# AIDS 2016

## 21ST INTERNATIONAL AIDS CONFERENCE

DURBAN, SOUTH AFRICA JULY 18–22, 2016

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**Track D: Social and Political Research, Law, Policy and** Human Rights
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**Track E: Implementation Research, Economics, Systems and** Synergies with other Health and Development Sectors
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# ABSTRACT MENTOR PROGRAMME

The Abstract Mentor Programme provides an opportunity for early-career investigators to receive feedback from more experienced researchers on their draft abstracts. The programme links mentees to mentors within the same track to maximize the use of the mentors' expertise. Participants are also given the chance to take part in an online e-course on conference abstract writing.

This year, 170 mentors reviewed 143 draft abstracts submitted by 110 researchers.
105 of them were submitted to AIDS 2016 and the following were selected:

- 1 Oral Abstract
- 1 Poster Discussion Session
- 30 Poster Exhibition

We would like to thank all volunteer abstract mentors, listed below, who supported early-career HIV researchers improve the quality of their abstracts.

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The The 21st International AIDS Conference received more than 7,100 abstract submissions, which went through a blind, peer-reviewed process carried out by an international panel of reviewers who play a critical role in designing a strong scientific programme.

Around 1,000 specialists from around the world volunteered their time and expertise to serve as peer reviewers, helping to ensure that the abstracts presented were selected on the basis of rigorous review and were of the highest scientific quality.

We extend our special thanks to the large pool of abstract reviewers for the time they dedicated to the success of the conference:

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# SESSION CODING FOR AIDS 2016 PROGRAMME

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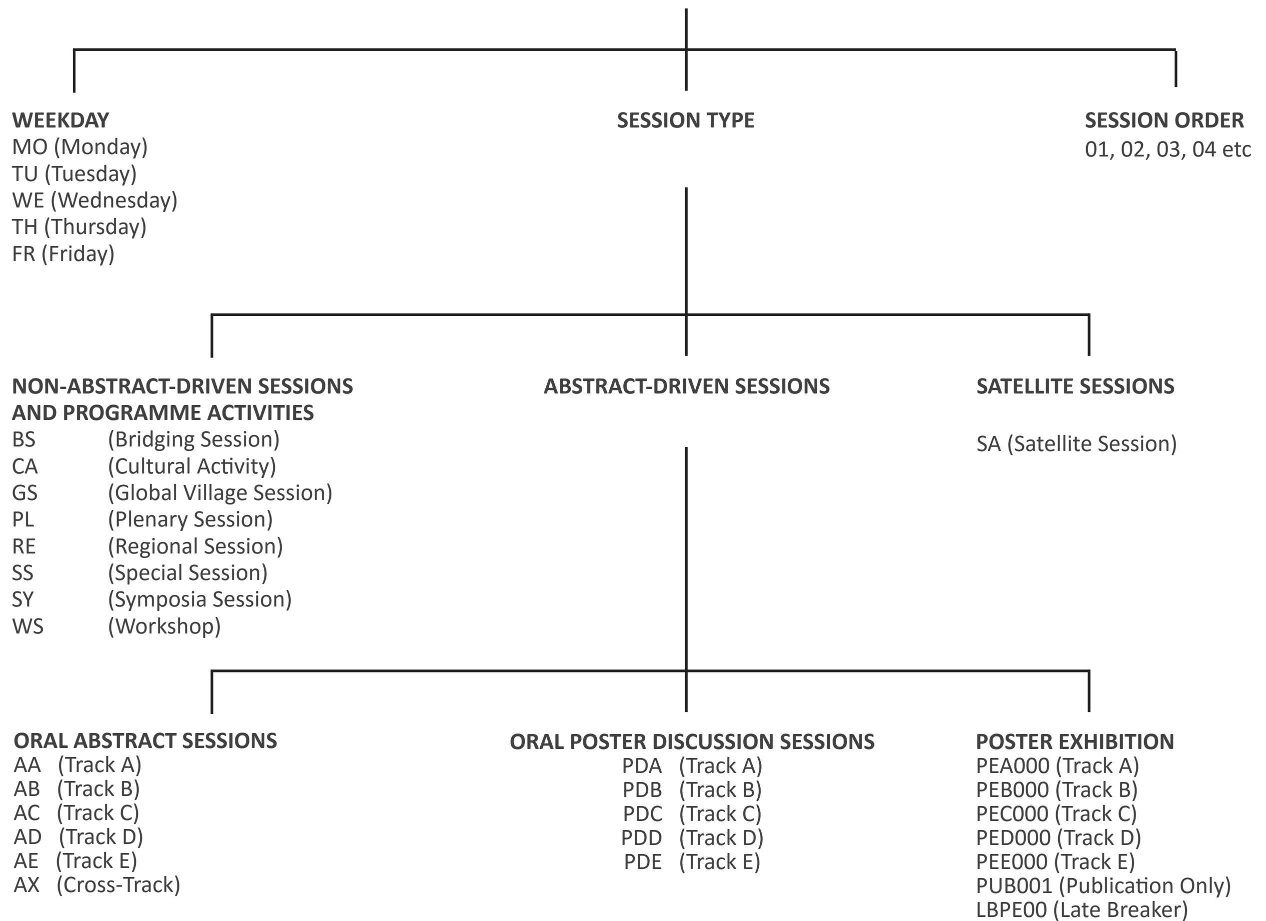
Example 2: **TUAA0105LB** = **TU** (Weekday) – **AA** (Session type) – **01** (Session order) – **05** (abstract order) – **LB** (late breaker abstract)
Example 3: **TUPEA001** = **TU** (poster presentation day) – **PE** (presentation type) – **A** (track) – **001** (abstract order)

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Tuesday 19 July

# ORAL ABSTRACT SESSIONS

## TUAA01 DRIVERS OF HIV PROGRESSION

### TUAA0101

### MICROBIAL TRANSLOCATION DURING HYPERACUTE SIV INFECTION

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**Background:** Within the first weeks of human immunodeficiency virus (HIV) infection, virus replication reaches systemic circulation. Despite the critical, causal role of virus replication in determining transmissibility and kinetics of disease progression, there is limited understanding of the conditions required to transform a small localized transmitted founder population into a large and heterogeneous systemic infection.
**Methods:** Cynomolgus and rhesus macaques were infected with simian immunodeficiency virus (SIV) and followed longitudinally. Plasma levels of SIV were monitored using qRT-PCR. Bacterial genomic DNA in plasma was characterized and quantified longitudinally using 16S ribosomal deep sequencing and qPCR. ELISA-based assays were used to monitor intestinal permeability (IFABP) and perturbation of bacteria-specific host factors (sCD14 and EndoCab). Flow cytometry was used to track peripheral blood lymphocyte populations. In vitro assays were performed by exposing freshly-isolated peripheral blood mononuclear cells to bacterial lysate prepared from major translocators. Effects of bacterial lysate on CD4+ T cell activation and CD8+ T cell cytotoxicity was measured using flow cytometry. Statistical significance was calculated using ANOVA or Wilcoxon signed-rank testing.
**Results:** Prior to the peak of viremia, we observed a transient high-level influx of microbial genomic DNA into peripheral blood. This microbial translocation was accompanied by perturbation of bacteria-specific host factors in plasma, as well as expansion of the CD4+CCR5+ T cell compartment. Exposure of freshly-isolated peripheral blood mononuclear cells to lysate prepared from major translocating taxa revealed differential taxa-specific effects on the CD4+CCR5+ T cell compartment and cytotoxic granule expression within CD8+ T cells.
**Conclusions:** Altogether, our data identify the influx of microbial products into blood during hyperacute SIV infection as a candidate modifier of early interactions between the antiviral host response and nascent HIV infection. Over the next few months, we will explore the effect of inducing microbial translocation during SIV infection, with particular interest on microbial reactivity within the CD4+CCR5+ target cell compartment.

### TUAA0102

### IMPACT OF A FAT-RICH DIET ON THE PATHOGENESIS OF SIV INFECTION IN THE AFRICAN GREEN MONKEY HOST

C. Xu[1], T. He[1], G. Haret-Richter[1], D. Franck[2], B. Policicchio[1], E. Brocca-Cofano[1], D. Ma[1], J. Stock[1], R. Tracy[3], A. Landay[4], C. Wilson[2], C. Apetrei[1], I. Pandrea[1]
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**Background:** High dietary fats were reported to induce intestinal dysbiosis, drive gut inflammation and breakdown the intestinal epithelial barrier, granting intestinal flora access to the bloodstream. As microbial translocation is a major determinant of the chronic immune activation and HIV/SIV disease progression, we investigated whether fat diet impacts HIV/SIV pathogenesis.
**Methods:** The nonprogressive African green monkey (AGM) model of SIV is an ideal system to assess the role of fat diet on disease progression, because they do not develop SIV-related intestinal dysfunction. We included 4 AGMs that received a fat diet prior and after SIVsab infection, and 5 controls in which the impact on key parameters of SIV infection such as: viral loads, CD4+ T cell counts, microbial translocation, immune activation and inflammation were compared and contrasted.
**Results:** LPS levels increased in the AGMs receiving fat diet prior and after SIV infection. Fat-rich diet also resulted in increases of immune activation (HLA-DR CD38, CD69 and Ki-67) and inflammation (inflammatory cytokines-IL-6, IL-17 and C reactive protein), leading to a prolonged depletion of CD4+ T cells compared to controls. However, these significant alterations of key parameters that are associated with the lack of disease progression in natural hosts of SIVs did not reach the levels described during progressive HIV/SIV infection. Furthermore, these changes did not result in significant increases in the levels of viral replication in the AGMs receiving a fat diet.
**Conclusions:** Administration of fat-rich diet resulted in alterations of markers of pathogenicity in the nonprogressive SIV infection of AGMs. Although not major, these changes were significant, suggesting that a diet very rich in fats may negatively impact HIV pathogenesis, especially if combined with other behavioral risk factors reported to impact gut integrity or systemic inflammation, such as alcohol consumption, drug usage and smoking. Detailed studies on the correlations between fat diet, alterations in the intestinal microbiota, metabolic markers, liver function and SIV progression to AIDS are in progress.

### TUAA0103

### HIV INFECTION IS ASSOCIATED WITH PRESERVATION OF MAIT CELLS IN THE LUNGS BUT ALTERATION OF THEIR PHENOTYPE AND T CELL RECEPTOR REPERTOIRE

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**Background:** Tuberculosis remains the leading cause of death in HIV-positive people. A better understanding of the impact of HIV on lung immunity may lead to novel immunotherapeutic interventions. MAIT cells are tissue-homing donor-unrestricted T cells with broad anti-microbial activity. HIV infection causes early and irreversible depletion of MAIT cells in the peripheral circulation, but the effect of HIV on MAIT cells in the lungs is unknown.
**Methods:** We FACS-sorted MAIT cells from bronchoalveolar lavage (BAL) fluid and peripheral blood of HIV-infected and HIV-negative patients from Durban, South Africa. MR1-5OPRU tetramer staining was used to identify and phenotype MAIT cells based on expression of CD3, CD4, CD8, TRAV1-2, CD161 and CD26. High throughput bias-controlled TCR sequencing (ImmunoSEQ) of sorted populations enabled detailed analysis of TCRA CDR3a usage.
**Results:** HIV infection was associated with depletion of MAIT cells in the peripheral circulation (median %5OPRU+ of CD3+CD4- lymphocytes was 1.09% in HIV-negatives, 0.34% in HIV-positives, $p = 0.027$). In contrast, MAIT cells were not depleted in the BAL compartment during HIV infection (0.68% in HIV-negatives, 0.89% in HIV-positives, p = non-significant). In HIV-negative individuals, 77.1% of circulating MAIT cells expressed the expected CD161++CD26++ phenotype, but only 43.8% of BAL MAITs expressed this phenotype ($p =< 0.0001$). In HIV infected lungs, the frequency of MAITs with the CD161++CD26++ phenotype was significantly higher (57.6%) than in HIV-negative lungs ($p=0.021$). MAIT cells with canonical MAIT TCRA CDR3a rearrangements were highly shared between donors and clonally expanded in the BALs. MAIT cells with non-canonical TCRs were unique to individuals and more frequent in HIV-infection.
**Conclusions:** We report for the first time that MAIT cells in the lungs are numerically preserved but phenotypically and clonotypically altered by HIV infection. We confirm previous reports that circulating MAIT cells are depleted in HIV. Our results suggest that peripheral MAIT cell depletions observed in HIV infection may be due to compartment-specific microbial alterations and/or tissue redistribution. Further study is needed to determine the mechanisms underlying the altered phenotypes of lung-resident MAITs and whether these can be targeted to improve anti-microbial lung immunity in people living with HIV.

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## TUAA0104

### CELL-ASSOCIATED HIV-1 UNSPLICED RNA LEVEL PREDICTS BOTH TIME TO VIROLOGICAL SUPPRESSION AND DURATION OF POST-TREATMENT VIROLOGICAL CONTROL IN PATIENTS TREATED WITH TEMPORARY EARLY ART

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**Background:** For the improved design of strategies towards HIV-1 functional cure, it is important to identify biomarkers that could predict the duration of post-treatment virological control.
**Methods:** We studied 46 patients that received 24 or 60 weeks of temporary ART initiated at primary HIV infection (PHI). Patients were treated with a quadruple triple-class ART regimen. Cell-associated HIV-1 nucleic acids were quantified by seminested real-time PCR.
**Results:** All patients achieved virological suppression (VS) (plasma HIV-1 viremia <50 copies/ml) with a median of 21 weeks. We first assessed the predictive power of plasma viremia, total HIV-1 DNA, unspliced (US) cell-associated HIV-1 RNA, $CD4^+$ T-cell count, and CD4:CD8 ratio, measured at PHI, for the time to VS. In the univariate analysis, both plasma viremia and US RNA were predictive for time to VS (p=0.016 and p=0.0033, respectively, log-rank test). In the multivariate Cox regression, US RNA at PHI was the only significant predictor of the time to VS (HR=0.65 per 1 $\log_{10}$ increase in US RNA, 95% CI, 0.48-0.87, p=0.0043). Subsequently, the same biomarkers were longitudinally quantified every 12 weeks during ART. All 45 patients who discontinued ART experienced virological rebound (VR) (plasma viremia >50 copies/ml) within 9 months after therapy interruption. We assessed the predictive power of the last measurements of the biomarkers on ART before the therapy interruption, as well as of the duration of temporary ART, for the time to VR (the duration of post-treatment virological control). Again, US RNA was the only significant predictor of the time to VR (HR=0.29 for patients with US RNA levels below vs. above the median, 95% CI, 0.10-0.83, p=0.021, log-rank test).
**Conclusions:** In summary, in this cohort of patients treated at PHI, cell-associated HIV-1 US RNA level was the sole independent predictor of both virological suppression on ART and post-treatment virological control after ART discontinuation. Further exploration of the potential of this biomarker as a predictor of post-treatment control in large-scale clinical trials aimed at HIV functional cure is warranted.

## TUAA0105

### HIV-INFECTED PATIENTS WITH EXCEPTIONAL TCD4+ RECOVERY DURING EFFECTIVE HAART PRESENT A DISTINCT T CD4+ DIFFERENTIATION PATTERN, HIGHER CD31NEG NAÏVE CELLS AND A SMALLER HIV RESERVOIR

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**Background:** Clinical outcome of HIV infected patients relies on the recovery of CD4+ T cells after HAART. However this immune recovery is variable and difficult to predict. Here we present a cohort of patients with undetectable viral load and a follow up of 48 months of HAART who reached CD4+ T cell counts >1000 cels/$mm^3$ (Hypers) and compare them to those who reached between 350 and 999 CD4+ T cels/$mm^3$ (concordants). Their demographic data, immune recovery kinetics, and T CD4+ subsets phenotype as well as their integrated HIV DNA were analyzed.
**Methods:** Retrospective data were obtained from the charts of 447 undetectable patients on their first ARV regimen and a follow up of 48 months at the INCMSZ HIV cohort. For immune phenotype and reservoir analysis, 20 Hypers and 19 Concordants matched by sex, age and T CD4+ nadir were available. The following subsets were analyzed by Flow cytometry on whole blood: naïve T-cells, central memory T-cells, effector memory and terminally differentiated. A two-step quantitative real-time PCR (qPCR) method to detect HIV-1 integrated DNA was used, with a DNA pre-amplification using *Alu* and LTR specific primers. Proviral DNA levels were determined by a second round SYBR Green-based qPCR assay in reference to a standard curve.
**Results:** 28 Hypers (6%) and 354 concordants (79%) were identified. Hypers had a higher proportion of CD4+ naïve T-cells (37.6 vs 24.8, p< 0.05), and a low proportion of CD4+ EM T Cells (27.9 vs 39.4, p< 0.05), with similar results found in CD8+ T Cells. Hypers presented a higher percentage of CD4+CD45RA+CD31neg cells. There was no difference in total integrated HIV DNA copies per $10^6$ PBMC (1729 vs 3062, p=0.19), however the DNA/CD4 ratio of Hypers was significantly lower (1.2 vs 2.89, p<0.05).
**Conclusions:** T cell recovery of Hypers occurs very early suggesting cell redistribution, however on the long term, their T CD4+ level is driven by non-thymic-central-naïve cells that are less likely to be HIV infected, thus diluting HIV reservoir. Understanding better immune recovery after HAART and its impact on viral reservoir could contribute to design more effective therapeutic strategies.

## TUAA0106LB

### DYSBIOTIC BACTERIA DRIVE SUPPRESSIVE NEUTROPHIL PHENOTYPES AND PROLONGED LIFESPAN IN MUCOSAL TISSUES OF HIV-INFECTED INDIVIDUALS

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**Background:** Neutrophils infiltrate the gastrointestinal (GI) tract during HIV infection, yet their contribution to the pathology of mucosal dysfunction is unknown. In chronic HIV, blood neutrophils expressing high levels of PD-L1 suppress T cell function and correlate with T cell expression of PD-1, an exhaustion marker predictive of HIV disease progression.
**Methods:** Our study aimed to investigate whether suppressive neutrophils are also present in the colon in HIV and examined whether bacterial dysbiosis contributed to their induction. Whole blood and isolated colon biopsy leukocytes from 10-HIV infected individuals were phenotyped by flow cytometry. To examine the effects of bacterial dysbosis, whole blood was stimulated for 20 hours with HIV-altered mucosal bacteria prior to phenotyping, including *Prevotella copri*, *Prevotella stercorea, Ruminicoccus bromii,* and *Lactobacillus plantarum*.
**Results:** We found a higher frequency of PD-L1 high neutrophils in the colon compared to blood in HIV-infected individuals *(p*=0.0028). In addition, colon PD-L1 high neutrophils correlated with colon PD-1+ CD4+ T cells (*p*=0.0207). Incubation of cells with GI bacteria increased in HIV (*Prevotella spp.*), induced this PD-L1 high phenotype in neutrophils. Conversely, the beneficial GI bacteria decreased in HIV, *R. bromii,* and *Lactobacillus* did not affect PD-L1 expression. Neutrophil PD-L1 expression correlated with PD-1 expression on CD4+ T cells after bacterial sitmulation (*p*=0.0065). Finally, stimulation with *Prevotella* species reduced neutrophil apoptosis compared to the media control.
**Conclusions:** These data suggest a role for dysbiotic bacteria in reducing neutrophil homeostatic cell death and clearance and contributing to gut neutrophil infiltration in HIV. Together, these suggests that suppressive colon neutrophils may play a role in T cell exhaustion and mucosal dysfunction associated with bacterial dysbiosis and translocation in HIV, and the continual presence of neutrophils in GI tissues may be a consequence of reduced homeostatic apoptosis upon interaction with these bacteria.

# TUAB01 LONG-TERM TREATMENT SUCCESS FOR ADOLESCENTS AND YOUNG ADULTS

## TUAB0101

### RESILIENCE IN PERINATALLY HIV-INFECTED AND PERINATALLY HIV-EXPOSED ADOLESCENTS AND YOUNG ADULTS GROWING UP IN HIGH-RISK ENVIRONMENTS

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**Background:** Globally, pediatric HIV is increasingly an adolescent and young adult (AYA) epidemic. Research with perinatally HIV-infected (PHIV+) AYA has prioritized identification of poor health and behavioral risk outcomes, but understanding positive outcomes in spite of adversity is critical to informing evidence-based programs. Using data from a New York City longitudinal cohort study (CASAH) of PHIV+ and perinatally HIV-exposed, uninfected (PHIV-) youth, we examined psychosocial and health outcomes pertinent to understanding resilience.
**Methods:** Data are from the most recent CASAH follow-up interview (2014-2015) with 135 PHIV+ and 86 PHIV- AYA to date. Participants were recruited when aged 9-16 years (2003-2008). Psychosocial batteries are administered every 12-18

months; PHIV+ youth viral load (VL) and CD4 are abstracted from medical records. Data on psychiatric disorders, sexual behavior, substance use disorders (SUD), and young adult milestones were compared across HIV status and age groups. Descriptive statistics, and chi-square and t-tests for comparing groups were used.
**Results:** Most participants were female (55%), African-American (67%), living in impoverished communities (100%); mean age was 22 years (range 15-28). There were no HIV-status differences in rates of psychiatric disorder (28%), SUD (27%), or past 3-month condomless sex (36%). At this wave, only 29% of PHIV+AYA had a psychiatric disorder and 25% SUD. Most PHIV+ AYA aged ≥19 years had achieved young adult milestones: 78% had graduated high school, 29% taken college classes; 53% were currently working or in school; 86% had ever had sex; and 41% were in romantic relationships. Achieving milestones did not differ by HIV status. Among all PHIV+ AYA, most had positive health outcomes: CD4 ≥ 250cells/mm$^3$ (79%); CD4 ≥500cells/mm$^3$ (44%) and VL≤1000copies/ml (70%); 46% had VL< 50copies/ml. Older age was associated with CD4 < 250cells/mm$^3$ ($X^2$=7.01, df=2, p=.030) and having a psychiatric disorder was associated with VL >1000copies/ml ($X^2$=4.29, df=1, p=.038).
**Conclusions:** In one of the few ongoing US-based studies with this population, we found, despite significant biopsychosocial risks, many PHIV+ AYA have positive health and mental health outcomes and achieve AYA milestones comparable to PHIV- and other vulnerable AYA. Identification of protective factors conferring resilience can inform evidence-based practice for millions of PHIV+ youth world-wide.

## TUAB0102

### THE YOUTH TREATMENT BULGE IN SOUTH AFRICA: INCREASING NUMBERS, INFERIOR OUTCOMES AMONG ADOLESCENTS ON ART

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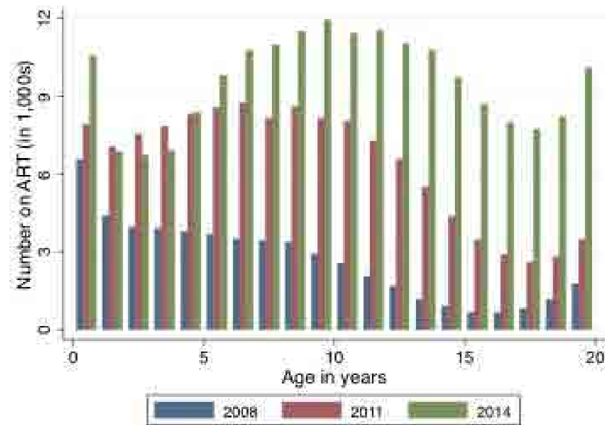
**Background:** Children perinatally-infected with HIV surviving due to pediatric ART are now ageing into adolescence. Yet monitoring adolescent treatment programs remains difficult as large, well-defined cohorts are rare. We quantify the size adolescent ART population and proportion virologic suppressed using a national patient cohort developed from South Africa's National Health Laboratory Service (NHLS) database.
**Methods:** Using NHLS data on all public sector viral load tests nationally since 2004, we analyzed information on all patients aged < 20 years at test date. We estimated the total number of patients accessing ART care in a given year as the number of individual patients with viral load results. Data were stratified by age and year (2004-2014) to assess shifts in age distribution on ART over time. We also assessed proportions virally suppressed in 2014, by age.
**Results:** A total of 929,274 person-years were analysed. There was a steady increase in number of children on ART under 5-years from 2004-2011, after which numbers stabilized, likely due to PMTCT successes. There were large increases in numbers of adolescents on ART, rising 10- to 20-fold from 2004-2007 to 2012-2014. Further increases are expected in 15-19 year-olds for the next decade, after which the younger cohort ageing into adolescence will decline. In 2014, the proportion virally suppressed was 71% among 5-9y (95%CI 71-72%), 65% among 10-14y (95%CI 65-66%), and 61% among 15-19y (95%CI 60-61%).
**Conclusions:** The rollout of PMTCT and pediatric ART led to a demographic bulge of HIV-infected adolescents and subsequently large numbers of adolescents receiving ART. Declining viral suppression among older adolescence suggests an urgent need to improve care for this vulnerable and growing population. Laboratory datasets represent an important tool for national and local resource planning and allocation.

| | 0-1 years | 1-4 years | 5-9 years | 10-14 years | 15-19 Years |
|---|---|---|---|---|---|
| 2004-2007 | 11,593 (15%) | 27,157 (35%) | 24,921 (32%) | 8,854 (11%) | 5,904 (8%) |
| 2008-2011 | 29,983 (9%) | 88,391 (26%) | 110,737 (33%) | 72,774 (22%) | 34,981 (10%) |
| 2012-2014 | 31,299 (6%) | 89,530 (17%) | 155,163 (30%) | 141,945 (28%) | 96,042 (19%) |

*[Table1: Distribution of viral load test results by age category and calendar year]*




*[Figure 1: Distribution of individual viral load test results by age and period]*

## TUAB0103

### LONG-TERM TRENDS IN MORTALITY AND AIDS-DEFINING EVENTS AMONG PERINATALLY HIV-INFECTED CHILDREN ACROSS EUROPE AND THAILAND

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**Background:** There are limited data on the prognostic effects of time-updated covariates on long-term mortality rates of perinatally HIV-infected children after starting ART. We analysed individual patient data from 19 cohorts in 16 European countries and Thailand in EPPICC.
**Methods:** Perinatally HIV-infected children aged < 18yrs starting cART were followed until death, loss to follow-up (LTFU), transfer to adult care, their 21st birthday or last visit to 31/12/2013. Crude rates of death and first AIDS-defining events were calculated. Baseline and time-updated risk factors for death ≤/>6 months of cART and progression to AIDS were assessed using inverse-probability-censoring-weighted Cox models to account for informative censoring of LTFU.

| Variable | | Adjusted HR (95% CI) | P |
|---|---|---|---|
| Country type | Middle-income (Russia, Ukraine, Thailand) | ref | 0.028 |
| | High-income | 0.5 (0.2-0.9) | |
| Calendar year at cART start | 1997-<2004 | ref | 0.035 |
| | 2004-<2008 | 0.4 (0.2-0.8) | |
| | ≥2008 | 0.5 (0.1-1.5) | |
| BMI-for-age z-score at cART start | >0 | 0.2 (0.1-0.6) | 0.045 |
| | -3 to 0 | ref | |
| | <-3 | 0.5 (0.2-1.6) | |
| VL copy-years suppressed (≤400c/ml) since cART initiation (per year increase) | | 0.7 (0.6-0.9) | 0.001 |
| Current (time updated) age (years) | <2 | 4.2 (1.4-12.7) | 0.002 |
| | 2-<5 | 0.2 (0.1-1.8) | |
| | 5-<14 | ref | |
| | ≥14 | 2.1 (1.0-4.2) | |
| Current (time updated) WHO immune stage severe | No | 0.1 (0.1-0.2) | <0.001 |
| | Yes | ref | |
| Current (time updated) BMI-for-age z-score | >0 | 1.1 (0.4-2.8) | <0.001 |
| | -3 to 0 | ref | |
| | <-3 | 19.5 (7.2-52.8) | |

*[Table: Predictors of death >6 months of cART]*

**Results:** Of 3527 children, 32%, 20%, 18% and 30% were from the UK/Ireland, Thailand, Russia/Ukraine, and the rest of Europe respectively. At cART initiation, median (IQR) age was 5.2(1.4-9.3) years and 42% had severe WHO immunological stage. Median follow-up was 5.6(2.9-8.7) years. There were 94 deaths and 174 first AIDS-defining events, of which 43(46%) and 79(45%) occurred within 6 months of cART

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initiation. The crude mortality rate was 2.50[95%CI 1.86-3.38]/100 person-years (PY) in the ≤6 month period, and 0.27[0.21-0.36] thereafter. 59(63%) {31≤6 months} deaths were from HIV-related infections, 19(20%) {9} HIV-related non-infectious conditions, 12(13%) {1} HIV-unrelated, and 4(4%) {2} unknown. The rate of first AIDS-defining event was 0.88[0.76-1.02]/100PY, including 31(18%) HIV encephalopathy, 29(17%) tuberculosis and 25(14%) HIV wasting syndrome. The Table shows multivariable predictors of increased risk of death >6 months of cART. Predictors for death ≤6 months (baseline only) and progression to AIDS (baseline and time-updated) were broadly similar.

**Conclusions:** Almost half of deaths occurred ≤6 months of cART, after which current severe WHO immune stage, low BMI-for-age z-score, and fewer VL copy-years suppressed were the strongest predictors for mortality. The raised mortality risk in those age≥14 and in middle-income countries raises concern.

## TUAB0104

### WHAT DOES ADOLESCENT TRANSITION MEAN IN SUB-SAHARAN AFRICA? PREDICTORS OF TRANSFER IN SOUTHERN AFRICAN PERINATALLY HIV-INFECTED ADOLESCENTS

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**Background:** In wealthy countries, many perinatally HIV-infected adolescents (PHA) transition from specialist pediatric clinics to adolescent/adult clinics during late adolescence. Transition may differ in sub-Saharan Africa, where pediatric HIV care is mostly provided in decentralized non-specialist primary care clinics either from antiretroviral therapy (ART) start or soon thereafter once children are stable on treatment. We examined transfer patterns in PHA in Southern Africa.

**Methods:** We included presumed PHA (ART initiation at < 9.5 years old without documented non-perinatal infection) with follow-up after 10 years of age at 12 IeDEA-SA cohorts providing pediatric ART care from Malawi, South Africa, Zambia and Zimbabwe from 2000-2014. We described characteristics at ART initiation, and at transfer or last visit in those remaining in care (RIC) at their original site. We used Cox proportional hazards models to identify predictors of transfer.

**Results:** We excluded 1660 PHA from 2 cohorts where no children transferred. Among 3820 children included, estimated probability of transfer by age 13 years varied widely between sites from 5.1% to 54.3%. Transfer was higher from specialist pediatric facilities compared to primary care facilities. At transfer, the median age was 11.4 years; 82% of children had CD4 >500 cells/μl and 89% had HIV-RNA < 400 copies/ml (Table).

| | RIC (n=2650) (excludes 253 children deceased or LTFU) | TFO (n=917) | p-value |
|---|---|---|---|
| Female (n/N; %) | 1260/2650; 48% | 439/917; 48% | 0.865 |
| Median (IQR) age in years at ART start | 7.2 (5.6-8.4) | 7.1 (5.4-8.3) | 0.195 |
| WHO-defined severe immunosuppression at ART start (n/N; %) | 993/1461; 68% | 433/627; 69% | 0.623 |
| Median (IQR) age (yrs) at TFO or last visit if RIC | 12.1 (10.9-13.8) | 11.4 (10.6-12.7) | <0.001 |
| Median (IQR) CD4 (cells/μl) at TFO or last visit if RIC | 725 (518-950) | 779 (569-1032) | <0.001 |
| CD4 >500 cells/μl at TFO or last visit if RIC (n/N; %) | 1566/2036; 77% | 656/801; 82% | 0.004 |
| Height-for-age z-score <-2 at TFO or last visit if RIC (n/N; %) | 355/906 ; 39% | 221/543; 41% | 0.568 |
| HIV-RNA <400 copies/ml (n/N; %) | 1543/2117; 73% | 694/781; 89% | <0.001 |

*[Characteristics of children with presumed perinatal HIV infection who remain in care at the original site (RIC) or are tranferred out (TFO)]*

After adjusting for site, PHA with the following characteristics were more likely to transfer: longer ART duration at 10 years (adjusted Hazard Ratio [aHR] 1.29, 95% Confidence Interval [CI]: 1.22-1.35), not severely immunodeficient at ART start (aHR 1.25; 95%CI:1.03-1.52), CD4 >500 cells/μl at age 10 (aHR 1.30; 95%CI:1.01-1.6), HIV-RNA < 400 copies/ml at age 10 (aHR 1.38; 95%CI:1.05-1.82).

**Conclusions:** Transfer patterns differ considerably between cohorts with many children transferring during early adolescence. PHA were relatively well at transfer; more than 80% had CD4 >500 cells/ul and virologic control. Understanding transfer patterns and tracking outcomes after transfer is important to comprehensively evaluate PHA outcomes.

## TUAB0105LB

### SWITCHING TO SECOND-LINE ANTIRETROVIRAL THERAPY (ART) IN HIV-INFECTED CHILDREN: A CIPHER COHORT COLLABORATION GLOBAL ANALYSIS

I.J. Collins, Collaborative Initiative for Paediatric HIV Education and Research (CIPHER) Cohort Collaboration Duration of First-line Team

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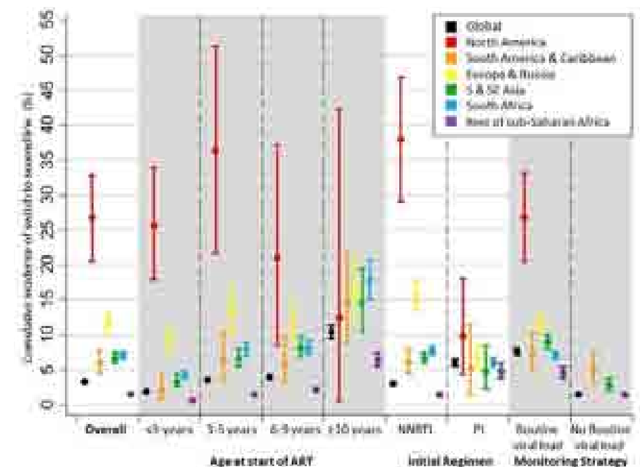
**Background:** There are conflicting data on time to switch from first-line to second-line ART in children. Here we present the first global estimates.

**Methods:** Individual-level data were pooled from 12 cohort networks within CIPHER. Children aged < 18-years initiating combination ART (≥2 nucleoside reverse-transcriptase inhibitors (NRTI) plus non-NRTI (NNRTI) or boosted protease inhibitor (PI)) were included. Switch to second-line was defined as: (i) change of ≥1 NRTI plus either change in drug class (NNRTI to PI or vice versa) or PI change; (ii) change from single to dual PI; or (iii) addition of new drug class. Cumulative incidence curves assessed time to switch, with death and loss to follow-up (LTFU) as competing risks.

**Results:** Of 95,194 children included, 18% were from South Africa and 72% from rest of Sub-Saharan Africa (SSA). At ART start, median [IQR] age was 3.7[1.6-6.8] years, CD4% 15%[9-21%], 42% had AIDS, 89% and 11% initiated NNRTI-based and PI-based ART, respectively. Median duration of follow-up from ART initiation was 26[9-51] months; 1% died, 26% were LTFU and 20% transferred out. Overall 4266 (4.5%) switched to second-line at median of 33.8[18.5, 55.1] months. The proportion switching at 3-years after ART start varied significantly across regions from 1.6% (95% CI 1.5,1.7) in SSA to 26.8% (20.6,33.3) in North America (Figure). A higher incidence of switch was seen in children aged≥10yrs at ART start compared to younger children in all regions except North America, in settings with routine viral load monitoring, and in children initiating NNRTI-based ART compared to PI-based ART in all regions except SSA.




*[Figure. Cumulative incidence of switch at 3 years of ART by age at start of ART, initial regimen and monitoring strategy by region]*

**Conclusions:** We found wide regional variations in the cumulative incidence of switch to second-line, with higher incidence among children initiating ART aged≥10 years and those in settings with routine viral load monitoring. High rates of transfer and LTFU mean these estimates maybe the lower bound of the true switch rates.

# TUAB02 CLUBS, CASH AND CAREGIVERS: IMPACT ON ADHERENCE AND RETENTION

## TUAB0201

### CASH, CARE AND HIV-COMMUNITY: SOCIAL PROTECTION IMPROVES ADOLESCENT ART-ADHERENCE IN SOUTH AFRICA

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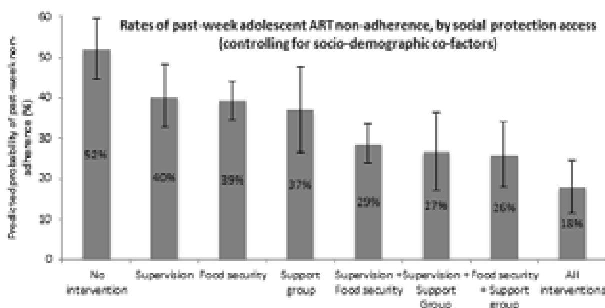
**Background:** Low ART-adherence amongst adolescents causes morbidity, mortality and onwards HIV-transmission. Reviews find no effective adherence-promoting interventions. This study examines associations of seven potential social protection factors with adherence, in the world's largest community sample of HIV+ adolescents.
**Methods:** N=1059 adolescents: all 10-19 year olds ever ART-initiated in 53 government healthcare facilities in a health district of South Africa's Eastern Cape were traced and interviewed in 2014-15. 90.1% of the eligible sample was included (4.1% adolescent or caregiver refused, 0.9% severe cognitive disability, 1.2% excluded and 3.7% unable to trace). Potential social protection predictors were 'cash': food security, school fees/materials, clothing; and 'care': HIV support group, sports group, positive parenting and high parental supervision. Analyses used multivariate regression with all potential predictors entered simultaneously, interaction and marginal effects models in SPSS and STATA.
**Results:** Past-week self-reported ART non-adherence was 36%, associated with increased opportunistic infections
(p< .002 SD.09). Postnatally-infected and rural adolescents were at highest risk, age and gender did not predict adherence. Analyses controlled for covariates: age, gender, location, perinatal/postnatal infection, treatment duration, ethnicity, maternal/paternal death, distance to clinic and general health. Independent of these, three cash and care social protection factors were associated with reduced non-adherence: food security (2 meals/day) (OR.60, CI.44-.81, p< .001); high parental/caregiver supervision (i.e. monitoring of adolescent activities) (OR.62, CI.47-.82, p< .001); and attending an HIV support group (OR.54, CI.36-.83, p< .004). Effects of combination social protection were not multiplicative, but were additive in predicted probabilities controlling for co-factors. With no protection factors, non-adherence was 52%, with any one protection it was 37-40%, and with all three social protections, 18%.



*[Rates of past-week adolescent ART non-adherence, by social protection access (controlling for socio-demographic co-factors)]*

**Conclusions:** Combination social protection 'cash plus care' improves adolescent ART-adherence. Specifically, food security, parenting support programmes and expanded provision of HIV support groups have potential to improve adherence, and subsequently adolescent HIV-survival and HIV-prevention.

## TUAB0202

### THE EFFECT OF COMMUNITY ART GROUPS ON RETENTION-IN-CARE AMONG PATIENTS ON ART IN TETE PROVINCE, MOZAMBIQUE

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**Background:** ART programs in many African countries have high attrition rates (death or loss-to-follow-up (LTFU) combined). In 2008 patients on ART in Tete Province, Mozambique, began forming community ART groups (CAGs) to overcome barriers to retention-in-care (RIC). CAGs are peer groups in which members take turns to collect ART at the health facility. Patients on ART can either join a CAG or remain in clinic based care. We conducted a retrospective cohort study among adult patients on ART to quantify the effect of CAG versus individual care on RIC.
**Methods:** Information to May 2012 was collected from patient records at eight health facilities. Patients who started ART ≥6 months before CAGs started at a health facility, or aged < 15 years at ART initiation, were excluded. Furthermore, patients had to remain in care for at least six months after starting ART to be included in the analysis. Survival analysis was used to compare RIC among patients in CAGs and patients in individual care, with time to joining a CAG treated as an irreversible time-dependent covariate. Cox regression was used to determine hazard ratios (aHR) for attrition, adjusted for age, gender, and health facility.
**Results:** Of the 2,683 patients in the analysis, 62.6% were female. The median age was 32 years. 12-month and 24-month RIC from point of eligibility were respectively 99.3% (95% CI: 97.8% - 99.8%) and 96.3% (95% CI: 94.4% - 97.6%) and among patients in CAGs, and 89.0% (95% CI: 87.3% - 90.2%) and 81.3% (95% CI: 78.8% - 83.4%) among those in individual care (p < 0.001). CAG patients were more than four times less at risk to die or to be LTFU (aHR = 0.22; 95% CI: 0.15 - 0.32; p< 0.001).
**Conclusions:** RIC was substantially better among patients on ART in CAGs than those in individual care. While exclusion of the first 6 months on ART reduced the potential impact of survivor bias, residual confounders may contribute to the differences observed. Nevertheless this study confirms that patient-led ART distribution through CAG results in high RIC, and supports the Mozambique Ministry of Health decision to implement CAG nationally.

## TUAB0203

### ONE YEAR RETENTION IN COMMUNITY VERSUS CLINIC-BASED ADHERENCE CLUBS FOR STABLE ART PATIENTS IN SOUTH AFRICA: FINDINGS FROM A RANDOMIZED CONTROLLED TRIAL

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**Background:** Adherence clubs, where groups of 25-30 patients stable on antiretroviral therapy (ART) meet for counselling and medication pick-up, is an innovative model to retain patients in care and facilitate task-shifting. Adherence clubs can be organized at a clinic or community venue. We performed a randomized controlled trial to compare club retention between community and clinic-based adherence clubs.
**Methods:** Stable patients with undetectable viral load at Witkoppen Health and Welfare Centre, in Johannesburg, South Africa, were randomized to either a clinic- or community-based adherence club. Clubs were held every other month and were run by an HIV counsellor. All club participants received annual viral load monitoring and annual medical exam by a clinician at the clinic. Patients became ineligible for club participation and were referred back to routine care if they missed a club visit without ART pickup within 5 days, had two consecutive late ART pickups, developed a comorbidity requiring closer monitoring, or had viral rebound. We compared the proportion referred back to routine care between clinic and community-based clubs in the first 12 months of club participation.
**Results:** From February 2014-May 2015, we randomized 770 adults into 12 pairs of clubs-- 378 (49%) clinic-based, and 392 (51%) community-based. Characteristics were similar by arm: 66% female, 88% on fixed-dose combination ART, and median CD4 count of 502 cells/mm$^3$. The proportion referred back to routine care was greater among community-based clubs (26%, n=102) compared to clinic-based clubs (19%, n=70, p=0.012) (Figure). Viral rebound was uncommon and comparable by club type (3% in clinic and 2% in community, p=0.594). Among those referred

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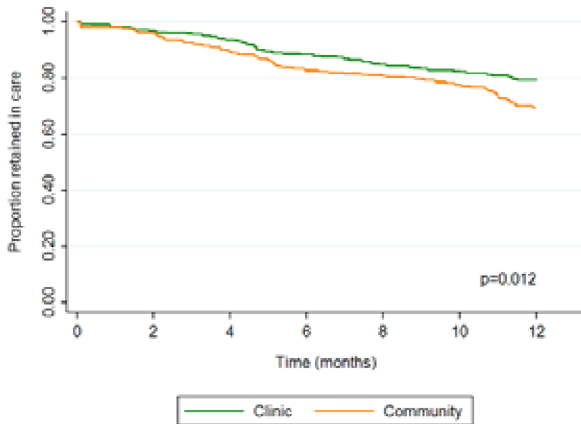
back to routine care, missing a club visit was the most common reason in both club types (61%).

**Conclusions:** Within the first year of adherence club participation, drop out was higher among community-based compared to clinic-based clubs.




[Retention in adherence club care--community vs clinic-based clubs]

## TUAB0204

### IMPROVED ADHERENCE TO ANTIRETROVIRAL TREATMENT OBSERVED AMONG CHILDREN WHOSE CAREGIVERS HAD POSITIVE BELIEFS IN MEDICINE

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**Background:** CHAPAS-3 trial investigated how the views of the child's caregiver towards medicine affected the adherence of their child to fixed-dose combination ART.

**Methods:** 478 HIV-infected children aged one month to 13 years were randomized to one of three first-line ARTregimens in Uganda and Zambia. Children were ART naïve (n=365) or ART experienced (n=113) at enrolment. We measured adherence to ART using medication event monitoring systems (MEMS) caps, and caregivers' views towards all medicines and medicines currently prescribed using the Beliefs in Medicine Questionnaire (BMQ). MEMS caps data were collectedduring weeks 0-18 and 54-72. The BMQ was completed by caregivers at weeks 0, 6, 24, 48, 72 and 96. We used repeated measures linear regression models to investigate associations between MEMS adherence in weeks 0-18 and BMQ at weeks 0 and 6 (period 1), and MEMS adherence in weeks 54-72 and BMQ in week 48 (period 2).

**Results:** MEMS adherence and BMQ data were available from 271/365 (74%) ART naïve and 97/113 (86%) ART experienced children in period 1, and 235/335 (70%) naïve and 98/112 (88%) experienced children in period 2. We present results from the ART naïve group in period 1, similar results were observed in period 2, and also among ART experienced children. Caregivers belief in the necessity of ART was stronger on average than their concern, median (IQR) scores were 20.0 (19.3,21.7) and 12.0 (10.7,14.7) for necessity and concern respectively. The median (IQR) necessity-concern differential was 8.3 (6.7,9.7). Adherence was good, as measured by MEMS, with median (IQR) 92% (84%,96%) doses taken. A significant positive association was observed between high necessity-concern score and high mems adherence, p=0.028 (β=0.236). A significant association was also seen among naïve children in period 2 (p< 0.001) but not among ART experienced children.

**Conclusions:** Caregivers of HIV-infected children had a strong belief in the necessity of ART, outweighing their concerns about treatment. High levels of adherence to ART were associated with positive overall beliefs towards medicine.There is a need of emphasizing the necessity of treatment to caregivers, while addressing any concerns they may have about ART.

## TUAB0205

### IS RETENTION ON ART UNDERESTIMATED DUE TO PATIENT TRANSFERS? ESTIMATING SYSTEM-WIDE RETENTION USING A NATIONAL LABS DATABASE IN SOUTH AFRICA

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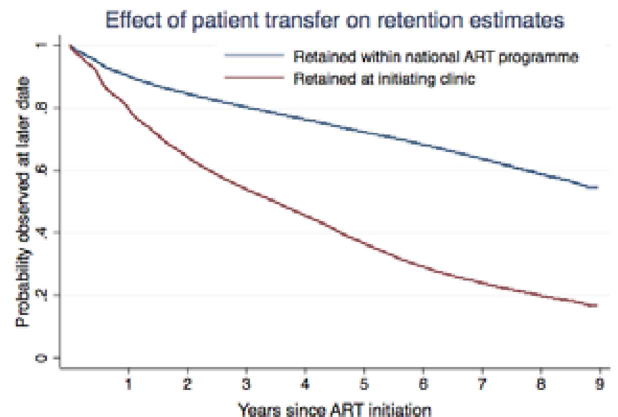
**Background:** Systematic reviews have described high rates of attrition in patients receiving antiretroviral therapy (ART). However, migration and clinical transfer may lead to overestimation of attrition. Using a newly linked national laboratory database in South Africa, we assessed system-wide retention in care.

**Methods:** South Africa's National Health Laboratory Service maintains a database of all public sector CD4 count and viral load (VL) test results since 2004. We developed an algorithm to link individual lab results using probabilistic matching techniques, creating a national cohort of HIV patients. We analyzed data on all patients initiating ART in 2004 and 2005 (during which time VL were collected at ART initiation) and who had at least one subsequent lab result. We assessed retention in care as *time to a patient's most recent lab result* (CD4 or VL), following patients through March 2015. Patients were identified as still in care if their last lab test occurred April 2013 - March 2015. We assessed two retention concepts: (a) *system-wide retention* including all lab results regardless of testing facility and (b) *retention at the initiating clinic,* in which lab tests at other facilities were ignored. These two concepts mirror the information available on patient histories from clinic-based and health system-wide perspectives.

**Results:** We followed 53,880 patients who initiated ART in 2004 and 2005. Eight-year retention at the initiating clinic was 13.1% (95%CI: 12.9-13.4). After allowing for transfers, system-wide eight-year retention increased to 47.3% (95%CI 46.9-47.7)(Figure).




[Figure 1 - Effect of patient transfer on retention estimates]

**Conclusions:** Patient migration and transfer are common throughout sub-Saharan Africa. Whereas prior cohort studies have tracked patients through resource-intensive follow-up, we show the utility of a national laboratory database for passive tracking of patients regardless of where they seek care. These findings have implications not just for measurement, but also potential to improve continuity of patient care in migration populations.

# TUAC01 PrEP: New drugs, new questions

## TUAC0101

### Oral administration of maraviroc, in infant rhesus macaques, fails to prevent SIVmac oral transmission

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**Background:** HIV maternal-to-infant-transmission (MTIT) accounts for >300,000 cases annually. New strategies of prevention are needed. SIV target cell availability at mucosal sites was reported to drive virus transmission. We investigated if systemic CCR5 blockade with Maraviroc (MVC) impacts oral SIV transmission to infant rhesus macaques (RMs).
**Methods:** Nine infant RMs aged six months were included. Four RMs were untreated controls and five RMs received MVC (150 mg/kg/bid/orally) for up to 6 months. Coreceptor occupancy was closely monitored and RMs were orally exposed to 10,000 TCID50 of SIVmac766XII every two weeks, up to 6 times. The concentration of MVC in plasma was measured by validated LC-MS/MS, plasma viral loads (VLs) and changes of immune cells were monitored respectively by RT-PCR and flow cytometry.
**Results:** MVC was well tolerated by RMs, with no adverse reactions and significantly blocked CCR5 coreceptor compared to control group (I challenge p=0.0159, II challenge p=0.0317 and III challenge p=0.0286). All RMs in the control group and 60% of those receiving MVC became infected (p=0.1515). No difference in the number of exposures needed to infect RMs in the two groups was observed. At the time of viral exposure, MVC plasma concentrations were of 538.36±422.56 ng/mL, within the range seen in humans receiving MVC. All treated and control RMs were infected with one viral variant, suggesting that the animals were not overexposed to virus, which might have offset MVC protective effect. Ramp-up viremia was significantly delayed (p=0.05) in the MVC-treated RMs. Peak (MVC-treated 7.18 log; control 6.71 log) and postpeak (MVC-treated 5.49 log; control 5.29 logs) VLs were similar in both groups. No significant differences in $CD4^+$ T cell depletion or in the levels of immune activation were observed between the two groups.
**Conclusions:** MVC effectively blocked CCR5 and was well tolerated in infant RMs. Yet, CCR5 blockade with MVC did not significantly impact SIV oral transmission. Since SIVmac is more promiscuous than HIV-1 with regard to coreceptor usage (i.e., being able to use alternative coreceptors, such as BOB/GPR15 and Bonzo/STRL33), CCR5 blockade in humans might be more effective in preventing MTIT alone or in combination with other antiretroviral drugs.

## TUAC0102

### HPTN 069/ACTG A5305: Phase II study of maraviroc-containing regimens for HIV PrEP in United States (U.S.) women

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**Background:** Maraviroc (MVC) is an HIV entry inhibitor that concentrates in the genital tract/rectum, making it a potential PrEP agent.
**Methods:** Prospective, randomized, double-blinded, multisite, safety/tolerability study of 4 regimens for HIV PrEP: (1) MVC alone; (2) MVC + emtricitabine (FTC); (3) MVC + tenofovir (TDF); (4) TDF + FTC. Study regimens consisted of 3 pills once-daily -- MVC 300 mg, FTC 200 mg, TDF 300 mg, with matching placebos. Eligible participants were adult HIV-uninfected women who reported a history of condomless vaginal or anal intercourse with ≥1 HIV-infected or unknown-serostatus man within 90 days of screening, and had adequate safety laboratory parameters including calculated creatinine clearance ≥70 ml/min. Participants were randomized to study regimens for 48 weeks with follow-up visits at weeks 2, 4, 8, and then every 8 weeks. At each visit, history, physical exam, safety laboratories, blood plasma for drug concentrations, adherence counseling, and HIV testing were conducted. All analyses were intent-to-treat.
**Results:** 12 HPTN and ACTG sites enrolled 188 women with a median age of 35 (range 18-61), including 65% black, 27% white, and 17% Latina participants. 153 (81%) completed study follow-up; 15 (8%) were lost to follow-up. 37 (20%) permanently discontinued the study regimen early, including 16 (8%) for participant request and 10 (5%) for pregnancy; rates and times to study drug discontinuation did not differ among the study arms (both p>0.2). MVC-alone was associated with fewer grade 2-4 adverse events than either TDF-containing regimen (p< 0.01); MVC+FTC was associated with fewer events than MVC+TDF (p=0.02). In a random subset of participants (n=125) at random study time points, 66% had detectable study drug plasma concentrations. 4 women had sexually transmitted infections while on study (3 chlamydia, 1 gonorrhea.) No HIV infections were identified during the study; the annual HIV incidence in women on this study was 0% [95% CI: 0%, 2.5%].
**Conclusions:** In this study of HIV PrEP in women, MVC-containing regimens were safe and well-tolerated compared to the control regimen of TDF+FTC. Only 2/3 had detectable study drug concentrations, but no HIV infections were identified. MVC-containing regimens should be explored further as oral PrEP for women.

## TUAC0103

### Persistence of rilpivirine following single dose of long-acting injection

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**Background:** Long-acting (LA) injectable formulations of rilpivirine (RPV) and cabotegravir (CAB) are currently being evaluated for the treatment and prevention of HIV infection. It is possible that, following completion of the PrEP dosing regimen with an LA agent, participants may experience an extended period of exposure to declining antiretroviral concentrations. Individuals who acquire HIV infection during this period may be at risk of developing resistance to the agent. To mitigate this risk, the HPTN-083 Phase 2B/3 study of CAB LA PrEP is proposing to provide study participants with 12 months of oral PrEP to cover the LA PK tail. However, there is an urgent need to better define the PK tail for LA PrEP agents.
**Methods:** The MWRI-01 study was undertaken to characterize the safety, acceptability, pharmacokinetics (PK), and pharmacodynamic profile of RPV LA. Participants from the single dose (SD) phase of evaluation of RPV (600 mg and 1200 mg) were able to enroll in a multiple dose (MD) phase evaluation of RPV (1200 mg). This study design provided an opportunity to characterize the persistence of RPV in baseline plasma samples obtained from participants enrolled in the MD phase of the MWRI-01 study. The Lower Limit of Quantification for RPV was 0.5ng/mL. Multiple blanks were included in the PK assays to exclude the possibility of carryover contamination.
**Results:** Eight women and four men were enrolled in the MD phase of the study of whom 9/12 (75%) had participated in the SD phase of the study (Table 1). RPV was detected in baseline plasma samples all five female participants (Mean RPV concentration 4.8 ± 2.9 ng/mL) and 3/4 of the male participants (Mean RPV concentration 2.9 ± 1.6 ng/mL). The mean time interval between the SD and Baseline visit was 536 ± 182 and 591 ± 78 days respectively for the female and male participants.

| Sex | Single Dose (SD) of RPV | Plasma RPV at 24 hours after SD RPV (ng/mL) Mean (± STD) | Time (Days)between SD and Multiple Dose (MD) Baseline Visit Mean (± STD) | Plasma RPV at MD Baseline Visit (ng/mL) Mean (± STD) |
|---|---|---|---|---|
| Male | 600 mg (N=2) | 20.9 (12.3) | 630 (100) | 0.8 (0.8) |
| | 1200 mg (N=2) | 18.2 (3.7) | 553 (51) | 3.7 (1.1) |
| Female | 1200 mg (N=5) | 54.0 (12.1) | 536 (182) | 4.8 (2.9) |

*[Table 1 Summary of time interval between single dose RPV and baseline PK]*

**Conclusions:** SD administration of RPV LA was associated with prolonged and declining PK exposure. These data have significant implications for the design of LA PrEP studies.

## TUAC0104

### BENEFITS OF PRE-EXPOSURE PROPHYLAXIS RELATIVE TO DRUG RESISTANCE RISK

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**Background:** The risk of drug resistance (DR) with FTC/TDF or TDF pre-exposure prophylaxis (PrEP) occurs primarily in people who had acute HIV infection when starting or restarting PrEP. The risks and benefits of RNA testing before starting PrEP have not been determined.
**Methods:** The risk of DR in PrEP programs was compiled across 6 randomized clinical trials and one demonstration project. Resistance was measured using clinical genotypic tests.
**Results:** All reviewed trials used rapid 2nd or 3rd generation antibody tests to guide PrEP initiation, and retrospectively analyzed baseline specimens for HIV RNA among seroconverters. FTC DR occurred in 10 participants who received FTC/TDF PrEP, including 33% (5/15) of participants acutely infected when starting PrEP, and in 3% (5/157) of participants with emergent infection. Including both baseline and emergent infections, there were 172 infections in the FTC/TDF arms compared with 270 among corresponding placebo controls, representing 98 infections averted and 10 (98/10) infections averted for every FTC resistant infection. Tenofovir resistance occurred in 1 participant who received TDF PrEP, including 10% (1/10) of participants acutely infected when starting PrEP, and none (of 90) with emergent infection. There were 100 infections in the TDF arms and 153 infections in the placebo controls, representing 53 infections averted by TDF PrEP and 53 (53/1) infections averted for every tenofovir resistant infection. In the demonstration project, a screen for acute viral symptoms led to deferral of PrEP among 30 of 1603 (1.9%) participants, of whom 2 (6.7%) were subsequently found to be acutely infected with HIV. Overall, the absolute risk of excess drug resistance during FTC/TDF PrEP was 0.05% (5/9222).
**Conclusions:** This analysis supports recent World Health Organization PrEP implementation guidance suggesting that rapid 3rd generation antibody tests are sufficient to minimize the overall risk of DR from PrEP. DR risk is higher with FTC/TDF PrEP compared with TDF PrEP. RNA testing before starting PrEP minimizes DR risk further while increasing costs and the risk of HIV infection due to delayed PrEP initiation.

## TUAC0105LB

### RESIDUAL DAPIVIRINE RING LEVELS INDICATE HIGHER ADHERENCE TO VAGINAL RING IS ASSOCIATED WITH HIV-1 PROTECTION

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**Background:** In MTN-020/ASPIRE, a vaginal ring containing dapivirine was found to decrease the risk of HIV-1 acquisition by 27% overall in an intention-to-treat analysis compared to placebo and by 37% in an analysis excluding data from two sites with lower adherence/retention. In subgroup analyses, no HIV-1 protection was seen in women ≤ age 21, for whom adherence appeared lower. In studies of tenofovir-based prophylaxis, objective markers of adherence have been important in understanding HIV-1 protection when products are used.
**Methods:** Rings were manufactured with 25 mg of dapivirine, and phase I studies indicated that ~4 mg of dapivirine on average are released during four weeks of continuous use; therefore, levels ≤22 mg were defined as having higher adherence for the present analysis. Starting one year into the trial, we tested the residual dapivirine levels (RDL) remaining in returned, used rings in ASPIRE. Visits at which participants did not return the ring, did not have access to the ring due to product hold or refusal or had RDL >22 mg were categorized as less or non-adherent. The association between HIV-1 acquisition and adherence was assessed using time-varying covariate Cox models adjusted for age and study site, including visits occurring at month 12 and beyond.
**Results:** Of the 2629 women enrolled in ASPIRE, 2359 were included in this analysis. Compared to placebo, higher adherence to the active dapivirine ring (i.e., RDL≤22 mg) was associated with a 65% (95% CI 23-84, p=0.009) reduction in HIV-1 risk. Results were similar for the full study population and when excluding the two sites with lower adherence/retention (risk reduction 67%, 95% CI 23-86), and point estimates suggested HIV-1 protection for both women >21 years (risk reduction 72%, 95% CI 21-90) and ≤21 years of age (risk reduction 50%, 95% CI -78-86). Partial/low adherence (i.e., RDL>22 mg) was not significantly associated with HIV-1 protection (relative risk reduction 35%, 95% CI -10-61, p=0.12).
**Conclusions:** Residual dapivirine levels in returned rings, an objective marker of adherence, indicate that higher adherence to the dapivirine vaginal ring may provide >65% protection from HIV-1 acquisition.

# TUAC02 CAN EPIDEMIOLOGY LEAD TO ACTION: WHO, WHERE, WHEN?

## TUAC0201

### STRENGTHENING HIV SURVEILLANCE IN THE ANTIRETROVIRAL THERAPY ERA: BASELINE FINDINGS OF HIV PREVALENCE AND INCIDENCE FROM KWAZULU-NATAL, SOUTH AFRICA

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**Background:** South Africa has over 6,000,000 persons living with HIV/AIDS, and the province of KwaZulu-Natal (KZN) is severely affected. We report on baseline findings from the population based household survey from the uMgungundlovu district of KZN, South Africa.
**Methods:** A two-stage cluster-based sample of randomly selected EAs and households; enrolled one eligible individual 15-49 years per household (2014 to 2015).. Structured questionnaires were administered and peripheral blood samples collected for laboratory measurements. HIV incidence was measured using the HIV LAg-avidity assay, adjusting for ART use and viral load. Taking into account the sampling design and adjusting for non-response, weighted data were analysed using SAS survey procedures.
**Results:** Of the 14624 eligible households visited, 11299 participated and 9812 individuals were enrolled; 63.8% females and 36.2% males. Overall HIV prevalence was 36.3% (95%CI 34.8-37.8); 44.1% (95% CI 42.3-45.9) females and 28.0% (95% CI 25.9-30.1) males [Risk ratio 1.57, 95% CI: 1.45-1.71, p< 0.001]. Prevalence was higher in females compared to males, 15-19 years (11.5% vs 5.0%, p< 0.001) and 20-24 years (32.4% vs 10.1%, p< 0.001). Prevalence peaked at 66.4% in females 35-39 years compared to 59.6% in males 40-44 years. A higher proportion of males had detectable virus (66.1% males vs 53.4% females, p< 0.001), however, 83.3% of females 15-19 years; 81.4% and 89.9% of males 20-24 and 25-29 years respectively had detectable virus. Males had a higher median (IQR) log viral load (3.69 c/ml, IQR 0.3-4.66 vs 1.83 c/ml, IQR 0-4.1; p< 0.001), with no difference in males and females 15-19 years; (males 3.57c/ml, IQR 1.3-4.6 vs females 4.1 c/ml, IQR 2.2-4.5; p=0.451). Overall HIV incidence was 3.21/100person-years (PY), 95% CI 2.39-4.03; 4.06/100py, 95% CI 2.85-5.25 in females and 2.10/100py, 95% CI 1.13-3.05 in males.
**Conclusions:** Despite the scale up of HIV prevention and treatment programmes, HIV incidence remains unacceptably high in the rural sub-districts of KZN. The high incidence in women coupled with a higher proportion of HIV positive males having detectable virus at higher median c/ml has implications for sustained HIV transmission.

## TUAC0202

### SPATIAL ASSOCIATION BETWEEN POPULATION VIRAL LOAD AND HIV INCIDENCE

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**Background:** Treatment as Prevention programs aim at reducing HIV incidence by increasing the proportion of HIV-positive individuals with undetectable Viral Load (VL) through ART roll-out. However, critical data on the relation between population VL and incidence are needed. We explored the spatial association between HIV incidence and population VL in a high HIV prevalence setting in western Kenya.
**Methods:** We conducted a population-based survey of persons aged 15-59 years in Ndhiwa sub-county, Nyanza, Kenya, collecting spatial (Cluster and Health Center location) and individual (including, HIV status, incidence and VL) information. Population VL is defined as the proportion of individuals HIV+ with a VL>1000cp/mL among the entire population. Population VL, HIV incidence and distance to the nearest health center (HC, delivering ART) were derived. A mixed Poisson regression model of incidence was used, adjusted on age (9 age groups), gender, distance to HC (3 classes) and population viral load in each cluster (6 classes).
**Results:** A total of 6,076 individuals from 165 clusters participated to the survey. HIV prevalence was 24.1% (95%CI 23.0-25.2). VL suppression among HIV-positive participants was 39.0% (95%CI 35.9-42.2). Among all participants, 13.7% (95%CI 12.9-14.6) were HIV-positive with a VL< 1,000 cp/mL. Incidence increased with population viral load and was 1.7, 3.3, 4.8 and 5.4 new cases per 100PY for a population VL of [5-10%[, [10-15%[, [15-20%[ and [20-25%[, respectively.
In the model, incidence was strongly associated with population VL. Relative risks were 1.26 (95% CI 0.6-2.6), 2.45 (95% CI 1.3-5.0), 3.40 (95% CI 1.8-7.0), 4.02 (95% CI 2.0-8.4) and 4.46 (95% CI 2.0-10.6) for a population VL of [5-10%[, [10-15%[, [15-20%[ and [20-25%[ compared to reference [0%-5%].
**Conclusions:** We found a strong association and gradient between HIV incidence and population HIV viral load. This association suggests that population-level reduction of HIV incidence could be achieved by reducing population viral load through ART roll-out in the general population.

## TUAC0203

### MAPPING THE HIV EPIDEMIC TO IMPROVE PREVENTION AND CARE: THE CASE OF FRANCE

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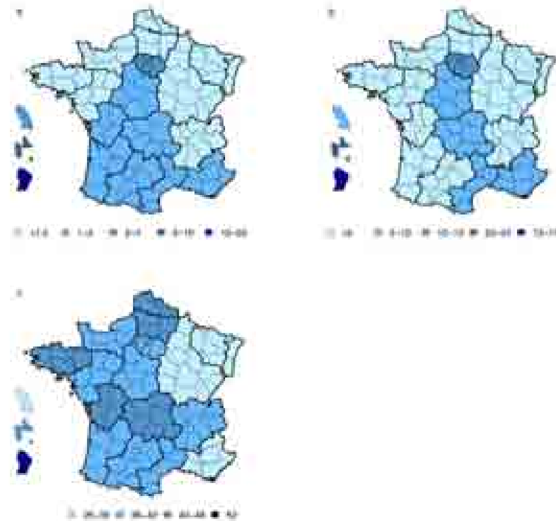
**Background:** Despite decades of treatment efforts, in most settings, the number of new HIV infections remains unacceptably high and late HIV diagnosis remains common. To improve HIV prevention and care, a more focused response is needed using detailed data to map areas that are most impacted by HIV.
**Methods:** We used data on newly diagnosed HIV cases from 2004 to 2012 and a back-calculation model, previously developed (Ndawinz et al. AIDS 2011, Supervie et al. AIDS 2014), to estimate, in France, at the national level, at the regional level and by HIV exposure group, three epidemiological indicators: HIV incidence, distribution of times from HIV infection to diagnosis, and the number of undiagnosed HIV infections.
**Results:** We estimated that in 2012, around 6800 (95% confidence interval: 5900-7700) new HIV infections occurred in France, 24600 (21000-26000) individuals were living with undiagnosed HIV and the median time from infection to diagnosis was 36 months (inter-quartile range: 12-64). HIV incidence and median time from infection to diagnosis were stable since 2004. HIV incidence and undiagnosed HIV prevalence rates were highest in French Guiana, French Antilles, Paris region (p< 0.001; Figure 1a and b). Median time from infection to diagnosis was longest in French Guiana, Poitou-Charentes, Brittany, Limousin-Auvergne, Guadeloupe, Nord-Pas-de-Calais and Picardy (p< 0.001; Figure 1c). The epidemic was mainly driven by both MSM and born abroad heterosexuals in the Paris region, and by born abroad heterosexuals in French Guiana.
**Conclusions:** To the best of our knowledge, this is the first study that provides estimates of three main epidemiological indicators at a granular level, throughout the use of a detailed national dataset. These estimates will be essential to tailor and evaluate a more focused HIV response.



*[Estimates of: (a) HIV incidence rates per 10000; (b) Undiagnosed HIV prevalence rates per 10000; (c) Median time from infection to diagnosis (months)]*

## TUAC0204

### ONGOING HIGH HIV INCIDENCE AMONG WOMEN AND MEN IN CHÓKWÈ, SOUTHERN MOZAMBIQUE: A CALL FOR RAPID SCALE UP OF COMBINATION HIV PREVENTION

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**Background:** In 2012, estimated HIV incidence among sexually active women in Chókwè Mozambique was 4.6 per 100 person-years (PY). In 2014, the Chókwè Health Demographic Surveillance System (CHDSS) incorporated HIV testing and counseling (HTC) within annual rounds of demographic surveillance. In this abstract, we report HIV incidence during the first two rounds of CHDSS HTC.
**Methods:** CHDSS includes 95,589 residents in Chókwè town and 6 villages in Southern Mozambique. During each round, all CHDSS households are visited and HTC is offered to all encountered residents. Round 1 was conducted April 2014-May 2015; round 2 May-December 2015. Analyses are restricted to residents who tested HIV-negative in round 1 and retested in round 2. Adjusted incidence rates (IR) per 100 person-years were estimated with a generalized linear model using SAS 9.4.
**Results:** Of 20,235 participants aged 15-59 years who tested HIV-negative in round 1, 10,826 (54%) retested in round 2. HIV incidence was high overall (adjusted IR, 4.7) and higher among residents in Chókwè town than villages (p< 0.001). Among participants aged 15-24 years, incidence among females was higher than males (4.0 vs. 1.0; p< 0.001); among participants aged 25-44 years, incidence was higher among males than females (10.8 vs. 7.9; p=0.02). Incidence was not statistically significantly different between males and females 45-59 years of age (p=0.08).

| Demographic Group | Participants | Incident Infections | Follow-up Person Years | Crude IR per 100 Person Years | Adjusted IR per 100 Person Years |
|---|---|---|---|---|---|
| Total | 10826 | 473 | 8195.8 | 5.8 (5.3-6.3) | 4.7 (4.2-5.4) |
| Chokwe Town | 6670 | 329 | 4733.1 | 7.0 (6.2-7.7) | 6.0 (5.2-6.9) |
| Villages | 4152 | 144 | 3462.6 | 4.2 (3.5-4.9) | 3.4 (2.8-4.2) |

*[Adjusted HIV Incidence and 95% Confidence Intervals, Total and by Urbanicity]*

**Tuesday 19 July** Oral Abstract Sessions
Wednesday 20 July
Thursday 21 July
Friday 22 July
Late Breaker Posters
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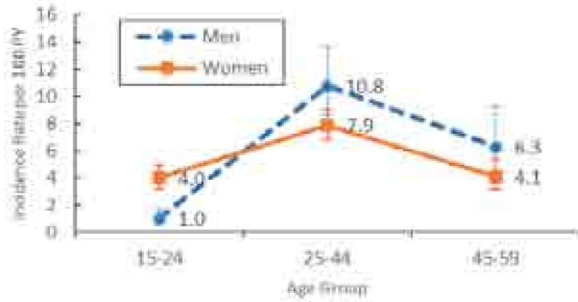


*[Adjusted HIV Incidence and 95% Confidence Intervals, by Sex and Age-group]*

**Conclusions:** HIV incidence is exceptionally high among residents aged 25-44 years in Chókwè District. Among persons under 25 years, HIV incidence is higher in women than men; among older persons, incidence is higher in men. To reduce HIV incidence, combined evidence-based HIV prevention interventions such as HIV testing and linkage to care, antiretroviral treatment as prevention, and male circumcision should be scaled up in Chókwè district.

## TUAC0205

### DISTRICT PREVALENCE OF UNSUPPRESSED HIV IN SOUTH AFRICAN WOMEN: MONITORING PROGRAMME PERFORMANCE AND PROGRESS TOWARDS 90-90-90

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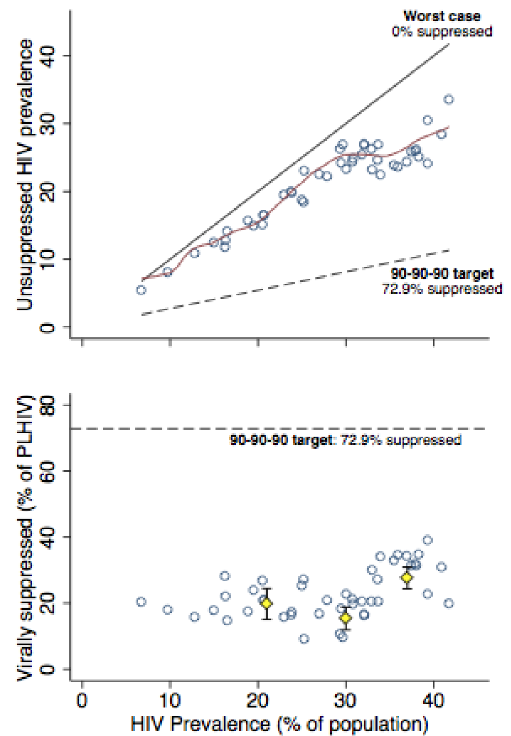
**Background:** Population prevalence of unsuppressed HIV is a key determinant of HIV morbidity, mortality, and onward transmission, and can be reduced through both treatment and prevention strategies. We estimate unsuppressed HIV prevalence among reproductive-aged women in South Africa's 52 districts.
**Methods:** District HIV prevalence for women 15-49 years was estimated using national antenatal surveillance data, pooled for 2010-2012 to improve precision. Data were combined from District Health Information System (DHIS), National Health Laboratory Service (NHLS), and South African Census to estimate proportion virally suppressed. We multiplied total numbers of patients remaining on ART in 2012 (DHIS) by proportions of patients with viral loads in 2012 that were women 15-49 years and virally suppressed (NHLS). We divided by the district population of women 15-49 years (Census) to obtaining the population prevalence of suppressed HIV. Subtracting this number from antenatal prevalence, we obtained *prevalence of unsuppressed HIV*. We also computed the ratio of these quantities, *percent of HIV-infected who are virally suppressed*. We assessed the relationship between each of these measures and district HIV prevalence in linear regression.
**Results:** Prevalence of unsuppressed HIV varied widely across districts (5% to 33%, Fig 1a). By 2012, no district had achieved the 90x90x90 target of 72.9% population-level viral suppression in the study population of reproductive-aged women; however, there was large variability in the percent of HIV-infected who were virally suppressed (9% to 39%, Fig 1b) and thus clear opportunity to identify the determinants of high-performing districts. Districts with the highest viral suppression had the highest HIV prevalence (p < .001), suggesting successful targeting of resources, but also a need for renewed focus on districts in the second tier of HIV prevalence.
**Conclusions:** Unsuppressed HIV prevalence and percent suppressed among the HIV-infected offer measures of unmet need and program performance that can be estimated from routine programme and surveillance data.




*[Figure 1. Unsuppressed HIV prevalence and population viral suppression in South African districts]*

# TUAD01 PATHWAYS: MOVING FROM STRUCTURAL RISKS TO RESPONSES

## TUAD0101

### SOCIAL ECOLOGICAL CONTEXTS OF HIV VULNERABILITY AMONG INTERNALLY DISPLACED WOMEN IN LEOGANE, HAITI

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**Background:** The confluence of poverty, increased gender-based violence, and limited access to sexual health services elevate HIV infection risks among women displaced from natural disasters. Scant research has examined factors associated with condom use among internally displaced women in post-disaster settings, such as post-earthquake Haiti. Approximately 65,000 people continue to experience protracted displacement in Haiti where they face chronic poverty, overcrowding, and unsafe living conditions. We examined factors associated with consistent condom use among internally displaced women in Haiti.
**Methods:** This community-based study involved a cross-sectional survey with a peer-driven sample of internally displaced women in Leogane, Haiti. Peer health workers administered tablet-based structured interviews to internally displaced women (n=175). We conducted multivariate logistic regression analyses to assess correlates of past month condom use.
**Results:** The 128 participants who reported being sexually active in the past four weeks were included in analyses. Two-thirds (n=84; 65.2%) reported consistent condom use in the past month. Three-quarters (n=95; 74.2%) of participants ate one meal or less per day. In multivariate logistic regression analyses controlled for age and income, consistent condom use in the past month was associated with meals per day (AOR 2.02, p=0.022), sexual relationship power (AOR 1.12, p=0.006), no reported intimate partner violence (AOR 2.82, p=0.022), and poor self-rated health (AOR 3.25, p=0.040). Participants who were less likely to report consistent condom use in the past month reported sex work involvement (AOR 0.09, p=0.004), shorter relationship duration (AOR 0.18, p=0.004), depression (AOR 0.62, p< 0.001), and a higher number of sex partners in the past year (AOR 0.56, p< 0.001). This model explained 48.7% of the variation in consistent condom use scores (Pseudo $R^2$=0.487).
**Conclusions:** Findings provide the first assessment of contextual factors associated with condom use among internally displaced women in post-earthquake Haiti. This research highlights the salience of a social ecological approach to understanding

HIV vulnerability, underscoring intrapersonal (e.g. depression), interpersonal (e.g. relationship duration) and structural (e.g. food security, intimate partner violence) domains. Understanding social ecologies of HIV vulnerability among internally displaced women can inform complex, multi-level interventions that address food security, gender-based violence, and depression, to advance HIV prevention in post-disaster settings.

## TUAD0102

### STILL "AT RISK": AN EXAMINATION OF HOW STREET-INVOLVED YOUTH UNDERSTAND, EXPERIENCE, AND ENGAGE WITH "HARM REDUCTION" IN VANCOUVER'S INNER CITY

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**Background:** Vancouver is an international leader in implementing interventions to reduce harms related to injection drug use, including a large needle exchange program and North America's first government-sanctioned supervised injection facility. However, street-involved youth who use drugs continue to be vulnerable to HIV infection as a result of high rates of syringe sharing. In order to understand why youth in this setting continue to experience drug-related harms in the context of intensive public health intervention, we consider how these youth understand, experience and engage with harm reduction programs in the context of entrenched marginalization.
**Methods:** Twelve semi-structured interviews were conducted in 2013 with thirteen youth (ages 17-28) recruited from the At-Risk Youth Study, a prospective cohort of 500 street-involved and drug-using youth. These interviews were embedded within a larger, eight-year program of ethnographic research, and explored participants' understandings of "harm reduction" their use of specific services, and their ideas about improving their day-to-day lives. Interviews were transcribed verbatim and a thematic analysis was performed.
**Results:** Youth's understandings of and ideas about "harm reduction" were diverse, and went beyond public health efforts to minimize drug-related risks. Many youth articulated the limitations of existing programs, indicating that while they reduce the risk of HIV transmission, they offer little meaningful support to improve youth's broader life chances. Youth described how they used "softer drugs" like marijuana to reduce the amount or frequency of substances deemed more harmful (e.g. crack cocaine, heroin) to their mental and physical health. They also indicated that using "softer drugs" allowed them to transition from intravenous routes of administration to oral, inhaled or intranasal routes. Finally, youth indicated that spatial considerations (e.g., distance from Vancouver's Downtown Eastside) strongly determined access to harm reduction services, and to the more expansive visions of "wellness" that they envisioned for themselves.
**Conclusions:** In Vancouver, a large, well-established harm reduction infrastructure seeks to reduce drug-related harms such as HIV transmission among street entrenched youth. However, youth's multiple understandings, experiences and engagements with "harm reduction" in this setting illustrate the limitations of the existing infrastructure in improving their broader life chances, and addressing their desires for structural change.

## TUAD0103

### FORCED SEX, MIGRATION AND HIV INFECTION AMONG WOMEN FROM SUB-SAHARAN AFRICA LIVING IN FRANCE: RESULTS FROM THE ANRS PARCOURS STUDY

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**Background:** In Europe, sub-Saharan African migrant women are a key population for HIV infection. Social hardships during migration may increase women vulnerability to sexual violence and HIV infection. The aim of this study is to assess the association between forced sex, migration and HIV infection among sub-Saharan African women living in France.
**Methods:** Parcours is a life-event survey conducted from February 2012 to May 2013 in health-care facilities in the Paris region, among two random samples of sub-Saharan migrant women: 570 receiving HIV care (156 acquired HIV in France) and 407 not diagnosed with HIV (reference group). Women were retrospectively asked whether they had ever been forced to have sex against their will and if happened, during which calendar year(s). Using mixed-effects logistic regression models, characteristics associated with an experience of forced sex after 14 years old in France, including migration history and living conditions each year after arrival in France, were first identified. Then, the frequency of forced sex after 14 years old in France was compared, adjusting for these characteristics, between women having acquired HIV either before or after migration and those HIV-uninfected.
**Results:** Overall, 22.2%, 23.1% and 18.3% of women HIV-infected before migration, HIV-infected after migration and HIV-uninfected, respectively, reported an experience of forced sex after 14 years old (childhood sexual abuse was about 4%), and, 3.8%, 17.3% and 4.2%, respectively, reported an experience of forced sex after arrival in France. Having migrated because of being threatened in the country of origin (aOR=5.96[1.57-22.61]) and absence of stable (aOR=4.64[1.69-12.79]) or own (aOR=2.72[1.13,6.53]) housing in France were associated with a higher frequency of forced sex in France. Adjusting for migration history and living conditions, the frequency of forced sex in France was higher among women having acquired HIV in France compared to those HIV-uninfected (aOR=4.97[1.63-15.12]), while no difference was found for those HIV-infected before migration (aOR=2.18[0.78-6.04]).
**Conclusions:** Among sub-Saharan African migrant women, HIV acquisition in France may be related to a context of sexual violence. Women whose migration was motivated by violence and those who experience social hardships in the host country are at high risk of sexual violence.

## TUAD0104

### WHOONGA: OFF-LABEL ANTIRETROVIRAL MEDICATION FOR RECREATIONAL SUBSTANCE USE AND PREDICTED IMPLICATIONS FOR PRE-EXPOSURE PROPHYLAXIS HIV PREVENTION IN SOUTH AFRICA

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**Background:** "Whoonga" is a colloquial term describing an illicit drug allegedly comprised of antiretroviral medication used alone, or in combination with cannabis, methamphetamine, heroin, and other substances. Few studies characterize whoonga use among adolescents. Off-label use of antiretrovirals may diminish supply of antiretroviral treatment medication, and contribute to non-adherence, medication resistance, and an illicit drug epidemic.
**Methods:** Emergent data on whoonga was derived from two adolescent HIV prevention studies conducted from 2015-2016 in Cape Town, South Africa. The first study was a baseline survey from an ongoing intervention study of family adolescent HIV prevention with N=399 adolescents and parents (adolescents: 100% Black African, 56% female, M=14 years; parents 100% Black African, 96% female, M=40 years). Participants were recruited through house-to-house community sampling, and completed behavioral self-reports of whoonga use via a computerized mobile smartphone with audio computer-assisted self-interview software. The second study is an ongoing qualitative study of acceptability of HIV pre-exposure prophylaxis (PrEP) for adolescents involving focus groups and interviews with N=24 adolescents (M=100% Black African, 60% female, 16-17 years) and N=17 service providers. Adolescent participants were recruited using convenience sampling in community and clinic settings; service providers were recruited using respondent driven sampling. We conducted descriptive analysis of quantitative survey data using SPSS and thematic analysis of qualitative data using NVivo. Brown University and University of Cape Town provided ethical approvals.
**Results:** Nearly a fifth of adolescents reported whoonga use (3% used themselves, 14% knew someone who used). Administration included smoking (71%), snorting (15%), injecting (15%), ingesting (15%), and inserting (3%). Parents also reported whoonga use (4% used themselves, 7% knew someone who used). Administration included smoking (57%), ingesting (29%), and snorting (14%). Preliminary qualitative findings demonstrated clinicians knew of patient whoonga use and were concerned about how PrEP implementation would impact whoonga initiation and abuse. Adolescents used specific slang for individuals using whoonga and identified linkages between crime and whoonga abuse.
**Conclusions:** Whoonga use is an emerging prevention challenge. Future studies should characterize the prevalence, composition, social and behavioral correlates of whoonga use, and further explore how the use of whoonga may be affected by PrEP implementation.

## TUAD0105

### IMPACT OF A STRUCTURAL INTERVENTION TO ADDRESS ALCOHOL USE AMONG GAY BAR-PATRONS IN SAN FRANCISCO: THE PACE STUDY

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**Background:** Men who have sex with men (MSM) have high rates of binge drinking (>50% in San Francisco (SF)), which can lead to increased sexual risk and other negative health outcomes. Heavy alcohol use is a recognized driver of the HIV epidemic in SF and gay bars have been identified as important venues for interventions addressing alcohol-related HIV risk.
We sought to evaluate the impact on alcohol intake and blood alcohol concentration (BAC) of a pilot structural intervention to increase the availability of free water, coupled with messaging on pacing alcohol intake and normative feedback about blood alcohol concentration in a convenience sample of gay bars in San Francisco, CA., USA.
**Methods:** From January 2012 to August 2014, study participants (n=1293) were recruited among exiting patrons of 4 gay bars in SF (2 intervention bars and 2 control bars). Participants answered a brief survey regarding alcohol intake and sexual risk behaviors then completed a breathalyzer test to measure their BAC. Individuals' measured BAC was displayed graphically in relation to others exiting the bar. Alcohol intake and measured BAC of participants were compared at baseline and post-intervention between control and intervention bar patrons using Pearson $\chi^2$.
**Results:** No significant differences between intervention and control bars were found at baseline. Participants were 69% Caucasian, 11% Latino, 5% African-American, 7% API, 8% other race; mean age was 37.5 years. We found high levels of alcohol use and sexual risk across all participants (56% reported condomless sex with a potentially serodiscordant partner at last sex). Post-intervention there were significant differences on measures of alcohol consumption: 30% of intervention bar participants had BAC levels over the legal limit (.08g/dL) compared to 43% of control bar participants, p< .0001 and 78% of intervention bar participants were above the AUDIT-C cut-off for problematic drinking compared to 87% in control bars, p< .001.
**Conclusions:** It is feasible to partner with bar owners to implement a structural intervention to reduce BAC levels of customers. Increasing the availability of free water and alcohol intake pacing messaging in gay bars can decrease patron alcohol intake and may impact alcohol related sexual risks for HIV.

## TUAD0106LB

### *'SOMETIMES I FEEL LIKE THE OTHER LIFE ON HEROIN WAS BETTER':* TRANSITIONING EXPERIENCES OF METHADONE CLIENTS AND THE POTENTIAL IMPLICATIONS IN HIV PREVENTION CARE AND TREATMENT IN NAIROBI, KENYA

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**Background:** In 2014, Kenya realized the ability to integrate new perspective in drug policy by introducing methadone (MAT)treatment for opiate-dependent persons. More than 500 people who use opiates have been enrolled in methadone in Nairobi. The study explored issues around access to and life experiences/changes with methadone, HIV care and treatment, health care and social support systems.
**Methods:** In depth interviews were conducted with HIV positive and negative men (n= 8) and women (n=22) who were receiving methadone at a psychiatric hospital in Nairobi. Interviews were complimented by observations and informal conversations with clients within a community based drop-in centre as well as interviews with community stakeholders.
**Results:** While clients were pleased with life changes brought about by methadone, a majority of study participants reported struggling with the transition from heroin and other drugs to methadone. In their everyday life, the labelled 'MAT clients' they struggle with social efficacy of MAT, thus immediate normalization of socioeconomic as well as sexual and reproductive lives in society. This result in tension between a new life on MAT and an old life on heroin and other drugs. This tension deepen a feeling of being a neglected population and lead some to revert to the 'old life' of (injecting) using heroin, while others mix methadone with other drugs such as heroin. The temptations of the 'old life' are exacerbated by the availability of heroin and other drugs in their environs; expectations of MAT; continued relations with friends who still use heroin and other drugs; a lack of income or being unoccupied; low self esteem; and a lack of or limited social support. In addition, those HIV positive reported stigma from fellow MAT clients.
**Conclusions:** The pressures of transition from heroin use to methadone is reported by some clients as involving a series of tensions that may lead to continued drug use and sexual risk of HIV, which may complicate the potential for methadone to support HIV prevention and treatment goals. Responses to these tensions could include pyscho-social support and structural interventions to facilitate the transition to use of methadone.

# TUAD02 REALITY CHECK: THE INTERSECTIONS OF HIV, VIOLENCE AND TRAUMA

## TUAD0201

### MICRO-LEVEL SOCIAL AND STRUCTURAL SYNDEMIC OF HIV RISK AMONG NEPALESE FEMALE SEX WORKERS

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**Background:** Sex workers face stigma, discrimination and violence across the globe and are almost 14 times more likely to be HIV infected than other women in low- and middle income countries. In Asia, condom campaigns at brothels have been effective in some settings, but for preventive interventions to be sustainable it is important to understand micro-level social and structural factors that enable sex workers to practice safer sexual behaviors. This study assesses the syndemic effects of micro-level social and structural factors of unprotected sex and the prevalence of HIV among female sex workers (FSW) in Nepal.
**Methods:** In this quantitative study, 610 FSW were recruited using two-stage cluster sampling between September 2012 and November 2012 from 22 Terai highway districts of Nepal. Rapid HIV tests and face-to-face interviews were conducted to collect biological and behavioral information. A count of physical (sexual violence), social (poor social support and condom negotiation skills) and economic (unsafe sex to make more money) factors that operate at the micro-level was calculated to test the additive relationship to unprotected sex. Unprotected sex was assessed with the following question: "The last time you had sex with your client, did he use a condom?". Point-biserial correlation was conducted to measure the size and significance of associations between each syndemic condition and unprotected sex. Statistically significant associations between independent variables and unprotected sex were computed using multivariable logistic regression.
**Results:** The HIV prevalence was 1% in this presumably representative and large sample of FSW in Nepal. The prevalence of unprotected sex with client was high (24%). For each additional adverse physical, social and economic condition, the likelihood of unprotected sex with clients increased substantially: 1 problem=2.2 adjusted odds ratio (AOR); 95% confidence interval (CI)=1.3-3.7; 2 problems=3.1 AOR; 95% CI=1.8-5.4; 3-5 problems=7.3 AOR; 95% CI=3.9-13.9.
**Conclusions:** Interactions between two or more adverse conditions linked to physical, social and economic environment increased the risk of unprotected sex among FSW. A more holistic approach, including efforts to improve condom negotiation skills and to address economic vulnerability and abuse, is required to address unprotected sex among FSW in Nepal.

## TUAD0202

### PHYSICAL AND SEXUAL VIOLENCE AGAINST FEMALE SEX WORKERS IN COTE D'IVOIRE: PREVALENCE, AND THE RELATIONSHIP BETWEEN VIOLENCE AND STRUCTURAL DETERMINANTS OF HIV

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**Background:** The HIV epidemic disproportionately affects female sex workers (FSW). Violence has been identified as an important measure in understanding HIV amongst FSW, however, limited data exist regarding the experience of physical and sexual violence amongst FSW in Cote d'Ivoire. Characterizing the prevalence of physical and sexual violence, as well as the relationship with structural HIV-related

risks can inform the development and implementation of programs and policies addressing health and human rights amongst FSW.
**Methods:** FSW, 18 years or older were recruited through respondent driven sampling in Abidjan, Côte d'Ivoire. A total of 466 participants completed a socio-behavioral questionnaire. Prevalence estimates of physical and sexual violence were evaluated as both crude and RDS adjusted estimates. The relationships between protection, coercive sexual risk, economic work environment, and physical and sexual violence were analyzed using chi squared tests, and bivariate and multivariable logistic regression.
**Results:** The RDS-adjusted prevalence estimate of physical violence amongst FSW in Cote d'Ivoire is 60.6%, and sexual violence is 44.1%. Among the study sample, police refusal of protection was associated with increased experience of sexual violence (Odds Ratio [OR]: 3.14; adjusted Odds Ratio [aOR]: 1.71; 95%CI: 1.02, 4.89). Being blackmailed because of FSW status was associated with physical (OR: 2.27; aOR: 2.08; 95%CI: 1.07, 4.04) and sexual violence (OR: 2.92; aOR: 1.96; 95%CI: 1.17, 4.65).
**Conclusions:** Violence amongst FSW in Cote d'Ivoire is prevalent, and shown to be severe and reoccurring. High levels of violence perpetrated by clients, as well as low levels of reported protection highlights a need for improved work environments for FSW in Cote d'Ivoire. Considering the policy and risk environment in Cote d'Ivoire, targeting the macrostructure through improved work environment and increased protection may be an effective way to address the cascade of barriers in realizing health and human rights for FSW in Cote d'Ivoire.

## TUAD0203

### EXPERIENCES OF CHILDHOOD TRAUMA INCREASES HIV-RISK BEHAVIOURS IN YOUNG WOMEN AND MEN IN URBAN INFORMAL SETTLEMENTS IN SOUTH AFRICA

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**Background:** Young adults in informal settlements experience high HIV-incidence. While childhood trauma is known to increase HIV risks factors including violence, multiple partnering and substance use in other settings, little is known about the impact of childhood trauma in informal settlements.
**Methods:** We drew on cross-sectional data from 320 women and 319 men aged 18 to 38 in informal settlements in Durban, South Africa comprising the control arm of a cluster randomised RCT. Questionnaires collected scores assessing childhood trauma before 18, including experiences of physical violence, sexual abuse, emotional violence and harsh parenting. Outcomes were HIV-risk factors assessed over the past 12m: three or more main partners, three or more causal partners, three or more once-off partners, IPV and non-partner sexual violence and problematic alcohol use. For each outcome we built (male/female) regression models controlling for clustering and potential confounding variables .
**Results:** Mean ages were 24.4 years for women and 23.4yrs for men. Before the age of 18, 76.2% of men and 71.3% of women reported witnessing or experiencing physical violence; 48.0% of men and 34.7% of women experienced sexual violence; and 62.1% of men and 56.9% of women experienced emotional violence.
For women increasing childhood traumas were associated with more once off sexual partners, experiencing IPV, non-partner sexual violence and problematic alcohol use.

| | Childhood Trauma Mean (CI95%) | | | |
|---|---|---|---|---|
| Past 12m outcomes | Yes | No | aOR (CI) | P-Value |
| 3 or more once-off sexual partners | 9.1(7.5-10.7) | 5.7(5.0-6.4) | 1.08(1.00-1.16) | p<0.05 |
| Experience of physical and/or sexual IPV | 7.2(6.5-8.0) | 4.6(3.8-5.4) | 1.08 (1.01-1.15) | p<0.05 |
| Experience of non-partner sexual violence | 9.3(8.1-10.5) | 4.9(4.3-5.4) | 1.13(1.06-1.21) | p<0.0001 |
| Problematic alcohol use | 9.4(7.9-10.9) | 5.4(4.8-5.9) | 1.07 (1.00-1.15) | p<0.05 |

*[Women: Childhood traumas associated with HIV-risks]*

For men, increasing childhood traumas were associated with more main, casual and once-off sexual partners and perpetrating IPV and non-partner sexual violence.

| | Childhood trauma mean (CI) | | | |
|---|---|---|---|---|
| Past 12m outcomes | Yes | No | aOR (CI) | p-values |
| 3 or more main sexual partners | 8.8(7.5-10.0) | 6.7(5.9-7.6) | 1.08(1.02-1.13) | P<0.01 |
| 3 or more casual sexual partners | 9.2(7.5-10.8) | 6.9(6.1-7.7) | 1.06 (1.00-1.11) | P<0.05 |
| 3 or more once-off sexual partners | 8.7(7.3-10.1) | 7.0(6.1-7.8) | 1.06 (1.00-1.11) | p<0.05 |
| Perpetrating any IPV | 9.3(8.3-10.2) | 5.1(4.2-6.0) | 1.14 (1.07-1.21) | p<0.0001 |
| Perpetrating non-partner sexual violence | 9.5(8.3-10.7) | 6.1(5.3-6.9) | 1.07 (1.02-1.13) | p<0.01 |

*[Men: Childhood traumas associated with HIV-risks]*

**Conclusions:** Experiences of childhood traumas were consistently associated with increased HIV-risk behaviours amongst young women and men in urban informal settlements, particularly number of recent sexual partners and experience/perpetration of IPV and non-partner sexual violence. Intervening with children and caregivers before 18 to reduce childhood trauma is critical for reducing future HIV-risk.

## TUAD0204

### HIV+ DIAGNOSES DURING PREGNANCY INCREASES RISK OF IPV POSTPARTUM AMONG WOMEN WITH NO HISTORY OF IPV IN THEIR RELATIONSHIP

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**Background:** There have been mixed findings on the relationship between HIV and women's risk of IPV. Per the dual vulnerability model, it may be that HIV infection matters only for particular relationships. Specifically, when you add an HIV-positive diagnosis into an already stressed relationship (as indicated by IPV history) it may work synergistically to increase IPV risk. In contrast, women's relationships where there is no history of IPV may be more resilient to an HIV-positive diagnosis. Therefore, the aim is to test whether the positive association between HIV status and IPV will be exacerbated for women with a history of IPV.
**Methods:** Data come from 1064 women who participated in the baseline antenatal visit and 9-month postpartum follow up visit as part of a larger RCT. We conducted logistic regression analysis to examine our hypothesis. Model 1 assessed whether HIV diagnosis at baseline predicted physical IPV at follow up, controlling for demographic covariates. Model 2 included an interaction between HIV diagnosis and history of IPV.
**Results:** While HIV was not associated with postpartum IPV in the main effects model (AOR: 1.44, 95% CI: .78-1.97), there was a statistically significant interaction between HIV diagnosis and having a history of IPV (AOR: .40, 95% CI: .17-.96). The findings were in the opposite direction as expected: among women who had a history of IPV in the relationship, HIV status did not predict IPV postpartum (AOR: .87, 95% CI: .49-1.55). Yet among women who had no history of IPV in the relationship, receiving an HIV-positive diagnosis during pregnancy predicted postpartum IPV (AOR: 2.17, 95% CI: 1.06, 4.42).
**Conclusions:** Receiving an HIV-positive diagnosis in pregnancy did not exacerbate postpartum IPV for women with a history of IPV in their relationship; the diagnosis may not signify new stress within the relationship. However, the findings have important implications for women with no history of IPV. That is, women who test HIV-positive and have no history of IPV should be counseled regarding their future risk of IPV in their relationship. Given the negative health ramifications of IPV during the perinatal period for women and their children, IPV prevention interventions are needed.

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## TUAD0205

### PHYSICAL ASSAULT PARTIALLY MEDIATES THE IMPACT OF TRANSGENDER STATUS ON DEPRESSION AND POLY-SUBSTANCE USE AMONG BLACK MSM AND BLACK TRANSGENDER WOMEN IN THE UNITED STATES: RESULTS FROM POWER

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**Background:** Black men who have sex with men (BMSM) and black transgender women (BTW) are vulnerable to physical assault, poly-substance use, and depression, outcomes that drive new HIV infections and poor HIV-related health outcomes in both populations. Though BTW are different than BMSM, no studies have examined how the manifestations of these outcomes may differ between populations. In order to fill this gap, we examined differences in physical assault, poly-substance use, and depression between BMSM and BTW, and we investigated whether physical assault mediates differences in poly-substance use and depression.
**Methods:** Cross-sectional data for our analysis came from the first two years of the ongoing study, *Promoting Our Worth, Equality, and Resilience* (POWER). In 2014 and 2015, POWER employed time-location sampling (TLS) to recruit a community-based sample of BMSM and BTW (n=3,426) who attended Black Pride events in six U.S. cities. Participants completed a behavioral health survey and were offered onsite HIV-testing. At total of 2,997 BMSM and 277 BTW (n=3,274), provided complete data for our analysis. All TLS weighted multivariable models controlled for age, education and city.
**Results:** BTW had significantly higher prevalence of physical assault than BMSM (44.8% vs 12.3%, respectively). In multivariable models, compared to BMSM, BTW had greater physical assault (AOR=5.2; 95% CI: 3.9, 7.0), poly-substance use (AOR=7.2; 95% CI: 4.9, 10.6), and depression (AOR=3.3; 95% CI: 2.5, 4.4). Physical assault attenuated the effects of transgender status on poly-substance use (AOR=3.9; 95% CI: 2.6, 5.9) and depression (AOR=2.4; 95% CI: 2.5, 4.4). The indirect effect of transgender status on poly-substance use via physical assault was 1.4 (95% CI: 1.2, 1.7), and the indirect effect of transgender status on depression via physical assault was 1.3 (95% CI: 1.15, 1.47). Physical assault partially mediated the relationships of transgender status with poly-substance use and depression.
**Conclusions:** BTW face an epidemic of physical assault. If this epidemic continues, efforts to address depression and poly-substance use as well as other downstream health outcomes (e.g. HIV incidence, HIV-related health outcomes) among BTW will be futile. Interventions addressing structural inequity are necessary to alleviate the instances of physical assault perpetrated against BTW.

# TUAD03 SEX, BABIES AND LIFE: EFFECTIVE REPRODUCTIVE HEALTH PROGRAMMES

## TUAD0301

### CHALLENGES TO ADVANCING HIV RESEARCH IN PREGNANCY: INSIGHTS FROM THE HIV RESEARCH COMMUNITY

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**Background:** Concerns about including pregnant women in research have led to a dearth of evidence to guide safe and effective treatment and prevention of HIV in pregnancy. We aimed to identify the range of barriers to conducting research in this area.
**Methods:** We conducted a series of consultations with HIV investigators and clinicians to elicit their views and experiences conducting HIV research involving pregnant women. We solicited input from 55 colleagues in small groups or one-on-one sessions to discuss priorities and barriers to research with pregnant women. Content analysis was used to identify themes.
**Results:** Participants discussed a breadth of areas of needed research, including safety, efficacy and appropriate dosing of: newer ARVs for pregnant women; emerging preventive strategies; and treatment for HIV's co-infections, including but not limited to tuberculosis. Challenges to conducting research on pregnancy and HIV included regulatory and legal barriers, such as restrictive interpretations of current regulations; financial disincentives stemming from funders' views that pregnant women cost more to include and represent a small sub-population; social and cultural research norms, such as fear of reputational damage if harms arise for pregnant women or their fetuses; and logistical difficulties, such as challenges recruiting enough pregnant women to sufficiently power data analysis.

| Treatment | Co-infection & Co-Morbidities | Other/Cross-cutting |
|---|---|---|
| • Choice of ARV to optimize short and long term maternal health<br>• Optimal dosing throughout pregnancy<br>• Continuation of therapy after treatment for PMTCT | Safety and efficacy of treatment for HIV+ pregnant women with:<br>• TB and Malaria<br>• Opportunistic Infections<br>• Hepatitis B and C<br>• Hypertension, Eclampsia, Pre-Eclampsia<br>• Diabetes | • PK studies<br>• New Delivery Mechanisms (e.g., rings and patches)<br>• HIV & Fertility |
| **Prevention** | **Diagnostics** | **Vaccines** |
| • Chemoprevention (PrEP, Microbicides)<br>• Safe Conception | • Optimal HIV testing throughout pregnancy<br>• Resistance testing | • HIV Vaccine Trials<br>• Other Vaccine Trials with HIV-infected participants |

*[Table 1. Pressing research gaps relevant to pregnancy and HIV]*

| Ethical | Legal | Research Environment & Culture |
|---|---|---|
| • Calculating risk/benefit ratio<br>• Ensuring informed consent, including what role, if any, the biological father should have in decision making<br>• Burden on pregnant women of research study requirements | • Difficulty interpreting U.S. human subjects regulations related to pregnant women (what is „minimal risk" in clinical research?)<br>• Concerns about study disapproval by IRBs<br>• Studies with pregnant minors raise additional regulatory concerns<br>• Liability if study results in harm | • Reputational risk to the researcher if study results in fetal harm<br>• Belief that funders, regulators, and public would only view observational studies as ethical<br>• Easier to obtain funding and conduct research with other populations |
| **Financial** | **Analytical** | **Logistical** |
| • Required follow-up and potential ancillary care for women who become pregnant on study are costly<br>• Pharma does not perceive pregnant women as a lucrative market segment (little incentive to study with potential liability as a disincentive)<br>• Funders fail to prioritize research on pregnancy | • Data from pregnant women or women who become pregnant during study must be analyzed separately<br>• Low statistical power due to likely small sample size | • Most trials do not enroll pregnant women and require women who become pregnant to withdraw, so even conducting opportunistic or observational studies is difficult<br>• Need for „buy-in" from men for studies in many international settings<br>• Locating participants for data collection at fixed time points in pregnancy |

*[Table 2. Barriers to conducting clinical research relevant to pregnancy and HIV]*

**Conclusions:** Despite broad recognition of research gaps related to HIV and pregnancy, investigators face numerous challenges to advancing needed research. Clearer guidance for navigating the complex legal, regulatory and ethical landscape is needed to advance women's health at the intersection of pregnancy and HIV.

## TUAD0302

### FUTURE PREGNANCY INTENTIONS AND KNOWLEDGE OF METHODS FOR SAFER CONCEPTION AMONG FEMALE SEX WORKERS IN PORT ELIZABETH, SOUTH AFRICA

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**Background:** Female sex workers (FSW) are disproportionately affected by HIV and experience high rates of pregnancy. The objective of these analyses is to assess fertility intentions and the impact of HIV on pregnancy intentions and safer conception knowledge among FSW in Port Elizabeth, South Africa.
**Methods:** FSW in Port Elizabeth were recruited into a cross-sectional study using respondent-driven sampling. Participants completed an interviewer-administered questionnaire asking about future fertility intentions and were provided HIV testing and counseling. Robust Poisson regression was used to model adjusted prevalence ratios (aPrR) for correlates of positive fertility intentions among FSW < 45 years. Knowledge of safer conception methods was described using Fisher's-exact tests.
**Results:** Overall 391 FSW were represented in the analyses. Just over 50% (203/391) had received a prior HIV diagnosis and an additional 12% (46/391) were diagnosed

with HIV during the study. Slightly under half of FSW (185/391) reported future pregnancy intentions (47%). In bivariate analyses, knowledge of prior HIV diagnosis was negatively associated with pregnancy intentions as compared to HIV-negative women [PrR=0.68,95%CI (0.55-0.85)]. Older age, greater number of children living, and more years selling sex were also significantly negatively associated with pregnancy intentions. Being in a relationship was significantly positively associated with pregnancy intentions. In multivariate analyses, only parity remained significantly associated with future pregnancy intentions. Knowledge of safer conception methods, such as timed condomless sex, pre-exposure prophylaxis, or self-insemination was low and non-statistically-significantly different between those with and without pregnancy plans (Table 1).

**Conclusions:** Pregnancy intentions were high and not independently associated with HIV status. Moreover, there was limited knowledge of safer conception methods suggesting the need for specific advice for FSW on how to conceive safely given that most women were living with HIV and have specific sexual risks of HIV acquisition and transmission given their occupation.

| | Overall n=391 | HIV- n=142 | HIV+, no prior dx n=46 | HIV+, prior dx n=203 | p-value |
|---|---|---|---|---|---|
| ARVs for the infected partner No Yes | 300 (76.7) 91 (23.3) | 113 (79.6) 29 (20.4) | 42 (91.3) 4 (8.7) | 145 (71.4) 58 (28.6) | 0.007 |
| PrEP for the uninfected partner No Yes | 374 (95.7) 17 (4.4) | 135 (95.1) 7 (4.9) | 45 (97.8) 1 (2.2) | 194 (95.6) 9 (4.4) | 0.883 |
| Treatment when pregnant No Yes | 203 (51.9) 188 (48.1) | 91 (64.1) 51 (35.9) | 30 (65.2) 16 (34.8) | 82 (40.4) 121 (59.6) | <0.001 |
| Self-insemination No Yes | 387 (99.0) 4 (1.0) | 140 (98.6) 2 (1.4) | 46 (100.0) 0 (0.0) | 201 (99.0) 2 (1.0) | 1.00 |
| Timed intercourse No Yes | 387 (99.0) 4 (1.0) | 140 (98.6) 2 (1.4) | 46 (100.0) 0 (0.0) | 201 (99.0) 2 (1.0) | 1.00 |
| Sperm-washing/in-vitro fertilization No Yes | 363 (92.8) 28 (7.2) | 130 (91.6) 12 (8.4) | 44 (95.7) 2 (4.3) | 189 (93.1) 14 (6.9) | 0.694 |
| Using a sperm donor No Yes | 360 (92.1) 31 (7.9) | 132 (93.0) 10 (7.0) | 46 (100.0) 0 (0.0) | 182 (89.7) 21 (10.3) | 0.038 |
| Adoption No Yes | 300 (76.7) 91 (23.3) | 109 (76.8) 33 (23.2) | 44 (95.7) 2 (4.3) | 147 (72.4) 56 (27.6) | 0.001 |

*[Table 1. Knowledge of HIV prevention strategies for conception by known HIV status among 391 Female Sex Workers in Port Elizabeth, South Africa]*

## TUAD0303

### "I GOT TESTED SO I COULD NOT LOSE HIM": HIV TESTING PRACTICES AND SUBSEQUENT SEXUAL BEHAVIOURS OF SEX WORKERS AND CLIENTS IN MOMBASA, KENYA

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**Background:** HIV testing is a critical step toward accessing treatment for individuals who test positive, but there is no consensus over whether knowing one's HIV status leads to less—or more—sexual-risk taking for individuals who test HIV-negative. We examined the HIV testing practices of female and male sex workers (FSWs, MSWs) and clients in Mombasa and how HIV testing relates to their subsequent sexual behaviors.

**Methods:** We conducted 75 semi-structured interviews with sex workers and clients recruited from 18 bars/nightclubs in Mombasa to guide intervention development. Eligibility criteria were being ≥18 years, regular patron of venue, solicited vaginal/anal intercourse with sex worker/client at that venue in last 3 months, willingness to be audio-recorded, and being visibly sober.

**Results:** Most participants had tested for HIV in the previous 12 months. HIV testing was more common among sex workers than clients, with some testing three times a year. HIV testing was undertaken both as a *response to* and as a *reason* for engaging in condomless sex. For instance, participants sought HIV testing following a high-risk sexual encounter, such as after condomless sex, condom breakage with commercial sex partners, or after a sexually transmitted infection. Some sex workers and clients, however, reported getting tested in order to engage in condomless vaginal and anal sex with main *and* regular commercial sex partners, particularly those with whom condom use was difficult to realize. Knowing a partner's HIV status or testing with a partner were frequently given as explanations for not using condoms with these partners. Many FSWs tested on the same or next day after they engaged in high-risk sex so that they could get post-exposure prophylaxis. Other participants sought testing weeks or months later.

**Conclusions:** HIV testing is used by some sex workers and clients as a reason to engage in condomless sex with commercial partners. However, given the high HIV risk involved in sex work, HIV prevention programs should continue to underscore the importance of both HIV testing and consistent condom use in these encounters.

## TUAD0304

### BEHIND CLOSED DOORS: SEX, REPRODUCTION AND THE HOUSEHOLD SPACE IN RURAL SOUTH-WESTERN UGANDA

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**Background:** In south-western Uganda HIV prevalence and total fertility rates are high amongst married individuals. Sex and reproduction in marriage primarily takes place in the home. This space is associated with privacy and preconceived ideas of gender norms, which can pose challenges to the negotiation and management of sexual and reproductive health (SRH) behaviours. This study set out to understand the challenges, risk perceptions and strategies used by men and women at different stages of the life-course to manage and negotiate conflicting SRH issues in marriage.

**Methods:** Data collection took place over 12 months within an existing general population cohort in rural south-western Uganda. Methods included life-story interviews and focus groups with individuals who had ever been married. Participants were randomly selected from six villages, where HIV prevalence ranges between 4.5%-16%. In-depth interviews were also conducted with religious leaders, traditional healers and health workers. Iterative thematic analysis was used to interpret, code and organise the data.

**Results:** Developing the home, unprotected sex and having children are central to the marital relationship in this setting. Failure to fulfil cultural expectations of gender roles and SRH behaviours within the household space were associated with marital dissatisfaction, relationship instability and extra-marital relations. This paper focuses on the SRH strategies described by men and women at different stages of marriage and the life-course. Strategies include: claiming space and time for sexual intimacy, techniques for managing menstruation, hygiene practices, and the various methods used to achieve fertility preferences and resolve SRH problems.

**Conclusions:** Individuals in marital relationships face specific challenges in managing SRH risks due demands in fulfilling gender roles, maintaining the marital relationship and stability of the home, whilst also achieving sexual desires and fertility preferences. Understanding the context and cultural meanings of sex and reproduction can facilitate tailored SRH intervention with married individuals.

## TUAD0305

### YOUTH SEXUAL AND REPRODUCTIVE HEALTH IN CHINA: RESULTS FROM A NATIONAL SURVEY OF 18,000 CHINESE COLLEGE STUDENTS

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**Background:** Notwithstanding years of efforts guided by *the National Strategy on HIV/ADIS Prevention and Control in Schools*, a climbing trend of HIV infections among college students has been observed in China[1]. This study investigated the status quo of HIV knowledge and sexual behavior patterns among college students, aiming to provide evidence for policy makers to identify priority areas of HIV/AIDS prevention and control[1] Ministry of Education. (2015). Retrieved from: http://www.moh.gov.cn/jkj/s3585/201508/e4c8a1e6809c4a8e9c49f7f8708873d1.shtml

**Methods:** This study was conducted from January to August in 2015 through a multi-stage sampling approach. 130 colleges were selected from eastern, central and western China. The internet-based survey questionnaire was subsequently delivered to the focal points in each school for voluntary participation Logistic and

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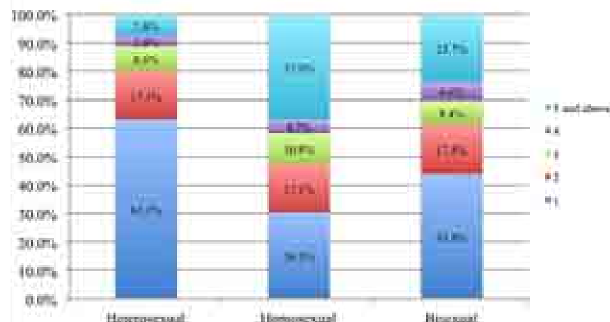
linear regression were used to explore the association between risk factors and attitude/behavioral outcomes, under SAS 9.2 with a significant level of 0.05.

**Results:** 17966 students were included, of which 90% came from the 130 schools. 94.8% of the surveyed population responded. Only 55.6% of the students had received sexual education from school. 20.3% of the respondents didn't know that HIV could not be spread by sharing eating utensils. 47.0% in homosexual group had sex before (19.3% for heterosexual, 30.1% for bisexual). The proportion of condom use during the last sexual intercourse was 62.5%. 22.7% reported to have STI-related symptoms. Logistic regression results indicated that knowledge about sexual and reproductive health, family structures and sexual orientation were strongly associated with high-risk sexual behaviors, while gender, parents' education, stratifications of residential area and types of degree programs were significant effect modifiers for knowledge on HIV/AIDS related information.

**Conclusions:** High prevalence of risk sexual behaviors suggested that students remain a vulnerable population in terms of HIV/AIDS and STIs, especially among sexual minority groups. Future school-based interventions should be designed with a more gender-sensitive and individualized approaches.




*[Figure 1. Cumulative number of Sexual Partners by Sexual Orientation]*

## TUAD04 SHAME-LESS: STIGMA INTERVENTIONS THAT WORK

### TUAD0401

### "WE TALK, WE DO NOT HAVE SHAME": REDUCING HIV AND SEX WORK STIGMA THROUGH SOCIAL COHESION AMONG FSW LIVING WITH HIV IN THE DOMINICAN REPUBLIC

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**Background:** Layered HIV and sex work stigma pose a significant barrier for female sex workers (FSW) living with HIV to engage in HIV prevention behaviors and access HIV treatment and care. How FSW manage and address layered stigma is not well understood. We explore the experiences of layered stigma among participants in *Abriendo Puertas*, a multi-level HIV/STI prevention, treatment, and care intervention for FSW living with HIV in Santo Domingo, Dominican Republic. Additionally, we examined social cohesion as a key community-driven strategy to address HIV and sex work stigma.

**Methods:** Using purposeful sampling, we conducted 23 in-depth interviews and two focus groups (n=11) with FSW living with HIV participating in the *Abriendo Puertas* intervention. Transcripts were analyzed using thematic analysis. First, constructs related to Foucault's conceptualization of power and discipline were identified. Then, transcripts were analyzed to identify individual and community narratives resisting and subverting stigma and shame.

**Results:** According to Foucault modern power is productive, giving life to those who adhere to social norms while disallowing it from those who transgress them through various forms of social disciplining. Foucault also proposed that such disciplining is often internalized leading to self-disciplining. We found that FSW living with HIV experience various instances of societal disciplining including domestic violence, verbal abuse, social rejection, and employer discrimination. They also experience self-disciplining in the form of hopelessness, low self-esteem, and loss of the will to live. The enhancement of social cohesion through participation in *Abriendo Puertas* was experienced as a means to subvert oppressive social norms around sexuality and healthism. This was verbalized as regaining hope and improving self efficacy, self-esteem, access to social support, and motivation to adhere to HIV treatment. Indeed, social cohesion provided the psychosocial space to reconstruct identity in more positive terms than those afforded by society. This was done through the production, repetition, and performance of de-stigmatized narratives in a safe space.

**Conclusions:** Findings indicate the importance of social cohesion as a means to challenge oppressive social norms and reduce layered stigma. HIV prevention, treatment, and care interventions for FSW living with HIV should include components to enhance social cohesion.

### TUAD0402

### EFFECTS OF A BRIEF AFFIRMATION INTERVENTION ON HIV-RELATED DISTRESS AND POSITIVE LIVING INTENTIONS AMONG INDIVIDUALS RECENTLY DIAGNOSED WITH HIV IN LESOTHO

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**Background:** In addition to the physical burden of the illness, HIV also carries a psychological burden as those recently diagnosed with HIV navigate identity-related concerns including fears regarding how to live a normal life with HIV, possible stigmatization, and whether to disclose one's HIV status. This study investigated using a novel psychological intervention to reduce the psychological distress associated with being HIV positive and in turn, improve intentions to live positively.

**Methods:** 331 participants (207 women, mean age of 41) were recruited, following HIV diagnosis, from 10 clinics and hospitals in the Maseru and Leribe districts of Lesotho. Participants were randomly assigned to either the affirmation intervention condition or the control condition. Those in the affirmation intervention condition completed a brief, 10-minute exercise where they reflected on important values before receiving positive living counseling. Those in the control condition simply received positive living counseling without completing the affirmation task. Following the counseling sessions, all participants completed measures of their current HIV-related stress and distress and their intentions to engage in positive living behaviors. The impact of the affirmation intervention on participants' HIV-related distress and positive living intentions was evaluated by separate one-way analyses of variance.

**Results:** Overall, participants in the affirmation condition reported less HIV-related distress relative to those in the control condition. More specifically, participants in the affirmation condition reported experiencing significantly less stress ($M$=1.79 vs. $M$=2.17, $p$=.006), fewer intrusive HIV-related thoughts ($M$=2.17 vs. $M$=2.62, $p$=.011), fewer distressing emotions in response to HIV ($M$=1.27 vs. $M$=1.46, $p$=.027), and were less worried about dying from HIV ($M$=1.86 vs. $M$=2.31, $p$=.012). Additionally, those in the affirmation condition also reported greater positive living intentions including intentions to use condoms ($M$=5.56 vs. $M$=5.38, $p$=.046) and to take medications properly ($M$=5.53 vs. $M$=5.30, $p$=.029). Finally, the effect of the affirmation intervention on participants' intention to live positively was mediated by the extent to which the intervention reduced participants' HIV-related stress.

**Conclusions:** These findings provide initial evidence in support of using brief affirmation interventions in clinical settings to reduce the stress associated with HIV diagnosis and to improve openness to positive living health messages.

### TUAD0403

### "HAPPY IN MY OWN SKIN": IMPACT OF ANTI-STIGMA INTERVENTIONS ON PEOPLE LIVING WITH HIV IN TORONTO, CANADA

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**Background:** HIV stigma negatively affects the physical and psychological wellbeing of people living with HIV (PLHIV). While many stigma interventions have been carried out worldwide, few focused on both individual and collective empowerment. Community Champions HIV Advocates Mobilization Project (CHAMP) is an intervention study undertaken to mobilize PLHIV and non-PLHIV community leaders in HIV championship in the African, Caribbean, Asian, and Latino communities in Toronto, Canada.

**Methods:** CHAMP tested two anti-stigma interventions: Acceptance and Commitment Training (ACT) that enhances psychological flexibility, and Social Justice Capacity Building (SJCB) that promotes collective empowerment. Participants were randomly assigned to take part in two intervention arms: SJCB only, or ACT plus SJCB. We used focus groups and validated scales to collect data before, immediately after, and 9-month after the interventions. In addition, monthly activity logs were used to capture participants' post-intervention HIV and social justice championship activities.
**Results:** A total of 31 non-PLHIV and 35 PLHIV participated in CHAMP. Study results showed significant reduction in felt and enacted stigma in all intervention groups. This paper reports specifically on the impact of CHAMP interventions on PLHIV. Participants reported more self-acceptance; less felt stigma; improved psychological wellbeing; new confidence to speak out against HIV stigma and social injustices; and having stronger social connections. Many had disclosed their HIV status to family and friends, and to leaders at church, college and community. Some took action to pursue their life goals. In addition, PLHIV participants collectively reported a total of 575 activities undertaken at personal, family, organizational, and community levels. These activities included: advocating for social justice (n=102); support for PLHIV (n=55); HIV education (n=59); addressing HIV stigma (n=109); community building (n=101); and collective empowerment (n=149). After CHAMP, they have initiated and carried out four participant-driven championship projects.
**Conclusions:** CHAMP demonstrated that the combined use of psychological and empowerment interventions are powerful in reducing stigma. ACT supported individual empowerment by addressing felt stigma and enhancing self-acceptance; SJCB enabled PLHIV to locate their experience of stigma and discrimination in a collective context and build alliances for change. Coordinated efforts to scale up these interventions will contribute to effective HIV response and PLHIV empowerment.

## TUAD0404

### HIV vulnerabilities, gender affirmation and social resilience among transgender women in Lima, Peru: a community-based approach to HIV prevention, care and treatment

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**Background:** TW experience unique vulnerabilities for HIV due to factors that limit access to and quality of services across HIV prevention, treatment, and care. Yet, social determinants of HIV disparities remain inadequately understood. Using a strengths-based framework, we assessed HIV vulnerabilities and community-level resilience strategies that buffer against marginalization and oppression, and harness existing supports to link TW to needed HIV-related services in Peru.
**Methods:** Between January-February 2015, 48 TW participated in a mixed-methods study including focus group discussion and brief survey. Audio files were transcribed verbatim and analyzed using an immersion crystallization approach to identify themes and relationships between themes. Descriptive analyses of survey data were conducted in Stata 13 and qualitative coding using Dedoose Version 6.1.18 (2015).
**Results:** Among TW (mean age of 29 years) 29% were unsure of their HIV status, over 60% reported sex work as primary income, and 48% reported having ever been arrested. Reported HIV vulnerabilities included: economic (occupation, cost of treatment), social (exclusion, recognition, support), and policy (legal protections, national guidelines). Themes of economic marginalization, multilevel stigma, and social recognition of gender identity emerged as salient across vulnerability groupings. Over half (52%) expressed distrust of healthcare providers and 62% postponed care due to perceived transgender-related stigma. Half reported experiences of discrimination within healthcare settings (e.g., incorrect pronoun, legal versus preferred name). To circumnavigate HIV-service barriers, social resilience strategies emerged within HIV vulnerability domains
(e.g., seeking healthcare in groups, using peer health promoters, vetting providers/clinics within social networks). Hormones were critical to affirming gender identity and being socially recognized; however, medical supervision of hormones was rare. Body modification was primarily self- or peer-administered, highlighting the importance of social networks to acquire desired and needed health-related resources and dissemination of peer-to-peer knowledge.
**Conclusions:** At the intersection of HIV vulnerabilities and collective agency, social resilience emerges as a strategy used by TW to access needed healthcare services in Peru. Fostering TW solidarity is a key component to ensure acceptability and sustainability of gender-affirming HIV interventions. Cross-sex hormone therapy alongside HIV services, peer support, and education represents a community-based, gender-affirmative approach to caring for TW in Peru.

## TUAD0405

### Changing forms of HIV stigma along the HIV care and treatment cascade: findings from a multisite qualitative study in Eastern and Southern Africa

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**Background:** Despite expanding coverage of HIV care and treatment services, stigma remains pervasive for people living with HIV (PLHIV) in sub-Saharan Africa, undermining engagement in care. We aimed to explore the manifestation of stigma and discrimination at different stages of the HIV care cascade in seven health and demographic surveillance sites (HDSS) in Eastern and Southern Africa.
**Methods:** Between 2015-2016 we conducted 35 in-depth interviews per site in Uganda, South Africa, Tanzania, Kenya, Malawi and Zimbabwe with
(1) PLHIV purposively sampled from HIV clinics and HDSS databases linked to HIV clinic records,
(2) health providers and
(3) family members of people known to have died from HIV.
Topic guides explored patient and provider experiences of HIV testing, care and treatment services. Data were analysed thematically, aided by NVivo 10 software.
**Results:** Across all sites, anticipated stigma and discrimination were experienced at different points throughout the cascade. Poor privacy in some HIV testing facilities gave rise to concerns about confidentiality and subsequently fear of stigma. Additionally, powerlessness and coercion within patient-provider relationships often marked the initial cascade stages. To avoid being identified and stigmatised, patients sometimes changed their names when presenting at clinics, posing problems with monitoring of patients for better health outcomes. Non-integrated HIV services sometimes served to exacerbate 'othering' of patients, while in settings where services were supposedly integrated PLHIV were kept in separate waiting areas, accentuating their differences negatively. Women in PMTCT programmes often feared being questioned about absent partners, and "encouragement" of couple-testing resulted in some people shying away from testing, as did fear of being seen accessing the services by community members. Moreover, many PLHIV took medication in secrecy for fear of exposing their status to partners and others.
**Conclusions:** Despite efforts to improve HIV care services, stigma remains pervasive across the HIV cascade in all of these sites, though it often manifests in different forms. Context-specific interventions are needed to address stigma and discrimination of PLHIV within the community and in health services, and greater reflection is required to ensure policies aiming to expand HIV treatment do not exacerbate stigma and result in negative HIV outcomes.

# TUAE01 Healthy mothers, healthy babies: the path to eMTCT

## TUAE0101

### An inferential analysis of the impact of exposure to a peer mentor mother model on uptake of PMTCT services and maternal behavioural outcomes

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**Background:** For nearly 15 years, mothers2mothers (m2m) has trained facility-based lay health workers in implementing a peer-to-peer "Mentor Mother" (MM) Model to support Prevention of Mother-to-Child Transmission (PMTCT) in sub-Saharan Africa. In 2015, m2m extracted a representative sample of their longitudinal client records to assess the relationship between exposure to facility-based MM visits, and key client health and behavioural outcomes along the PMTCT cascade.
**Methods:** A stratified random sampling approach was used to identify a representative sample of 87 out of 350 m2m supported facilities in Kenya, Lesotho, Uganda, South Africa, Swaziland and Malawi. A census of longitudinal clients records was taken for clients (n=12 976) first enrolled in mothers2mothers care between June and November 2012, and concluding care in December 2014. Exposure status of clients to the m2m model was defined retrospectively by dividing the sample into a low exposure group comprised of clients who had one MM visit after an outcome under investigation had occurred and a high exposure group who had two or more MM visits before an outcome under investigation had occurred. Multivariate regression was then used to explore group differences after adjusting for key confounders.
**Results:** Women with two or more MM visits were more likely to have an infant who was HIV-negative at the final test (AOR =6.4, p< 0.001). MM visit exposure status was also positively associated with key behavioural and PMTCT uptake indicators (see Table).

| | | Adjusted odds ratios | | Unadjusted Frequencies | |
|---|---|---|---|---|---|
| Indicator | | AOR | p-value | 2+ m2m visits | 1 m2m visit |
| Maternal Behavioural Outcomes | Using Family Planning | 1.26 | 0.012 | 74% | 65% |
| | Exclusive breast feeding first 6 months | 1.67 | <0.001 | 84% | 75% |
| Uptake of Maternal PMTCT Services | Antenatal Prophylaxis | 3.86 | <0.001 | 96% | 77% |
| | Postnatal Prophylaxis | 2.27 | <0.001 | 86% | 74% |
| Uptake of Infant PMTCT Services | Infant prophylaxis | 1.60 | 0.017 | 96% | 93% |
| | Infant CPT | 1.63 | 0.001 | 78% | 72% |
| | 6-8 week PCR test | 2.31 | <0.001 | 75% | 52% |
| Impact - Mother-to-Child Transmission Rate at 18 Months | Infant HIV status HIV-negative | 6.4 | <0.001 | 93% | 70% |

*[Association between MM visit exposure and key behavioural and PMTCT uptake indicators]*

**Conclusions:** Within a longitudinal cohort of clients receiving m2m support, exposure to more Mentor Mother visits appears to be positively associated with better client behavioural and PMTCT outcomes along the treatment cascade. The study builds a pervasive case for the efficacy of peer-to-peer support models delivered by a paid cadre of lay councillors at the facility level.

## TUAE0102

### Increasing retention of HIV-positive pregnant and postnatal women and HIV-exposed infants: measuring the effects of follow-up activities and improved patient management in rural Uganda

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**Background:** In March 2013, Uganda adopted Option B+, providing lifelong antiretroviral therapy (ART) for all HIV+ pregnant women; however, only 40% of mother-infant pairs were retained in care by the end of the breastfeeding period. Retention must improve in order to achieve Uganda's goal of eliminating mother-to-child-transmission. A pilot was conducted in 2014 to evaluate the effectiveness of a package of interventions consisting of phone and home-visit follow-ups, strengthening the use of appointment books to track attendance, and patient-held appointment calendars. The study's objective was to determine if retention increased for both HIV+ pregnant/postnatal women and HIV-exposed infants.
**Methods:** A pre-post study was designed, selecting 20 rural facilities from six districts. Data were collected retrospectively for six months prior to and six months during the pilot period. Retention was defined as a woman or infant remaining in care for a minimum of five months after enrolment into the cohort, determined by the ART visit schedule. Retention rates were assessed by facility using weighted paired t-tests on cluster-level summaries.
**Results:** 686 women and 358 infants were included in the pre-pilot implementation period; 604 women and 332 infants during the pilot. Retention in care for mothers increased from 72.8% to 80.3% (p=0.009). This was driven by women who initiated on ART during pregnancy, as their retention rates increased from 68.5% to 76.0% (p=0.031). Women under 20 had almost three times more of an increase in retention compared to women of older ages. Retention for HIV-exposed infants increased from 41.3% to 61.1% (p=0.001). 30% of appointments were missed during the pilot program requiring follow-up, of those missed appointments, 28% received followed-up. There was a 70% return rate for missed appointments relative to a 12% return rate for appointments that received no follow-up.
**Conclusions:** The results of the pilot showed a significant impact on retention that will result in fewer HIV+ infants and better health outcomes for HIV+ mothers. Despite a low missed visit follow up rate, when conducted, the impact was substantial. In January 2016 Uganda adopted this model to be the national standard of care for follow-up of mother-infant pairs in all PMTCT sites nationwide.

## TUAE0103

### Impact of a systems engineering intervention on PMTCT service delivery in Côte d'Ivoire, Kenya, Mozambique: the SAIA cluster randomized trial

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**Background:** Improving pMTCT effectiveness requires increasing the number of women-infant pairs passing through the multiple, sequential steps in the pMTCT cascade, and associated access to efficacious interventions. The Systems Analysis and Improvement Approach (SAIA) trial tested a package of systems engineering techniques to improve cascade flow. Prior systems engineering applications for pMTCT lacked comparison groups or randomization.
**Methods:** The five-step SAIA intervention addresses cascade inefficiencies through 1) cascade analysis using an automated pMTCT Cascade Analysis Tool (P-CAT) with optimization function to identify largest potential gains across the cascade; 2) process mapping to identify workflow modifications; and 3-5) rapid, iterative testing of workflow modifications. A nine-month cluster randomized trial was conducted in 18 intervention/18 control facilities in Kenya, Côte d'Ivoire, and Mozambique, stratified by country and clinic volume. Registry data quantified HIV testing during first antenatal care (ANC) visit, antiretrovirals (ARVs) for HIV-positive pregnant women, and screening HIV-exposed infants (HEI) by 6-8 weeks. Change between baseline (01/2013-01/2014) and post-intervention (01/2015-03/2015) periods were compared using *t*-tests via intent-to-treat analyses.
**Results:** Seventeen of 18 intervention facilities accepted the intervention. An average of one cycle was completed monthly falling into five categories: service

reorganization; expanding patient knowledge; improving team communication; improving data quality; and introducing new norms or technologies. Examples of service reorganization include increasing blood draw frequency (increasing CD4 testing from 25% to 56%), and reorganizing ANC flow (reducing wait times from 7.5 to 3.5 hours). ARV coverage increased three-fold, and HEI screening increased 17-fold in intervention vs. control facilities, though differences were not significant overall. In pre-specified sub-group analyses, ARV coverage increased significantly in Kenya (+20.9% [95% CI: -3.1-44.9] in intervention vs. -21.2% [-52.7-10.4] in controls; p=0.02). HEI screening increased significantly in Mozambique (+23.1% [10.3-35.8] in intervention vs. +3.7% [-13.1-20.6] in controls; p=0.04). HIV testing did not differ significantly between arms.

**Conclusions:** This first randomized trial of systems engineering to improve PMTCT saw substantially larger improvements in ARV coverage and HEI screening in intervention facilities compared to controls, which were significant in pre-specified sub-groups. The SAIA intervention was feasible and well-accepted by facility staff. Systems engineering could strengthen PMTCT services and protect infants from HIV.

## TUAE0104

### RETURNING HIV-EXPOSED INFANTS TO CARE: RESULTS FROM A PILOT INTEGRATING INFANT DEFAULTER TRACING INTO THE NATIONAL OPTION B+ PROGRAMME IN LILONGWE, MALAWI

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**Background:** Despite high uptake of prevention of mother-to-child transmission (PMTCT) services early in the care continuum in Malawi's Option B+ Programme, including HIV counseling and testing (90%) and antiretroviral therapy (ART, 79%), challenges remain with the post-natal care continuum, including high loss to follow-up (40% by 24 months of age) for HIV-exposed infants (HEIs). Poor HEI care retention undermines early diagnosis and treatment of HIV-infected infants, and threatens progress in reducing vertical HIV transmission in Malawi and elsewhere in sub-Saharan Africa. In response to this challenge, in October 2013 we launched an HEI "defaulter" tracing program at 20 health facilities in Lilongwe selected for high HEI census as part of the UNICEF Optimizing HIV Treatment Access (OHTA) Initiative to increase timely uptake, adherence, and retention along the PMTCT care continuum.

**Methods:** We trained and mentored 737 community-based Health Surveillance Assistants (HSAs) from Ministry of Health (MOH) to perform tracing via phone contact and/or home visit. HSAs were mentored on accurate reporting using data collection tools from the MOH National HEI Follow-Up Programme, as well as OHTA-specific defaulter-tracing and HEI appointment registers. To support physical tracing, we provided 30 bicycles to health facilities and all HSAs with a modest monetary incentive (~$2 USD) for every HEI successfully reached.

**Results:** From October 2013—September 2015, we traced 2,707 HEIs who had fallen out of care (i.e. missing a scheduled follow-up appointment by ≥14 days). Of these, 2,078 HEIs (76.8%) were successfully reached by phone or home visit. Following tracing, 1,969 of 2,078 reached HEIs (94.8%) returned to clinic and were retained in care as assessed at 2, 12, or 24 months of age (depending on HEI age at the time of tracing). Of these, 50 HIV-infected infants were identified (2.5%, 50/1,969) and all initiated ART (100%, 50/50).

**Conclusions:** Integrating HEI defaulter tracing into the public health system facilitated improved HIV care retention for HEIs, and successful HIV diagnosis and ART initiation for HIV-infected infants. Such an approach, implemented by community agents receiving mentorship, incentives, and field supervision, may be a strategy to strengthen HEI care retention and the post-natal PMTCT care continuum in Malawi.

## TUAE0105

### A MULTIPRONGED APPROACH TO THE ELIMINATION OF MTCT IN SOUTH AFRICA

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**Background:** South Africa has the highest number of people living with HIV in the world, estimated at 6.4 million in 2012, with HIV prevalence of 29.5% in antenatal women, and mother-to-child transmission (MTCT) rate estimated at 3.5% at 6 weeks in 2010. In response to the Global Plan *towards the elimination MTCT*, the National Department of Health (NDOH) developed and implemented the national elimination MTCT Action Framework entitled "No child born with HIV by 2015 and improving the health and wellbeing of mothers, partners and babies in South Africa". The framework enabled evidence-based, accelerated, programme scale-up and delivery of quality services, with innovative data-driven action plans in all provinces and districts.

**Description:** Five key strategic pillars were identified for scaling up quality integrated prevention of MTCT services. Political leadership and commitment at the highest level resulted in accelerated national HIV response, including EMTCT. Responsive changes in policy, for example, the move from single dose Niverapine to more efficacious triple antiretroviral (ART) regimens for PMTCT, coupled with quality improvement initiatives and task shifting, resulted in rapid scale-up of quality EMTCT services. PMTCT was integrated into the maternal, child and women's health programme to maximise service delivery platforms. The routine use of 'robot' dashboards and data for action reports ensured continuous monitoring of programme performance, and action planning. Significant progress was made towards targets of the plan. The number of children newly infected with HIV in South Africa declined by over 70% (2009 -2014). Over 90% of HIV positive women were receiving treatment for PMTCT (2015), a significant increase from the 63% in 2009. The coverage of early infant diagnosis of HIV increased from 45% in 2009 to 87% in 2014, MTCT rate declined to 2.6% in 2012/2013. Infant HIV positivity rates at around 6 weeks declined from 5.8% in 2009 to 1.5% in 2015.

**Lessons learned:** High level political leadership, strong partnerships and robust monitoring and evaluation systems helped to accelerate response to elimination of MTCT.

**Conclusions/Next steps:** An evidence-based multipronged approach was critical for the success seen in the journey towards the elimination of MTCT in South Africa.

## TUAE0106

### HIGHEST RISK OF MOTHER TO CHILD TRANSMISSION OF HIV OR DEATH IN THE FIRST 6 MONTHS POSTPARTUM: RESULTS FROM 18 MONTH FOLLOW-UP OF AN HIV-EXPOSED NATIONAL COHORT, SOUTH AFRICA

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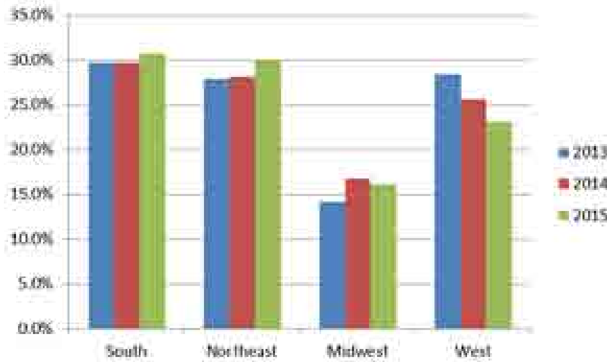
**Background:** Few resource-limited, high HIV prevalence settings produce data on national 18-24 month infant 'mother-to-child transmission of HIV (MTCT)-or-death' - the gold standard measurement of programme impact. We studied South African national MTCT and 'MTCT-or-death' when health policy provided infant nevirapine during breastfeeding (Option A) and changed to triple antiretroviral therapy for all HIV infected women during pregnancy and lactation (Option B).

**Methods:** A nationally representative cross-sectional survey was conducted to estimate early (4-8 weeks postpartum) MTCT. Facilities (n=580) were randomly selected following multistage probability proportional to size sampling methodology. Consenting caregivers of systematically or consecutively sampled infants (4-8 weeks old) receiving their six week immunisation, were interviewed. Infant dried blood spot specimens (iDBS) were drawn and tested for HIV exposure and, if positive, for infection (total nucleic acid polymerase chain reaction - TNA PCR). Then, all HIV exposed infants (antibody, or maternal self-reported positive) were invited for facility-based follow-up at 3, 6, 9, 12, 15 and 18 months. At each follow-up visit caregivers were interviewed and infants were tested for HIV infection). Analysis was weighted for sample ascertainment, population live births, consent to follow-up (if eligible) and loss to follow-up.

**Results:** Analysis of 9120 iDBS at 4-8 weeks revealed 33.1% infant HIV exposure (95% Confidence Interval, 31.8-34.3%) and 2.6% (2.0-3.2) MTCT. 1880 (71%) HIV-exposed infants were followed up at 18 months. Cumulative MTCT and 'MTCT-or-death' by 3, 6, 9, 12, 15, months was 2.7% (2.6-12.6) and 2.8% (2.6-19); 3.5% (3.1-4.4) and 4.2% (3.5-5.4); 3.7% (3.2-4.6) and 5.1% (4.4-6.2); 3.9% (3.4-4.7) and 5.7% (5.0-6.8); 4.1% (3.5-4.8) and 6.0% (5.2-7.0), and at 18 months, 4.3% (3.7-5.0) and 6.2% (5.5-7.3) respectively. 81% of MTCT and 67% of 'MTCT-or-death' occurred by 6 months postpartum. Maternal receipt of CD4-cell-count result and avoiding breastfeeding protected against MTCT (Adjusted hazard ratio HRa, 0.3 [0.2-0.6], and 0.3, [ 0.07-0.9],respectively). Mixed feeding and infant nevirapine did not significantly

**Methods:** We used nationally representative (82% of retail pharmacies) de-identified data (Symphony Health Analytics) on individuals who received a TVD prescription from Jan 2013 to Dec 2015. The data warehouse contains medical claims, diagnosis codes, and patient and provider demographics. A validated algorithm was used to quantify TVD for PrEP use by excluding TVD for HIV treatment, HIV post-exposure prophylaxis and chronic Hepatitis B treatment. Logistic regression analyses were used to compare demographic data from TVD use for HIV treatment or PrEP.
**Results:** Between January 2013 and December 2015, 49,469 unique individuals started TVD for PrEP: 3,746 in 2013; 14,756 in 2014; 30,967 in 2015. 87.5% were male. Mean age was 37.4 years, with 11.5% under age 25. Fig 1 shows regional distribution of TVD PrEP starts over time. There were 19,274 prescribers across 50 states. Four states (CA, NY, TX, FL) with the highest HIV incidence account for 43.0% of PrEP starts. Compared to HIV positive patients, uninfected individuals receiving TVD for PrEP were 3.1 times less likely to be female (95% CI 3.0 - 3.2), but 1.98 times more likely to be under age 25 (95% CI 1.93 - 2.05).




*[Fig 1: Distribution by region over time]*

**Conclusions:** The number of individuals starting on TVD for PrEP has increased nationally since the 2012 approval in the US, and is primarily male. States with the highest number of new HIV cases also had the highest number of TVD PrEP starts. Despite positive trends in TVD for PrEP use, utilization must increase to ensure lifetime risk seroconversion decreases in areas of high prevalence HIV in the US.

Tuesday 19 July

# POSTER DISCUSSIONS

## TUPDA01 HIV TRANSMISSION AND PATHOGENESIS

### TUPDA0101

### SELECTION OF HIV-1 VARIANTS WITH HIGHER TRANSMISSION POTENTIAL BY 1% TENOFOVIR GEL MICROBICIDE

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**Background:** Women in the CAPRISA 004 trial assigned to use 1% tenofovir microbicide gel had higher HIV-1 viral loads and slower antibody avidity maturation compared to placebo participants. This study sought to determine whether tenofovir gel selected for viruses with altered characteristics which, in turn, influenced disease progression.

**Methods:** We analysed bulk *gag* sequences from the earliest time-point post-infection for 71 (n=28 TFV and n=43 placebo) participants who became infected during the CAPRISA 004 microbicide trial conducted in Durban, South Africa. The median (IQR) days post infection at which the sequence data were obtained were 84 (84-91) for women assigned to tenofovir gel and 84 (77-84) for women assigned to placebo. Genetic distances between sequences were estimated in MEGA version 5.1 (Tamura, Peterson et al., 2011). The transmission index of a sequence was calculated as the mean of the expected log-odds of transmission for each site in the sequence, as estimated by a logistic regression model that included a second-order polynomial of cohort frequency, the number of co-varying sites, and offsets and cohort-frequency interactions for each protein domain. Transmission indices were computed out-of-sample using leave-one-out cross-validation.

**Results:** Sequences from the two groups (tenofovir and placebo) of the trial were interspersed on the phylogenetic tree, showing no lineage effects on the viruses infecting the two groups. Viruses within the tenofovir group were less diverse from each other compared to those from the placebo group (p< 0.0001), suggesting constrained diversity of viruses infecting the tenofovir group. Furthermore, viruses from the tenofovir group were closer to the consensus sequence of regional strains (p=0.003), and had higher transmission index (p=0.01), than those from the placebo group. There was a modest correlation between the transmission index and the baseline viral load (Spearman r=0.2, p=0.04) but not with viral load at set-point (12 months post-infection).

**Conclusions:** The 1% tenofovir gel may have increased the transmission barrier to select for more consensus-like viral variants with a higher transmission index.

### TUPDA0102

### CHARACTERIZATION OF HIV-1 GENOMES FROM 74 ACUTELY INFECTED SUBJECTS IN THE ACUTE INFECTION COHORT RV217

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**Background:** Since the early events of HIV infection are critical for disease progression and provide a path to develop anti-HIV strategies, we analyzed viral evolution during the first six months of HIV infection in 74 treatment-naive individuals enrolled in the RV217 acute infection cohort in East Africa and Thailand.

**Methods:** More than 2,000 HIV-1 negative individuals were enrolled and bi-weekly testing for HIV-1 RNA allowed to identify subjects during the earliest days of infection in Kenya (n = 9), Tanzania (n = 18), Uganda (n = 18) and Thailand (n = 29). HIV-1 genomes were sequenced following PCR amplification by endpoint-dilution from plasma samples.

**Results:** We sequenced 802 HIV-1 genomes from 74 subjects at a median of four days after HIV-1 diagnosis, a diagnosis that occurred a median of six days after the last negative visit. For a subset of 42 individuals, we sequenced 857 additional genomes obtained at a median of 32 and 171 days post HIV diagnosis. Sequences from the first time point were obtained before peak viremia, which occurred 12 days after diagnosis with viral loads reaching 6.55 $\log_{10}$ copies/ml (range: 3.96-8.46 $\log_{10}$ copies/ml). The median viral load setpoint (SPVL) was 4.31 $\log_{10}$ copies/ml (range: 2.43-5.96 $\log_{10}$ copies/ml). In East Africa, most individuals (n = 25) were infected with circulating recombinant forms (CRF) comprising subtype A1, C and D with 13 individuals infected with subtype A1 and seven with subtype C; in Thailand, 23 of 29 subjects were infected with CRF01_AE.

We identified multiple HIV-1 variants among sequences from 18 of 48 subjects, with some variants found at very low level initially and some variants being identified only temporarily. SPVL for subjects replicating multiple founders was significantly higher than for subjects with single founders (4.82 vs. 4.08 $\log_{10}$ copies/ml, p = 0.021).

**Conclusions:** Analysis of HIV-1 sequences earlier in infection and more frequently than before revealed a greater complexity in HIV-1 evolutionary processes and identified viral determinants associated with higher viral loads. Identifying HIV-1 features that determine SPVL will allow to better predict the transmission risk associated with specific HIV-1 variants.

### TUPDA0103

### HIV-ASSOCIATED ALTERATION IN GUT MICROBIOTA ARE ASSOCIATED WITH INCREASED INFLAMMATION AND INFECTION OF ENTERIC CD4+ T CELLS

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**Background:** HIV infection is associated with dramatic alterations of the enteric microbiome that often persist despite long-term otherwise successful Antiretroviral Therapy (ART). Alterations in gut microbiota have been correlated with HIV disease progression, inflammatory markers in the gut and with inflammatory and bacterial translocation markers in blood. A better understanding of the immune-modulatory properties in gut microbes that correlate with disease will allow for the exploration of microbial drivers of immune activation, HIV disease pathogenesis and co-morbidity.

**Methods:** We are collecting gut microbiome data from a large cohort of individuals living in Colorado and identifying bacteria whose prevalence correlates with disease status, ART, and with inflammatory and metabolic disease markers. To explore the immune-modulatory properties of these bacteria, we culture peripheral blood mononuclear cells (PBMC) and lamina propria mononuclear cells (LPMC) isolated from resected gut tissue with bacteria isolated from patient stool and cultured bacteria that are increased or decreased with HIV infection. We then measure the impact of the stimulation on pro and anti-inflammatory cytokines, T cell activation, T regulatory cells, HIV co-receptors and levels of HIV infection.

**Results:** Many bacterial species significantly change with HIV and correlate with inflammatory and translocation markers in blood in our study population. Although stimulations of PBMC/LPMC with most bacteria induce both pro and anti-inflammatory cytokines, cultured bacteria that increase with HIV and fecal bacteria from HIV-infected individuals induce lower levels of T regulatory cells and anti-inflammatory IL-10. Furthermore, incubation of LPMCs with numerically dominant bacteria of the HIV-associated (*Prevotella copri*) but not health-associated (*Bacteroides uniformis*) gut microbiome resulted in increased infectivity of immune cells by HIV.

**Conclusions:** These data suggest that a loss of anti-inflammatory (beneficial) bacteria with HIV infection has the potential to drive chronic inflammation observed in HIV-infected individuals. Furthermore, our infectivity assays indicate a potential role of the HIV-associated gut microbiome in disease transmission and progression. We are currently further exploring microbiome associations with HIV disease, inflammation and metabolic disease in populations in both the US and Zimbabwe.

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## TUPDA0104

### THE ASSOCIATION OF INJECTABLE PROGESTIN-ONLY CONTRACEPTIVES AND ENDOGENOUS PROGESTINS WITH HIV TARGET CELL FREQUENCY IN THE CERVIX AND HIV ACQUISITION RISK

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**Background:** Multiple observational studies have suggested that injectable progestin-only contraceptives (IPCs) are associated with HIV acquisition risk. However, the biological mechanism of this potential link was unclear. We aimed to understand immunological changes associated with exogenous and endogenous progestins that could mechanistically help explain a link to acquisition risk.

**Methods:** HIV-negative South African women ages 18-23 were enrolled in a prospective cohort study, the Females Rising through Education, Support and Health (FRESH) study. These women were at high risk of acquiring HIV, were living in Umlazi and were not pregnant. During the study, they were tested for HIV-1 two times per week; behavioral data along with blood and cervical samples were collected every three months.

**Results:** We characterized 423 HIV-uninfected women from the FRESH cohort. Of these, 152 women used IPCs, 222 used no long-term contraceptive and 43 used other forms of contraception. IPC users had a higher risk of acquiring HIV (12.06 per 100 person-years, 95% CI 6.41-20.63) compared to women using no long-term contraceptive (3.71 per 100 person-years, 1.36-8.07; adjusted hazard ratio 2.93, 95% CI 1.09-7.868, p=0.0326). In the cervix, CCR5+ CD4 T cells (HIV target cells) were 3.92 times more prevalent in IPC users than in women using no long-term contraceptive (p=0.0241). Of women using no long-term contraceptive, those in the luteal phase of the menstrual cycle had 3.25 times the frequency of cervical target cells compared with those in the follicular phase (p=0.0488).

**Conclusions:** High progestin levels, either due to the use of IPCs or the luteal phase of the menstrual cycle, are associated with an increased frequency of HIV target cells in the cervix compared to women with low progestin levels, in the follicular phase of the menstrual cycle. Because the female genital tract is the site of HIV entry in most women who become infected, the higher density of HIV target cells in a high-progestin state provides a potential biological mechanism for the epidemiological observation of increased HIV acquisition risk in IPC users.

## TUPDA0105

### THE MECHANISMS AND ROLE OF HPV IN ENHANCING HIV TRANSMISSION IN WOMEN IN SOUTH AFRICA

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**Background:** Young women bear a disproportionately high burden of sexually-acquired HIV infection. Human papillomavirus (HPV), a common sexually transmitted infection is a known contributor to this burden through its established association with higher rates of HIV acquisition. However, the mechanism of this relationship remains unclear. Here we explored whether the immunological impact of HPV promotes a mucosal immune environment that favours the establishment of HIV infection in young women in KwaZulu-Natal, South Africa.

**Methods:** This cohort study was nested within the CAPRISA 004 1% tenofovir gel study. Stored genital specimens from HIV uninfected participants (N=779) were utilized to determine the presence of 37 HPV genotypes using commercially available Linear Array kits. Concentrations of 48 cytokines were quantified by multiplexed ELISA assays, and the presence of $CD4^+$ targets for HIV infection was investigated by flow cytometry. HIV infection was monitored monthly using two commercially available rapid tests, and confirmed by western blot and PCR.

**Results:** Baseline HPV prevalence was 73.8% (95% CI: 70.7, 76.9); with 70.3% of these infected participants presenting with an oncogenic strain. Participants with prevalent HPV infection were 2.8 times more likely to acquire HIV infection compared to those without HPV infection (HR 2.8, 95% CI: 1.3, 5.9, p=0.006). HIV risk was independent of the oncogenicity of HPV strains at baseline [(HPV oncogenic strains HR 2.9 (95% CI: 1.3, 6.1) vs non-oncogenic strains HR 2.8 (95% CI: 1.3, 6.1)], and was also increased in the presence of multiple concurrent infections (HR 4.0; 95% CI: 1.8, 8.8). Compared to HPV uninfected women, acquisition, clearance, or persistence of HPV were each significantly associated with >6 fold increased rates of HIV acquisition, and elevated concentrations of several cytokines associated with HIV infection (including IL-8, MIP-1a, RANTES, IL-1a, IL-6). Further, in line with cytokine involvement in chemotaxis, the influx of CD4+ T cell targets for HIV infection was associated with HPV infection (p=0.012).

**Conclusions:** These data provide a plausible causal immunological link between two viral infections of critical public health importance, and suggest that increased HPV vaccination rates in young women could have important additional HIV prevention benefits.

## TUPDA0106

### THE ENDOTOXIN-LIPOPROTEIN HYPOTHESIS, OBESITY AND HIV

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**Background:** An obesity paradox has been documented in many conditions including HIV infection, where those who are obese may have a survival advantage or improved disease outcomes. Lipopolysacchride (LPS), an endotoxin, is a constituent of Gram-negative bacterial cell walls and known to produce proinflammatory responses. Sequestration of LPS by higher circulating lipoproteins in obesity has been suggested as mechanism for the obesity paradox known as the endotoxin-lipoprotein hypothesis and warrants further investigation in HIV.

**Methods:** A retrospective cross-sectional analysis of data and specimens from a nutritional study was conducted in 60 HIV+ ART-naïve adults who were in the early stages of HIV disease in Botswana, Africa. Anthropometrics and bioimpedance were obtained. Blood was drawn for LPS, total cholesterol as a measure of circulating lipoproteins, CD4 count, and HIV viral load. Regression analyses were adjusted for age, gender and smoking.

**Results:** Among 60 ARV-naïve HIV+ asymptomatic adults, the median age was 33 years (IQR: 29-39) and 76.4% were women. The overweight/obese group had higher total cholesterol levels (4.08±0.85 vs. 3.50±0.65 mmol/L, P=0.007) than the normal weight group. Plasma LPS levels at or above the median (0.058 EU/mL) were associated with lower BMI (OR=.79; 95% CI: 0.630, 0.990; P=0.041), lower fat mass% (OR=0.852, 95% CI: 0.757, 0.958, P=0.007), and higher HIV viral load (OR=2.608, (95% CI: 1.111, 6.124; P=). Higher LPS levels were also associated with a lower odds of overweight/obesity, BMI ≥ 25 kg/m$^2$ (OR=0.035, 95% CI: 0.004, 0.283; P=0.002). LPS levels at or above the median were also associated with lower total cholesterol levels (OR=0.360, 95% CI: 0.150-0.862; P=0.022), controlling for age, gender, smoking, and HIV viral load.

**Conclusions:** A possible explanation for the lower levels of LPS observed in those with higher BMI might be similar to the endotoxin lipoprotein hypothesis first described by Rauchhaus et al. (2000) to explain the endotoxin lipoprotein paradox in congestive heart failure. Higher circulating lipoproteins may reduce inflammation by binding to lipopolysacchrides and decreasing the release of proinflammatory cytokines. In HIV infection, viral load contributes to increased LPS.

## TUPDB01 HIV DRUG RESISTANCE: IS IT TIME TO WORRY?

### TUPDB0101

### ASSESSMENT OF THE WORLD HEALTH ORGANIZATION EARLY WARNING INDICATORS OF HIV DRUG RESISTANCE IN NAMIBIA FOR PUBLIC HEALTH ACTION, 2015

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**Background:** Early warning indicators (EWIs) of HIV drug resistance (HIVDR) are a key element of the World Health Organization (WHO) public health strategy to minimize and monitor emergence of HIVDR at facilities providing antiretroviral treatment (ART) in countries that are rapidly scaling up treatment. Namibia has instituted a routine EWI monitoring system and developed HIVDR survey strategies.
**Methods:** In 2015, we abstracted the following WHO EWIs from adult and paediatric patients from all ART sites in the state health sector. These included, 50 main ART sites and 163 Integrated Management of Adolescent and Adult Illness (IMAI) sites and outreach points): *EWI 1: On-time Pill Pick-up, EWI 2: Retention in Care at 12 months, EWI 3: Pharmacy Stock-outs, EWI 4: Dispensing Practices,* and *EWI 5: Viral Suppression at 12 months*.
**Results:** All 213 ART sites in Namibia were included. For *EWI 1*, 43% of sites achieved either excellent or fair performance (>90% or 80-90% of patients on-time collection) for adults and 40% for children. For *EWI 2,* 53% of sites achieved either excellent or fair performance (>85% or 75-85% retention) for adults and 37% for children. For *EWI 3,* 5% of sites achieved excellent performance (100% of months with no stock-outs) for adult patients and 14% for children. For *EWI 4,* 97% of sites achieved excellent performance (0% mono- or dual-therapy) in adults and 91% for children. For *EWI 5*, low rates of viral load (VL) completion among patients eligible for routine VL testing significantly affected monitoring of viral suppression.
**Conclusions:** Namibia has successfully institutionalized EWI monitoring into routine ART program functioning. Strengthening patient adherence to treatment, retention in care, and ensuring the continuous availability of antiretroviral medicines are all high priorities to minimize emergence of HIVDR and achieve the 90-90-90 (HIV epidemic control) goals. Additionally, improving routine VL monitoring and data capturing is a priority to enable monitoring of viral suppression rates. As a result of these data, program leaders and healthcare providers in regions throughout the country are implementing service quality improvement projects and operational research to improve patient care and minimize the emergence of HIVDR.

### TUPDB0102

### HIGH PREVALENCE OF ANTIRETROVIRAL DRUG RESISTANCE AMONG HIV-INFECTED PREGNANT WOMEN IN BUENOS AIRES, ARGENTINA

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**Background:** The presence of primary mutations in the viral genome is a major cause of drug resistance, which can lead to treatment failure. Thus, monitoring the presence of drug resistance-associated mutations (RAMs) in HIV-infected pregnant women (HPW) is crucial for optimizing antiretroviral therapy (ART) selection. Until recently, genotypic resistance tests were not routinely available for HPW in Argentina and information about the prevalence of RAMs in this population is limited.
**Objective:** To determine trends in the prevalence of RAMs in HPW assisted in a public hospital in Buenos Aires, Argentina.
**Methods:** HPW were recruited as part of a prospective sentinel epidemiological survey (period 2008-2014). Baseline plasma samples were sequenced using TRUGENETM HIV-1 Genotyping Kit. RAMs were identified in ART-naive and ART-experienced patients, according to the WHO guidelines and the IAS-USA mutation list, respectively. RAMs prevalence was compared for two periods: 2008-2011 vs. 2012-2014.
**Results:** Overall, 136 HPW were included: 77 (56.6%) naïve and 59 (43.4%) ART-experienced (24 with ongoing ART and 35 with a history of exposure to ART). A total of 37 (27.2%) women had at least one RAM: 25/94 (26.5%) in 2008-2011 and 12/42 (28.5%) in 2012-2014 (p>0.05). Among the naïve, 15 (19.5%) had at least one RAM: 10/49 (20.4%) in period 2008-2011 and 5/28 (17.8%) in 2012-2014 (p>0.05). Transmitted resistance was observed mainly for non-nucleoside reverse transcriptase inhibitors (NNRTIs): 14.3% in 2008-2011 and 17.8% in 2012-2014, being K103N the most common mutation. Among the ART-experienced HPW, 37.3% had RAMs: 33.3% in 2008-2011 and 50% in 2012-2014 (p>0.05). In the experienced HPW with ongoing ART subgroup, 50% had nucleoside reverse transcriptase inhibitors-RAMs and 45.8% had NNRTI-RAMs. In the experienced group with a history of (but not ongoing) ART-exposure, 17.1% had NNRTI-RAMs.
**Conclusions:** This sentinel study demonstrates an overall high prevalence of RAMs in HPW in Buenos Aires city, which remained stable over the two periods analyzed. Considering the >15% prevalence found in naïve HPW is above the threshold suggested by WHO for routine resistance surveillance in a certain population, access to genotypic tests should be warranted.

### TUPDB0103

### HIV-1 DRUG RESISTANCE AND GENETIC DIVERSITY IN ART-NAÏVE PATIENTS INFECTED IN 2013-2015 IN KAZAKHSTAN

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**Background:** Treatment of HIV-positive patients in Kazakhstan was launched 10 years ago. Every year an increasing number of cases of HIV-1 drug resistance among patients with failing first-line antiretroviral therapy. The aim of the study was to analyze prevalence of HIV drug resistance in ART-naïve patients infected in 2013-2015 in Kazakhstan.
**Methods:** 376 plasma samples from newly HIV-infected patients from 8 regions of Kazakhstan were tested. Isolation of HIV RNA, RT-PCR, sequencing of *pro* (1-99) and *rev* (35-265) genes were performed using diagnostic kit "AmpliSens-HIV-Resist-Seq». For interpretation of HIV drug resistance the software "Deona" was used. HIV subtypes were determined using the program Comet HIV-1 (http://comet.retrovirology.lu). The level of transmitted HIV drug resistance was determined by the software CPR (http://cpr.stanford.edu/cpr.cgi).
**Results:** In the study group the patients were 56.6% males; median age: 35,7 years; median CD4: 478/mm$^3$; risk factors: heterosexuals (64.7%), MSM (3.0%), IDUs (31.4%), unknown (0.9%).
56.1% were infected with subtype of HIV-1 A1 (IDU-A variant); 38.6% - CRF02_AG; 2.9% - subtype B; 2.4% - other (CRF03_AB, CRF07_BC and URF). CRF02_AG is more prevalent in the southern regions of Kazakhstan (70.4% - 85.0%), while in the central and eastern regions of the country dominated HIV-1 subtype A1 (55.1% - 96.2%).
The presence of mutations of HIV-1 resistance to first-line antiviral drugs among ART-naïve patients have been identified in six regions of Kazakhstan (from 1.9% to 4.2%). In three patients (0.8%) were identified TAMs to NRTIs: M41L, L210W and K219E/R. In four patients (1.1%) were identified resistance mutations to NNRTI: K101E, K103N, Y181C.
**Conclusions:** The study showed that in Kazakhstan the level of primary HIV-1 drug resistance to NRTI/NNRTI is low. The highest level (4.2%) of primary HIV-1 drug resistance observed in large cities, where there is the greatest number of patients on ART.

## TUPDB0104

### CROSS-SECTIONAL ASSESSMENT OF VIROLOGICAL FAILURE, DRUG RESISTANCE AND THIRD-LINE REGIMEN REQUIREMENTS AMONG PATIENTS RECEIVING SECOND-LINE ART IN 3 LARGE HIV PROGRAMMES IN KENYA, MALAWI AND MOZAMBIQUE

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**Background:** With access to viral load (VL) monitoring, the number of patients receiving second-line antiretroviral treatment (ART) is increasing in resource-limited countries. We assessed virological response and second-line drug resistance in three large HIV-programmes to inform regimen-requirements, to evaluate patient outcomes and support forecasting of effective third-line drugs.

**Methods:** Between November 2014 and December 2015, patients aged ≥5 years receiving a standard second-line regimen for ≥6 months were recruited in three HIV outpatient-clinics supported by Médecins Sans Frontières in Kenya, Malawi and Mozambique. Viral load (VL) was quantified and resistance-genotyping performed if VL ≥500 HIV RNA copies/ml (virological failure). Sequences were interpreted with Stanford and ANRS algorithms. Virological failures are assessed 6 and 12 months after counseling or regimen change.

**Results:** 824 patients were included (median age 41 years, 45.4% males). In Kenya: among 355 participants (26.9 month median duration of second-line; 71.6% 3TC-TDF-LPV/r), 18.3% (65/355) had VL ≥500 copies/ml, 16.9% ≥1000 copies/ml. Among those aged ≤19 years, 31.2% (20/64) had ≥500 copies/ml. Overall 24.6% (16/65) had major PI-resistance, 72.3% major NRTI-resistance, 80% major NNRTI-resistance, and 9.2% major etravirine-resistance (Stanford). Nineteen patients (29.2%) required replacement of ineffective NRTIs, 21 (32.3%) needed to start a third line regimen (change of PI-component), with 3 children requiring pediatric formulations. Six months after regimen change 77.8% (14/18) had VL< 20 copies/ml. In Malawi: among 242 patients (36.3 month median duration of second-line; 81.4% 3TC-TDF-ATV/r), 16.5% had VL ≥500 copies/ml, 13.2% ≥1000. Among those aged ≤19 years, 29.4% (10/34) had VL≥500. Sequencing (37/40) detected 2.9% major PI-resistance, 78.4% major NRTI-resistance, 83.8% major NNRTI-resistance, 18.9% major etravirine-resistance. Seven patients required switch to a third-line regimen, 12 required NRTI-replacement. Complete resistance and regimen data will be available from all sites, including Mozambique (227 patients, 91.2% TDF-3TC-LPV/r).

**Conclusions:** These findings indicate good virological suppression in patients receiving second-line ART. Failure rates were notably higher among children and adolescents, highlighting the need for enhanced monitoring. Resistance data were essential to inform optimal regimen choice. Preliminary results indicate good short-term outcomes of patients who needed ART change. Increased access to resistance genotyping and affordable salvage ARVs, including pediatric formulations, are needed.

## TUPDB0105

### EFFECT OF PI RESISTANCE MUTATIONS ON VIRAL LOAD IN PATIENTS ON PI MONOTHERAPY

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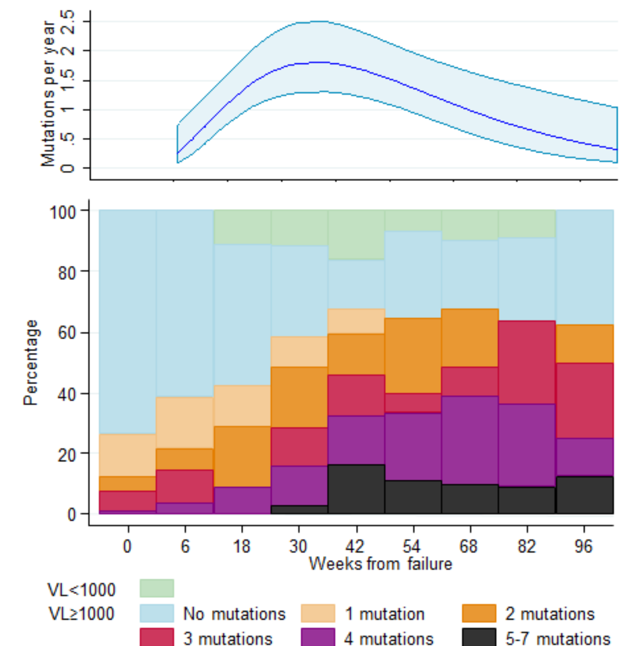
**Background:** Protease inhibitor (PI) resistance mutations are uncommon in patients failing boosted-PI (bPI) containing regimens; longitudinal data assessing impact of PI resistance on outcomes are sparse.

**Methods:** We assessed the development of PI-resistance mutations over time in patients failing first-line NNRTI-based regimens and randomised within the EARNEST trial to bPI-monotherapy (standardised to lopinavir/ritonavir bd, with 12-week raltegravir induction to induce rapid VL suppression). VLs and resistance tests were performed blinded. Resistance testing was done retrospectively in one laboratory on all stored samples (12-16 weekly) between first confirmed virological failure (VL>1000 copies/ml) and switch to combination therapy.

**Results:** 405 patients started bPI-monotherapy and had ≥1 follow-up VL sample. Median treatment duration was 108(IQR 98-124) weeks until switch to combination therapy following an interim review. 148(37%) developed virological failure on bPI-monotherapy. Median VL at bPI-monotherapy failure was 3681c/ml, subsequently increasing by 0.48$\log_{10}$c/ml per year (95% CI 0.31-0.65). 28(26%) of the 106 with genotypes at bPI-monotherapy failure had major/minor PI mutations, increasing to 5(62%) of the 8 with genotypes 96 weeks after failure. The most common mutations were V82A(39%), I54V(39%) and M46I(32%). Rate of emergence of new mutations peaked at 37 weeks after failure (1.81 mutations /year; 95% CI 1.31-2.51; see figure). In a multivariable model, each new mutation was associated with a mean increase of 0.12$\log_{10}$c/ml(95% CI 0.06-0.18, p< 0.001). Q58E and I47A were associated with significantly (p< 0.02) larger increases of 0.74(95% CI 0.24-1.20) and 1.02(95% CI 0.47-1.56) log10c/ml respectively. I47A slowed the increase in VL by 0.43$\log_{10}$c/ml per year(95% CI -0.01-0.87, p=0.05).




*[Graph of rate to mutation development after failure and percentage of patients with each number of mutations after failure]*

**Conclusions:** Overall, the rate of accumulation of PI resistance mutations was slow in patients with virological failure on bPI monotherapy with lopinavir/ritronavir; declines after 37 weeks of failure suggest fitness costs may prevent additional mutations developing. The impact of resistance on VL is also limited, although I47A/Q58E appear to have greater effects.

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## TUPDB0106

### DOLUTEGRAVIR PLUS RILPIVIRINE IN SUPPRESSED HEAVILY PRE-TREATED HIV-INFECTED PATIENTS

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**Background:** Patients with previous multiple virological failures are frequently suppressed with complex, toxic regimens. We aimed to explore the role of dolutegravir (DTG) 50 mg plus rilpivirine (RPV) 25 mg once daily in fully suppressed patients with a history of repeated treatment failures.
**Methods:** Ongoing cohort study. Heavily pretreated patients with multiple virological failures and resistance mutations who were on complex suppressive therapy were switched to a QD dual regimen with DTG + RPV. Patients were excluded if resistance to integrase inhibitors (INI) or RPV was shown. Follow-up visits were scheduled at 4, 12, 24 and 36 weeks after switching. The main outcome variable was persistence of undetectable HIV RNA.
**Results:** We included 38 subjects. At study entry, median age was 53.4 years, 34% were women, 68% were prior IDU, 70% were HCV-positive, and 34% had AIDS. Median nadir and current CD4+ cell count were 179 and 592 cells/mm3, respectively. Patients had received ART for a median 19.4 years with exposure to a median 3.6 drug families (100% NRTI, 89.5% NNRTI, 97.4% PI, 61.7% INI, 10.5% T20, 10.5% CCR5 receptor antagonist; 87% NRTI+NNRTI+PI, 52.6% NRTI+NNRTI+PI+INI). Previous failures were documented to one or more regimens including NRTI (100%), PI (71%), NNRTI (68.4%), and INI (8.1%). Patients with primary ART mutations were**:** 64.7% to NRTI**,** 37% to NNRTI, and 31.6% to PI. No INI-associated mutations were detected. Median time of undetectable HIV RNA load with current regimens was 6.7 years. Patients were taking a median 4.3 pills before switching. Only 1/38 (2.6%) patients left the study due to gastrointestinal toxicity, and another one because of DDI with omeprazole. HIV-RNA remained below 37copies/mL in 100% (38/38) at week 4, and 97% (33/34) at week 24. CD4 count kept stable after switching (median 633cells/$mm^3$ at week 24). We observed a statistically improvement in triglycerides and liver tests, with no changes in total, HDL and LDL-cholesterol. CKD-EPI eGFR decreased from 85 to 74 mL/min/1.73m² (95% CI 5.1-16.6, $p$=0.0002) at week 24.
**Conclusions:** Switching to a simple, dual regimen of DTG plus RPV in heavily pretreated, multiply failed, suppressed HIV-infected patients is safe and highly efficacious.

## TUPDC01 MEASURING PROGRESS TOWARDS 90-90-90

## TUPDC0101

### ACHIEVING UNAIDS 90-90-90 TARGETS IN A HIGH HIV BURDEN DISTRICT IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** With the goal of eliminating new HIV infections, the Joint United Nations Programme on HIV/AIDS (UNAIDS) set ambitious 90-90-90 targets to be achieved by 2020. Including 90% of people living with HIV knowing their HIV-status, 90% of these receiving antiretroviral therapy (ART) and 90% of these having viral suppression. Delivery of medical care to HIV-positive individuals requires a sequence of diagnostic tests, assessments and monitoring, termed the 'HIV treatment cascade'. The aim of this analysis is to quantify the current achievement and gaps in this cascade for participants enrolled in the HIV Incidence Provincial Surveillance System (HIPSS) in South Africa.
**Methods:** HIPSS is a household survey of HIV-prevalence and incidence in the uMgungundlovu District in KwaZulu-Natal in 2014 and 2015. Households within selected enumeration areas were randomly selected and a single randomly selected eligible (15-49 years) individual was invited to completed a questionnaire and provide blood samples for HIV-antibody and viral load testing.
**Results:** A total of 9812 participants, 3547(36.1%) males and 6265(63.9%) females was enrolled. HIV prevalence was 28.0%(95%CI:25.9-30.1) among males and 44.1%(95%CI:42.3-45.9) among females. First 90: 51.8% (95%CI: 47.4-56.3) of males and 64.6% (95%CI: 61.9-67.3) of females who are HIV positive knew their HIV status, p< 0.001. Second 90: 69.1% (95%CI: 63.4-74.9) of males and 70.3% (95% CI: 67.6-73.0) of females who knew their HIV status were on ART. Third 90: 85.5% (95% CI: 80.1-90.1) of males and 89.7% (95%CI: 87.3-92.0) of females on ART had suppressed viral load
(< 1000 copies/mL). Among all HIV positive participants 44.1% of males and 58.2% of females had suppressed viral load. More than 80% of both males and females who have not tested for HIV reported that they did not test for HIV because they were afraid to know their results.
**Conclusions:** All three elements of UNAIDS 90-90-90 targets were below 90%. The gap was largest for the first 90, especially amongst men where only half knew their status. Campaigns to increase HIV-testing are needed and reduce fear, especially amongst men. The target best accomplished is achieving suppressed viral load on ART; highlighting the success of ART in achieving viral suppression, if accessed.

## TUPDC0102

### ANALYSIS OF AGE- AND SEX-SPECIFIC HIV CARE CASCADES IN SOUTH AFRICA SUGGESTS UNEQUAL PROGRESS TOWARDS UNAIDS 90-90-90 TREATMENT TARGETS

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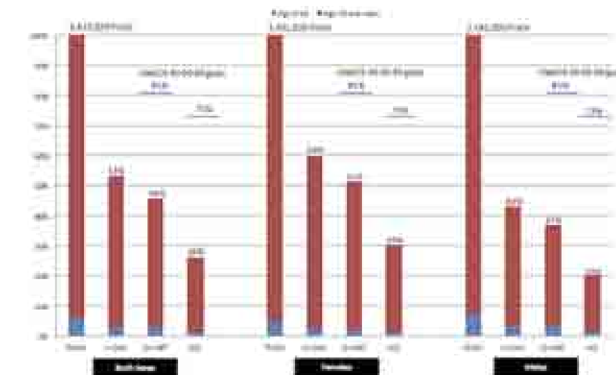
**Background:** South Africa has adopted UNAIDS' treatment targets of 90% of people living with HIV (PLHIV) tested for HIV, 90% of those tested on antiretroviral treatment (ART), and 90% of those on ART having a suppressed HIV RNA viral load (VL). Using innovative record linkage techniques, we constructed HIV Care Cascades (HCC) to measure progress to these targets.
**Methods:** We defined the HCC for April 2014-March 2015 using four categories:
1) PLHIV,
2) engaged in HIV care,
3) on ART, and 4) virally suppressed.
PLHIV numbers were estimated using population size and HIV prevalence data from StatsSA and the Human Sciences Research Council. Numbers engaged in care were calculated as the number of individual patients with a CD4 count or viral load during this period, as assessed in newly-deduplicated data from the National Health Laboratory Service. Patients on ART were reported from District Health Information System. Persons with a VL test result <400 copies/ml were considered suppressed.
**Results:** Figure 1 shows HCC by sex and age group. Overall there were an estimated 6.47 million PLHIV (61% female, 6% aged <15 years), of whom 53% were in care, 46% on ART and 26% VL suppressed. An estimated 3.02 million PLHIV are either not yet diagnosed with HIV or diagnosed but not engaged in HIV care. Men and children aged <15 years fared worse across the cascade.



*[Figure 1. South African HIV Care Cascade by Sex and Age Group, April 2014 to March 2015]*

**Conclusions:** Large gaps remain across the HCC in South Africa, particularly those engaged in HIV care. In order to meet the 90-90-90 treatment targets, 73% of PLHIV in South Africa need to be virologically suppressed (far higher than the current 26%). Increasing the testing and initiation of those newly diagnosed on ART will have the largest impact on meeting these targets. Excellent monitoring data linking patients to their laboratory results are essential.

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## TUPDC0103

### CROSS-SECTIONAL ESTIMATES OF HIV INCIDENCE REMAIN HIGH IN RURAL COMMUNITIES IN BOTSWANA IN THE ERA OF SUCCESSFUL SCALE UP OF ART

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**Background:** The successful scale up of the national ART program in Botswana has almost reached the UNAIDS "90-90-90" goal (Gaolathe et al., CROI-2016). Cross-sectional estimate of HIV incidence needs to take into account ARV use to avoid mis-classification of HIV recency.

**Methods:** Using cross-sectional sampling HIV recency was estimated at the baseline of the Botswana Combination Prevention Project in 30 rural communities from Nov 2013 to Nov 2015. The algorithm for estimation of HIV recency combined Limiting-Antigen Avidity Assay (LAg) data, ART status and HIV-1 RNA load (as described in Rehle et al., *PLoS One* 2015;10:e0133255). The LAg cut-off normalized optical density was 1.5. ART status was documented. The HIV-1 RNA cut-off was 400 cps/mL. The Mean Duration of Recent Infection was 130 days and the False Recent Rate was zero.

**Results:** During the baseline household survey, a total of 3,596 individuals tested HIV positive among 12,570 individuals with definitive HIV status. Among those testing HIV positive, 3585 (99.7%) had a research blood draw available, of whom 3580 (99.9%) had LAg data generated. Of those, 326 were identified as LAg-recent cases. Among those, 278 individuals were considered chronically infected based on their documented ART status. Among the remaining 48 ART-naïve individuals, 14 had an HIV-1 RNA load ≤400 cps/mL. The Botswana MoH electronic medical records system was queried for these 14, 10 were found in the MoH data and evidence for initiation of ART was found for 5 individuals. ARV-naïve status could not be confirmed in 9 individuals. Thus, 34 LAg-recent, ARV-naïve individuals with HIV-1 RNA above 400 cps/mL were classified as individuals with recent HIV infections. HIV incidence was estimated at 1.06% (95% CI 0.70%-1.42%). Including 9 virologically suppressed individuals with uncertain ART status brings the estimate of HIV incidence to 1.34% (95% CI 0.91%-1.77%).

**Conclusions:** Using an algorithm including LAg-Avidity EIA, documented ART status and HIV-1 RNA load, cross-sectional HIV incidence in 30 rural communities in Botswana was estimated at 1.06%-1.34% in 2013-2015. Given the high level of ART scale-up in Botswana, studies able to identify HIV transmission sources and reduce HIV incidence are warranted.

## TUPDC0104

### HOW CLOSE TO 90-90-90? MEASURING UNDIAGNOSED HIV INFECTION, ART USE AND VIRAL SUPPRESSION IN A COMMUNITY-BASED SAMPLE FROM NAMIBIA'S HIGHEST PREVALENCE REGION

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**Background:** Data on the continuum of HIV care are necessary to track progress in the response to the epidemic; however, they are difficult to obtain, particularly at a sub-national level. We directly measured HIV diagnosis, receipt of ART, and viral suppression in a community-based sample of adults in Zambezi, the region of highest HIV prevalence in Namibia.

**Methods:** A cross-sectional, household-based survey was conducted from 12/2014 - 7/2015 in five purposefully selected sites of Namibia's Zambezi region. Adults received HIV rapid testing using the national algorithm, completed behavioral interviews, and submitted dried blood spots (DBS) in their homes. Previous HIV diagnosis and receipt of ART within the past 90 days were measured through self-report and verified in patient-carried records when available. HIV-RNA viral load was quantified using DBS (Abbott Real-Time HIV-1 m2000 platform). Multivariable logistic regression was used to characterize disparities in outcomes.

**Results:** We enrolled 2,163 adults, of whom 1,312 [60.7% (95%CI: 58.6-62.7)] were female and 461 [21.3% (95%CI: 19.6-23.1) were HIV-positive. Among HIV-positives, 293 [63.6% (95%CI: 59.0-68.0)] were previously diagnosed. Among those diagnosed, 242 [82.6% (95%CI: 77.8-86.8)] were receiving ART. Of 209 DBS tested from participants receiving ART, 170 [81.3% (95%CI: 75.4-86.4)] were virally suppressed (i.e., < 1000 copies/uL), which equates to 36.9% (95%CI: 32.5-41.5) viral suppression among all HIV-positive adults. HIV diagnosis was significantly lower among men [Adjusted odds ratio (AOR): 0.24, $P$< 0.001] and youth (< 25 years) (AOR: 0.15, P=0.02). Receipt of ART was somewhat lower among rural residents (AOR: 0.33, $P$=0.08). Viral suppression was significantly lower among youth (< 25 years) (AOR: 0.27, $P$=0.002).

**Conclusions:** With 83% of previously diagnosed adults receiving ART and 81% of those on ART achieving viral suppression, the second and third benchmarks of the UNAIDS "90-90-90" targets are within reach for adults in Zambezi region. However, serostatus awareness among HIV-positive adults was well below the 90% target, especially among men and youth. Thus, overall prevention impact may be limited with only 37% of HIV-positive adults having unsuppressed virus. If the population-level prevention benefits of ART are to be maximized, "test and start" policies must be strengthened with new interventions to improve serostatus awareness.

## TUPDC0105

### ASSESSMENT OF THE IMPACT OF EARLY ART ON SEXUAL BEHAVIOUR IN INSIGHT STRATEGIC TIMING OF ANTIRETROVIRAL TREATMENT (START) TRIAL

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**Background:** Antiretroviral treatment (ART) reduces HIV infectiousness, but effect on sexual behaviour is unclear. The effect of early versus deferred ART on condomless sex was assessed in the START trial.

**Methods:** HIV+ people with CD4>500 mm$^3$ were enrolled from 35 countries (April 2009 to December 2013) and randomised to immediate or deferred (CD4< 350 cells/mm$^3$) ART. A sexual behaviour questionnaire was completed at baseline, 4, 12 and 24 months. Three risk measures were used:

(i) all condomless sex (CLS)

(ii) condomless sex with HIV negative (or unknown status) partners (CLS-D)

(iii) HIV transmission risk sex defined as CLS-D and not on ART for ≥6 months *or* viral load (VL) >200c/mL *or* no VL within 6 months (CLS-D-HIV-risk). The pre-planned primary outcome was CLS-D at month 12, with separate analyses for men-who-have-sex-with-men (MSM) and heterosexuals.

**Results:** 4685 HIV+ participants were randomised; 2620 (55.9%) MSM; 808 (17.3%) heterosexual men and 1257 (26.8%) women. Recruitment region: 33% Europe/Israel; 25% Latin America; 21% Africa; 11% N America; 8% Asia; 3% Oceania. Median (IQR) age 36 years (29, 44); 45% reported White, 30% Black and 14% Hispanic ethnicity.

17% (764/4605) reported CLS-D at baseline (MSM [20%], heterosexuals [13%]). Among MSM, there was no difference in CLS-D prevalence at month 12 or month 24. Among heterosexuals, at month 12, CLS-D prevalence was 11% in the immediate arm vs 8% in the deferred arm (p=0.066) and at month 24, 10% vs 6% (p=0.004). In both MSM and heterosexuals, CLS-D-HIV-risk was substantially lower in the immediate vs deferred arms at months 12 and 24 due to VL suppression on ART.

| *See Methods for definitions of (i) CLS, (ii) CLS-D (iii) CLS-D-HIV-risk. P values by chi-squared tests | MSM Immediate ART (N=1314 | MSM Deferred ART (N=1306) | P Value | Heterosexual Immediate ART (N=1012) | Heterosexual Deferred ART (N=1053) | P Value |
|---|---|---|---|---|---|---|
| Baseline CLS* | 427/1090 (39.2%) | 429/1094 (39.2%) | | 239/914 (26.1%) | 253/941 (26.9%) | |
| 12 months CLS | 359/1201 (29.9%) | 367/1148 (32.0%) | 0.28 | 177/909 (19.5%) | 195/931 (20.9%) | 0.43 |
| 24 months CLS | 357/1062 (33.6%) | 349/1032 (33.8%) | 0.92 | 153/719 (21.3%) | 110/714 (15.4%) | 0.004 |
| Baseline CLS-D* | 253/1281 (19.8%) | 257/1283 (20.0%) | | 132/1002 (13.2%) | 122/1039 (11.7%) | |
| 12 months CLS-D | 156/1232 (12.7%) | 155/1185 (13.1%) | 0.76 | 101/933 (10.8%) | 80/959 (8.3%) | 0.066 |
| 24 months CLS-D | 173/1064 (16.3%) | 152/1035 (14.7%) | 0.32 | 69/724 (9.5%) | 40/720 (5.6%) | 0.004 |
| Baseline CLS-D-HIV-risk* | 253/1281 (19.8%) | 257/1283 (20.0%) | | 132/1002 (13.2%) | 122/1039 (11.7%) | |
| 12 months CLS-D-HIV-risk | 3/1232 (0.2%) | 130/1185 (11.0%) | <0.001 | 6/933 (0.6%) | 74/959 (7.7%) | <0.001 |
| 24 months CLS-D-HIV-risk | 6/1064 (0.6%) | 97/1035 (9.4%) | <0.001 | 6/724 (0.8%) | 33/720 (4.6%) | <0.001 |

*[Table 1: Sexual behaviour at baseline, 12 and 24 months in the START Trial: comparison of immediate ART vs Deferred ART in MSM and heterosexuals]*

**Conclusions:** While no difference in condomless sex with sero-different partners (CLS-D) was noted between immediate vs deferred arms among MSM at 12 or 24 months, among heterosexuals there was evidence of higher levels of CLS-D in immediate vs deferred.

## TUPDC0106

### ANALYSIS OF THE EFFECTIVENESS OF THE OI/ART PROGRAMME IN HWANGE DISTRICT, MATEBELELAND NORTH PROVINCE, ZIMBABWE: LESSONS LEARNED FROM VIRAL LOAD ROLL-OUT PROGRAMME

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**Background:** Hwange district(HD) is one of the districts with a high HIV burden in Zimbabwe(ZIM) with a prevalence of 18% against a national prevalence of 14.9%. In HD, 11,661(96%) adults and 622(81%) children were receiving ART through the public health sector by end 2015. The need to monitor such a large cohort of patients becomes very important with the country's adoption of the "90-90-90" commitment. Despite the adoption of viral load(VL) as gold standard to monitor patients on ART in Dec 2013, VL testing in ZIM is still very low, having achieved 3% in 2014. This was even lower in Hwange district. The Ministry of Health and Child Care began a nationwide VL Roll-Out Programme in June 2015.
**Methods:** The district received a TaqMan96 VL analyzer through partner support and 2408 routine VL tests were performed through December 2015. This is higher than what has been achieved in most rural districts in Zimbabwe. We analysed the VL results dataset to assess OI/ART program performance in relation to achieving the third "90".
**Results:** 2409 VL results were analysed of which 759 (63%) were female and 424 (37%) were male. The median age was 40 (IQR: 33, 48). 1170(99%) were on ART and, of these, 90% were on ART for more than 12mos. Viral suppression (VL< 1000) was achieved in 82.7% (86% of females,79% males; p=0.006). 57% of those below 20 years of age compared to 85% of those above 20 were virally suppressed (p=0.001). There were no statistically significant differences between patients followed-up through outreach into the rural communities (81.2%) and at the municipal hospital (83.1%) (p=0.31).
Mean PCR was 45,119c/mL (median 19; IQR: 0, 83); Mean log PCR 1.37 (median 1.28; IQR: 0,1.92). 18% on ART had PCR>1000c/mL (14%>10,000; 7%>100,000).

**Conclusions:** Routine VL testing to be done on all patients on treatment and follow-up to be made on all patients who were not virally suppressed. There is need to capacitate the program to conduct Drug Resistance testing for failing patients. Special focus and close monitoring needs to be placed on adherence support for adolescents and young adults to improve adherence to treatment.

# TUPDD01 HUMAN RIGHTS, WRONGS AND REALITIES: TRANSLATING FRAMEWORKS INTO ACTIONS

## TUPDD0101

### A RIGHT TO PREVENTATIVE CARE IN PRISONS: MOTIVATING PRISONERS' ACCESS TO CONDOMS IN SOUTHERN AFRICA

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**Background:** Despite high levels of HIV transmission in prisons and the southern Africa region's disproportionate share of the global HIV burden, South Africa and Lesotho are the only two countries in the region in which condoms are, in policy at least, made accessible to prisoners. Criminal sanctions against consensual same-sex sexual acts in many jurisdictions and prohibitions on sexual contact amongst prisoners are often cited as legal impediments to policy change on the issue.
**Methods:** The paper analyses statutory frameworks and jurisprudence in selected jurisdictions in the southern Africa region where condom access is refused to prisoners. A legal argument is developed to establish that prisoners have a right to preventative care which includes access to condoms, irrespective of criminal provisions outlawing consensual same-sex sexual acts or legal restrictions on sexual contact in prisons.
**Results:** Prisoners have a legal right to access preventative care interventions and prison authorities are legally obliged to prevent the spread of disease in prisons. By applying a "doctrine of double effect" to the position of prison health authorities who distribute preventative measures such as condoms, the fulfilment of this obligation is legally justified irrespective of criminal sanctions or administrative prohibitions against sexual contact between prison inmates.
**Conclusions:** Advocacy to advance prison health services in southern Africa, through ensuring access to condoms and other measures to prevent the sexual transmission of HIV between prisoners, can be strengthened by legal arguments within existing legal frameworks. While criminal sanctions against consensual same-sex sexual acts ought to be challenged as infringing human rights protections and harming public health imperatives in their own right, motivating access to preventative care for prisoners need not necessarily be reliant in legal argument on the reform of those laws. Supporting advocacy initiatives within the existing legal frameworks may assist in countering popular justifications cited as legal impediments to making HIV prevention methods accessible in prisons.

## TUPDD0102

### "MMANGWANA O TSHWARA THIPA KABOHALENG" - THE MOTHER OF A CHILD HOLDS THE KNIFE ON THE SHARPER EDGE: IMPROVING HEALTH OUTCOMES FOR CHILDREN OF SEX WORKERS

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**Background:** "Children of sex workers deserve the right to education, health and safety, the government should respect my job and decriminalise sex work for my children's future" - Duduzile Dlamini, Sisonke Mobilizer and Mother's for the Future founder.
While sex workers enter the industry for numerous and complex reasons, one reoccurring theme that motivates many sex workers is children. A survey of 200 South African female sex workers by the Sex Workers Education and Advocacy and Taskforce found that those participating in the study were supporting 279 children in total. Studies have also shown incredibly high HIV prevalence rates among female sex workers in South Africa (ranging between 39.7% - 71.8%). What these studies show is that mothers whose primary source of income is sex work, are in a very precarious and extremely vulnerable situation. Not only is their work fully criminalised

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(they constantly face the threat of arrest and violence at the hands of the police), but the stigma and discrimination they face as sex workers greatly limits their ability to access health services for themselves and their children. It is in this context that "Mothers for the Future" (M4F) was founded in 2013.
**Description:** M4F is a programme that supports mothers who do sex work by providing a safe space as well as knowledge sharing, skills building, stigma reduction in addition to advocating for the decriminalisation of sex work.
**Lessons learned:** This programme illustrates that access to healthcare cannot be addressed in isolation from the broader social justice struggles. Through the use of a number of methodologies and tools M4F attempts to create integrated support that ranges from addressing urgent short-term needs such as accessing toiletries, medication, school fees etc and the more long term goal of law reform and decriminalising sex work. M4F is a powerful example of the efficacy of sex worker led interventions and how providing comprehensive support to mothers, can result in better overall health outcomes for their children.
**Conclusions/Next steps:** Creating better health outcomes for the children of sex works needs more than just a service delivery approach. Holistic support within a strong human rights framework is essential.

## TUPDD0103

### HUMAN RIGHTS AND ETHICAL DILEMMAS IN THE IMPLEMENTATION OF OPTION B+ IN MALAWI

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**Background:** Malawi pioneered Option B+ in July 2011. There have been concerns that with Option B+ pregnant and lactating women are forced to undergo HTC and start ART. The approach is also perceived as discriminatory as it offers ART only to women and not their spouses who may also be HIV+. Overall the delivery of Option B+ is perceived as a threat to patient rights concerning consent, confidentiality and counselling. This study explored people's perceptions about human rights and ethical issues surrounding the delivery of Option B+ in Malawi.
**Methods:** We collected data in 15 districts across Malawi. We conducted 18 key informant interviews at national level, 84 interviews with women on Option B+ and their spouses, 28 interviews with community leaders; 56 focus group discussions with community members,42 focus group discussions with women on Option B+ and 42 interviews with service providers. Content analysis was used to analyse the data.
**Results:** While some study participants viewed Option B+ as mandatory, hence breaching women's right to making decisions, most of them reported that women make their own decisions after appropriate counselling. Most study participants had no problems with the prioritization of pregnant and lactating women as it aimed at ensuring babies were born HIV uninfected. A few study participants, however, said that the procedure is ethically unfair as it does not offer ART to spouses who may also be HIV+ and this may cause strained relationships within the household. Lack of male involvement, fear of divorce, fear of stigma and discrimination and in some cases the low quality of counselling services constitute the most common barriers to Option B+ implementation.
**Conclusions:** There were a few participants who raised human rights and ethical issues surrounding implementation of Option B+. However the advantages of the program including improved health and ensuring children are born free of HIV outweigh the human rights and ethical concerns.

## TUPDD0104

### A RIGHTS-BASED APPROACH TO HIV, FAIR MIGRATION AND HEALTH: A GLOBAL FRAMEWORK FOR ACTION

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**Background:** The ILO estimates that there are 232 million migrant workers worldwide - 48 % are women. Many face obstacles that place their health at risk and heighten their vulnerability to HIV.
To reduce migrants' HIV risk it is essential to ensure their equal access to health services in countries of origin, transit and destination.
Migration alone is not a risk factor for HIV, but factors associated with migration are. These include discrimination, poor living/working conditions, sexual violence during migration and unfair migration practices.
**Description:** The ILO has developed a Framework Guidance Document to promote engagement and support contributions of all partner organisations to the new UNAIDS Strategy 2016-17 in the areas of migration and mobility.
The Framework contains four key elements:
- Analysis of new/emerging trends and developments around labour migration and associated HIV vulnerabilities
- Analysis of gender-specific dimensions of migration and their impact on HIV, health and migration policies
- Overview of international human rights law guiding guide labour migration governance and its interaction with health and social protection.
- Overview and examples of good practices around HIV and health programmes for migrants across countries/regions
The end result is a global framework for action which includes:
1) recommendations and evidence-informed guidance on integrating access to HIV and health services into labour migration processes at all stages of migration; and
2) roles/ responsibilities of national stakeholders on policy making and programme implementation around HIV and health issues in the context of migration.
**Lessons learned:** A fair labour migration agenda must address health deficits experienced by migrants in countries of origin, transit and destination. Bilateral agreements and migration policies and programmes should thus integrate health service access for migrant workers.
**Conclusions/Next steps:** Based on the Framework, the ILO will seek to engage organisations working on migration and HIV in coordinated efforts to:
· guide development and implementation of rights-based programmatic and policy responses integrating fair labour migration practices that increase migrants' access to health services, and
· guide national stakeholders in integrating HIV and health programmes for migrant workers into national migration policies and bilateral agreements.

## TUPDD0105

### IMPLEMENTING A HUMAN RIGHTS MONITORING AND RESPONSE SYSTEM (REACT) IN BURUNDI

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**Background:** Link Up is a four year project funded by the Dutch government aimed at improving the sexual and reproductive health of young people from key populations in Bangladesh, Burundi, Ethiopia, Myanmar and Uganda. Rights-Evidence-Action (REAct), is a human rights monitoring and response system developed by the International HIV/AIDS Alliance to help provide evidence for human rights programming in Link Up.
**Description:** Alliance Burundaise contre le SIDA (ABS) has trained two of its implementing partners - RNJ+ (young people living with HIV) and Humure (LGBTI association) - on REAct. REAct is a community-driven system, which community-based organisations use to document human rights-related barriers in accessing HIV and health services and human rights violations. Information collected through interviews is used to provide individual responses to violations and to inform human rights-based HIV programming.
ABS, RNJ+ and Humure will be implementing REAct in Burundi's fragile and conflict affected context. The Burundi team is already aware of many cases of physical violence and discrimination faced by young people living with HIV and the LGBT and sex work communities when accessing HIV and SRHR services.
**Lessons learned:**
· It was important to develop customised questionnaires in French, specific to people living with HIV, LGBTI and sex workers in Burundi
· Young people living with HIV and young LGBT people are well-placed to administer the questionnaires and respond to clients› immediate needs because of their regular contact with clients
· Rights violations identified by implementing organisations in preparation for the documentation of cases through REAct include refusal to provide post-abortion care (abortion is highly restricted); discrimination of children living with HIV in schools; refusal to treat MSM in healthcare facilities; breach of confidentiality in healthcare settings; and failure to obtain clients› informed consent to receive services
**Conclusions/Next steps:** Collecting evidence of human rights violations is an essential step in advocating for law reform and policies to address violence and discrimination against young people from key populations. It is possible to document human rights violations in conflict affected countries; and ensuring the safety and security needs of interviewers and interviewees is a critical part of the training for the project.

## TUPDD0106

### REMOVING HUMAN RIGHTS BARRIERS TO EVIDENCE-BASED HIV PREVENTION, CARE AND TREATMENT: WHAT DO WE KNOW?

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**Background:** Repressive legal environments and widespread human rights violations act as structural impediments to efforts to engage key populations at risk of HIV infection in HIV prevention, care, and treatment efforts. The identification of human rights programmes and rights-based interventions that enable coverage of and retention in evidence-based HIV prevention and treatment approaches is crucial for achieving an AIDS-free generation.
**Methods:** We conducted a systematic review of studies that assessed the effectiveness of human rights interventions on improving HIV-related outcomes between 1/1/2003-28/3/2015. A comprehensive and systematic search protocol was iteratively developed including databases for both peer-reviewed and non-peer-reviewed reports. Ancestry searches for articles included in the review were also conducted.
Studies of any design that sought to evaluate an intervention falling into one of the following key human rights programme areas defined by UNAIDS were included with independent and dual-data abstraction at all stages: HIV-related legal services; monitoring & reforming laws, policies, and regulations; legal literacy programs; sensitization of lawmakers & law enforcement agents; and training for health care providers on human rights and medical ethics related to HIV.
**Results:** Of 31,861 peer-reviewed articles and reports identified, 24 were included in our review representing 15 different populations across 14 countries. The majority of studies incorporated two or more of the principles of the human rights-based approach, most often non-discrimination and accountability, and sought to influence two or more elements of the right to health, namely availability and acceptability. Half of the interventions addressed multiple UNAIDS' key programme areas, with monitoring and reforming laws and sensitizing law makers the most common. However, most interventions targeted a single socio-ecological level, namely public policy. Outcome measures varied considerably, making comparisons between studies difficult, and only a few studies explicitly referenced the promotion and protection of human rights.
**Conclusions:** The majority of studies reported a positive influence of human rights interventions on HIV-related outcomes. Yet, limited financial support for methodologically sound evaluations of human rights interventions limits the generalizability of these findings. Fast-tracking HIV prevention and expanding treatment approaches to achieve sufficient coverage will require effective structural interventions implemented in coordination with biomedical approaches.

## TUPDD0107LB

### IMPACT OF CLOSING SPACE FOR CIVIL SOCIETY ON LGBT GROUPS IN KYRGYZSTAN, INDONESIA, KENYA, AND HUNGARY

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**Background:** In response to both the threat of terrorism and to growing populist pressure for transparency and government accountability, many countries are using new laws and tactics to restrict freedom of association and freedom of expression. The study by Global Philanthropy Project, a network of private foundations, aimed to assess the specific impact of civil society restrictions on LGBT groups through four case studies.
**Methods:** Kyrgyzstan, Indonesia, Kenya and Hungary were selected as representative of trends in the four regions of Central Asia, Southeast Asia, East Africa and Europe. Over two months, researchers conducted desk review, as well as guided interviews with 19 LGBT activists, scholars, human rights experts and UN officials from the four countries.
**Results:** The report finds that while the four contexts had key differences, overall LGBT groups have always faced restrictions. In recent years a combination of new "LGBT propaganda" laws, resurgent nationalism, religious fundamentalism, and political scapegoating of LGBT people as "foreign agents" promoting "foreign values", together combine to heighten the risk environment to individuals and groups. LGBT groups are also forming new alliances and developing innovative approaches to continue their work.
**Conclusions:** UN partners and donors should monitor ways that closing space for civil society impacts on LGBT groups, which are critical as partners, watchdogs and HIV service providers; and should support LGBT alliance-building and advocacy to resist closing space.

# TUPDD02 WHATSUP: MOBILE TECHNOLOGIES, MULTIMEDIA AND MASS COMMUNICATIONS

## TUPDD0201

### A HACKATHON FOR HIV AND STD PREVENTION: USING MOBILE TECHNOLOGIES TO EXPAND ACCESS TO INFORMATION AND HIV PREVENTION, TESTING AND CARE SERVICES AMONG YOUNG KEY POPULATIONS IN BRAZIL

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**Background:** Brazil already counts on more mobiles than inhabitants: over 269 million active mobile phone lines in the country. More than 40% of young people in Brazil (aged 18-24) report mobile phone as most used device to access internet. The Brazilian Association of Companies for the Sensual and Erotic Market and UNAIDS have joined forces to promote the 1st Hackathon on HIV and STD Prevention, aiming to develop innovative mobile apps and games that can support the expansion of access to information and health services among young people - a vulnerable group that has been facing significant increase on HIV infection rates in the past 10 years.
**Description:** A hackathon is a digital marathon that gathers several different professionals involved in software programming including IT programmers, designers, communication professionals, entrepreneurs and others interested in technology. The Hackathon on HIV and STD Prevention was developed in two phases: 1) Information sessions (TED-Talk style meetings were carried out with the participation of specialists from health sector, sexuality, entrepreneurs and technology professionals, presenting different perspectives and opportunities in the market to the teams participating to the Hackathon; 2) Technology Marathon - 24 hour event for the development of apps/games and for the selection of best projects. Mentorship for the IT teams was provided by young MSM and young people living with HIV and health professionals (including UNAIDS technical advisers) to guarantee that the projects developed were based on real needs in prevention and human rights.
**Lessons learned:** The use of IT tools open up a world of new possibilities to promote HIV prevention and care especially with young key populations. Bringing together young IT professionals with young MSM and PLHIV is fundamental to the development of innovative projects that are feasible, attractive and with cutting-edge and appropriate language.
**Conclusions/Next steps:** Mobile apps market assessment needs to be taken into consideration given the huge number of free mobile apps/games competing for the attention of young audiences. The partnership with the erotic market is innovative and fruitful and represents an enormous potential to eroticize safe sex and to support the reinvention and update of HIV prevention messages.

## TUPDD0202

### *'ONCE YOU START WATCHING THIS SHOW, INTERSEXIONS, IT'S EASIER TO GET TO THE POINT THAT YOU REALLY WANT TO TALK'*: HOW VIEWERS' IDENTIFICATION WITH *INTERSEXIONS II* FACILITATED NEW COMMUNICATIVE SPACES

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**Background:** The successful South African television drama series, *Intersexions,* consisted of 26 interlinked episodes. While *Intersexions I* portrayed the risks of multiple and concurrent partnerships by mapping a fictional sexual network, *Intersexions II* (2013) portrayed how keeping secrets can increase risk of HIV infection through what is left unsaid or hidden in one's personal and sexual relationships.
**Methods:** A qualitative post-broadcast evaluation consisting of 14 focus groups and 12 interviews was conducted in six provinces with 122 regular viewers of the series. Participants needed to have watched at least half the episodes and reflected

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a mix of urban, peri-urban and rural localities. Discussions were audio-recorded, transcribed and analysed using NVivo.

**Results:** By portraying relevant and realistic themes, *Intersexions'* unusual dramatic formula succeeded in raising awareness about the influence of communication and the sexual network on HIV risk. Reported forms of interpersonal communication demonstrated that the drama series provided a useful tool to communicate sexual health content and life lessons with sexual partners, family and friends. Such conversations strengthened norms around open communication and greater critical consciousness about the limits of trust and the potential consequences of having sexual secrets. The episodes became more than *'just an episode'* in the way they prompted meaningful conversation and critical reflection about topics that were previously considered too taboo to comfortably discuss. Watching *Intersexions* thus spurred a new level of openness in a number of participants' family, peer and sexual relationships and for some, engagement with the series sparked meaningful self-reported behaviour change.

**Conclusions:** The power of mass media to create much needed spaces for interpersonal dialogue and conversation about sexuality, relationships, and HIV prevention is significant. Both *Intersexions* series appear to have broken through the silence and cultured *'HIV fatigue'* that often accompanies efforts to raise awareness about HIV prevention, care and support. By moving viewers beyond the simple *'ABCs'* of HIV prevention to asking critical questions about the quality of their relationships and the ways that communication and secrets in particular contribute to HIV risk, *Intersexions* may have contributed to a more complex and multifaceted shift in the national consciousness around HIV prevention.

## TUPDD0203

### DEVELOPMENT OF A MOBILE-BASED APPLICATION TO INCREASE UPTAKE OF HIV TESTING AMONG YOUNG U.S. MEN WHO HAVE SEX WITH MEN

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**Background:** Young men who have sex with men (YMSM) accounted for 72% of new HIV infections among all persons aged 13 to 24, and 30% of new infections among all MSM. However, overall rates of testing among young adults are suboptimal. Though mobile app use is nearly universal among US YMSM, there are currently no HIV prevention mobile phone apps developed specifically for YMSM, suggesting a need for further research to develop these interventions.

**Methods:** We conducted six focus groups with 33 participants (mean age=21.8, range 17-24; 36% Hispanic/Latino, 33% Black, non-Hispanic; 18% White, non-Hispanic, 12% other) in Boston, Chicago and Los Angeles. During focus group discussions, participants were shown an app developed to increase HIV testing for adult MSM, HealthMindr, and screenshots of potential adaptations, and provided feedback on the utility of the app, functionality of the various app features and how to best optimize the current app for use by young people prior to adaptation.

**Results:** Participants found the essential functions of the current app to be generally useful, including the ability to locate an HIV/STI testing site near them. They suggested adding the ability for the app to "ping" them when near a testing site and due for a test. Participants remarked that this would help overcome the obstacles associated with planning, such as forgetting to test, and would remove the responsibility of finding a testing location. While participants felt that the app contained an abundance of useful information and access to materials on HIV testing, PrEP and sexual health, they described the language and appearance as being very "medical" and unappealing to youth, suggesting changes to the interface, including use of avatars, infographics and less formal language.

**Conclusions:** Overall, participants liked the app and suggested that it would help them to increase the frequency and acceptance of HIV/STI testing and improve their general sexual health. However, suggestions for changes were provided. Further app development and testing is warranted.

## TUPDD0204

### CHARACTERISTICS OF BISEXUAL MEN WHO USE THE INTERNET TO SEEK SEX WITH OTHER MEN IN ONTARIO, CANADA

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**Background:** The use of the Internet to seek sexual partners is associated with increased HIV sexual risk behaviours for men who have sex with men (MSM). Little research, however, focuses specifically on bisexual MSM who use the Internet to seek sexual partners. In this analysis, we examined: 1) differences between bisexual and other-identified MSM with regard to HIV status, online sexual health outcomes, and condom use/non-use; 2) factors associated with condom use/non-use during the most recent anal intercourse for bisexual men.

**Methods:** Data were drawn from an online survey targeted at MSM in Ontario. Using logistic regression analysis and chi-square tests we assessed differences between bisexual-identified MSM and other-identified MSM (gay, queer) with regard to HIV status, online sexual health outcomes, and condom use/non-use. Following this, we used logistic regression to examine factors associated with condom use during the most recent anal intercourse for bisexual men. All results were considered significant at $p < .05$.

**Results:** The study included a total of 1830 MSM. Among these men, 438 (24.0%) indicated "bisexual" as their sexual orientation. Bisexual men were less likely than non-bisexual-identified men to be HIV-positive (2.4% versus 9.9%; OR=0.23, 95%CI:0.18-0.43), to have been recently tested for STIs (45.4% versus 65.3%; OR=0.44, 95%CI:0.35-0.55), and to receive sexual health information online (74% vs. 85.3%; OR=0.63, 95%CI: 0.47-0.85). Bisexual men were more likely than non-bisexual-identified men to report condom-use during their last male anal sex (65.7% versus 59.2%; OR=1.32, 95%CI:1.02-1.72). Substance use emerged as a significant factor associated with condom use during the most recent anal intercourse for bisexual men (OR=0.50, 95%CI:0.29-0.88).

**Conclusions:** Bisexual men who use the Internet to seek sex with other men may exhibit distinct sexual risk behaviours (decreased rates of STI testing, less sexual health information sought online, increased condom use) compared to other MSM. In addition, further research is needed to understand the link between condom use and substance use within the context of preventing HIV risk among bisexual men who use the Internet to seek sex with other men.

## TUPDD0205

### MASIVUKENI: A MULTIMEDIA ART INITIATION AND ADHERENCE INTERVENTION FOR RESOURCE-LIMITED SETTINGS

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**Background:** The need for ART initiation and adherence with staggering numbers of people, and a reliance on lay counselors for ART counseling remain challenging in South Africa (SA) and globally. Masivukeni, a theoretically-derived behavioral intervention, was developed to enhance the capabilities of lay counselors to deliver ART adherence counseling to patients initiating ART. Masivukeni is a structured, laptop-based multimedia intervention requiring minimal training and supervision.

**Methods:** We conducted a randomised controlled trial of Masivukeni at two township clinics in Cape Town, SA. Masivukeni is consistent with standard of care counseling (SOC) guidelines (3-4 sessions prior to/ during ART initiation, follow-up sessions for defaulters, and inclusion of treatment support partners (buddies)). Masivukeni using videos, visually-relevant content, and interactive exercises that focus on key domains related to Social Action Theory (e.g., HIV/AIDS knowledge, motivation for health, mood, problem-solving skills, and social support). Patients eligible for ART-initiation who provided consent were allocated 2:1 to Masivukeni or SOC. Patients were seen 12-months post-initiation, corresponding with routine clinic-based viral load testing. Qualitative interviews with counselors were also conducted.

**Results:** Participants included 456 HIV+ adults with 337 (74%) completing 12-month follow-up; most patients lost to follow-up transferred out of the clinic or did not initiate treatment. At enrollment 20% had TB; 73% were female; mean age was 33 years; 42% had some employment; and 96% were impoverished (< R5000/month). At follow-up, over 90% of all patients (across study arms) achieved viral suppression (VL< 400copies/ml), however, proportionally, nearly twice as many SOC participants did not initiate ART compared to those in the Masuvkeni arm.. Among Masivukeni

participants, viral suppression was improved with increased buddy participation in counseling sessions. Counselors found the multimedia computerized intervention easy to use, enhancing their competence and confidence in their counseling role. They also reported greater patient learning and retention.
**Conclusions:** Masivukeni has promise as an adherence counseling tool, improving the numbers of patients who initiate treatment, and strengthening the work of and empowering counselors by standardizing and guiding their counseling interactions, providing visual aids solidifying patient understanding of HIV and its treatment, and contributing to rapid ART initiation and viral suppression.

## TUPDD0206

### "TÁNAMÃO" (INHAND) APP, A POCKET RISK CALCULATOR AND FREE PREVENTION SERVICE LOCATOR FOR CELL PHONES AND TABLETS

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**Background:** Recent data from epidemiological reports and surveys demonstrated increase of HIV infection, low use of condoms, and lack of awareness on the use of antiretroviral drugs among young population from Sao Paulo City. Furthermore, risk management and pre-exposure prophylaxis need to be publicized to encourage their adoption by this population.
**Description:** In order to address this problem, the STD/AIDS Program from the São Paulo City Department of Health commissioned a task force to create an app to provide accessible information in timely manner for young people. As a result, "TáNaMão" app (meaning "InHand" in English) was developed with the participation of representatives of key-populations. The user can input data and the app can calculate STD/HIV risk and provide guidance, and inform the nearest place to obtain free prevention supplies and healthcare.
**Lessons learned:** After successful test period with healthcare workers and key-population members, the app was released in social media, blogs and press. The app can be downloaded for Android and iOS. Noteworthy, Apple Store considers draws representing sexual interactions too explicit and blocks them.
**Conclusions/Next steps:** "TáNaMão" app was downloaded 3,660 times in six months after release, meaning that a broader promotion is required. A plan to increase app downloads through partnership with key people in online social networks and popular webpages is ongoing. A new version will have more friendly and enjoyable interface.

# TUPDD03 THE NEW NORMAL: SEXUAL IDENTITY, RELATIONSHIPS AND NORMS

## TUPDD0301

### DOES SEXUAL IDENTITY MATTER IN ACCESSING SERVICES?: RISK PROFILE AND HEALTH-SEEKING BEHAVIOURS OF DIFFERENT SEXUAL IDENTITY TYPES OF YOUNG MEN WHO HAVE SEX WITH MEN IN MYANMAR

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**Background:** Men who have sex with men (MSM) are disproportionately affected by HIV compared to the general population in Myanmar (6.6% versus < 1%). While there is increasing information on risky behaviors of MSM in Myanmar, an in-depth understanding of how the risk profile and health-seeking behaviors differ by sexual self-identities is needed to tailor HIV/STI services. This analysis compares MSM with different sexual self-identities among young Myanmar MSM.
**Methods:** A behavioral cross-sectional survey was conducted in six townships in 2014 as a baseline for an evaluation of the Link Up project, a global consortium led by the International HIV/AIDS Alliance, to address sexual reproductive health needs of young key populations. Men (18-24 years) who had sex with a man in the previous six months were recruited using respondent-driven sampling to complete an interviewer-administered survey. Characteristics are compared using chi-squared test across different sexual identities: "tha-nge" (hidden MSM, insertive partner [*hidden/i*]), "apone" (hidden MSM, receptive partner [*hidden/r*]), and "apwint" (open MSM; typically receptive [*open/r*]).
**Results:** The study enrolled 623 MSM. Respondents self-identified as hidden/i (54%), hidden/r (16%), and open/r (29%). Open/r had the highest proportion reporting STI symptoms in the last 12 months (open/r: 37%; hidden/i: 23%; hidden/r: 24%; p< 0.01). All groups were equally likely to have sought STI treatment (57-65%). Open/r had the highest proportion ever having tested for HIV (open/r: 87%; hidden/i: 52%; hidden/r: 68%; p< 0.001); self-reported HIV-positivity was 15.7% (open/r), 1% (hidden/i), and 7% (hidden/r) (p< 0.001). While the majority of open/r and hidden/r (90-95%) revealed their male-male sexual behavior, only 78% of hidden/i revealed such (p< 0.001). Open/r were the most likely to have accessed an MSM-friendly drop-in center (open/r: 78%; hidden/r: 69%; hidden/i: 49%; p< 0.001) or been reached by a peer educator (open/r: 67%; hidden/r: 56%; hidden/i: 47%; p< 0.001).
**Conclusions:** Despite MSM being a vulnerable group overall, certain sexual identities of MSM may be even more vulnerable. The findings suggest the importance of tailoring MSM outreach and facility-based services to meet the nuanced needs of different sexual identities within MSM, particularly the hidden MSM who access services the least but are not without risk.

## TUPDD0302

### MEASURING GENDER NORMS AMONG VERY YOUNG ADOLESCENTS (AGES 10-14) AND YOUNG PEOPLE (AGES 15-24) IN UGANDA: TOOL VALIDITY AND ASSOCIATIONS WITH KEY HIV OUTCOMES

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**Background:** Gender norms are strongly associated with HIV-related factors, and they often form early in life. Very young adolescents (VYAs) ages 10-14 could benefit from gender transformative interventions, yet no tools are validated to measure gender norms among VYAs. The GEM Scale measures views towards gender norms, and has proven valuable in evaluating HIV programs for older adolescents/adults, in numerous settings. We assessed GEM Scale utility among Ugandan VYAs, and compared responses of VYA and older youth.
**Methods:** We conducted a two-stage cluster-sampled survey of 297 VYAs and 658 15-24 year-olds in rural and urban communities near Kampala. The survey included a 24-item GEM Scale. Using confirmatory factor analyses (CFA), we separately evaluated the scale among 10-14s and 15-24s. To maintain between-group comparability, we created a modified scale, omitting items with low CFA factor loadings (< 0.30). We trichotomized scores into low-, moderate-, and high-equitability groups, and assessed bivariate associations between gender-equitability and key outcomes.
**Results:** The GEM Scale proved an effective measure among both VYAs and older youth. For YVAs, CFA identified one latent construct with good fit [root-mean-square-of-error-approximation=0.04; Comparative-Fit-Index=0.93; Tucker-Lewis-Index=0.92], and consistency (α=0.74); 8 of the original items had low factor loadings. The 5 items with low factor loadings in both age groups were omitted to form the final 19-item scale. The scale results were comparable for males and females. Nearly 87% had low-to-moderate gender equitability. VYAs had lower mean scores than 15-24s (33.5 vs. 37.1; p< .0.001). VYAs were 3 times as likely to agree that "*a man should have the final word on decisions in his home*"(p< 0.001), or "*a woman who has sex before marriage does not deserve respect*" (p< 0.001). Analyses showed that gender equitable norms were significantly (p< 0.05) associated with key outcomes, including HIV knowledge, HIV testing, and condom use.
**Conclusions:** The GEM Scale provides a valid measure of gender norms across a wide age range, including VYAs, and is associated with important HIV outcomes. Moreover, support for equitable gender norms was generally low, and lower among VYAs compared to their older counterparts. This gap may provide opportunities for gender transformative interventions for VYAs.

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## TUPDD0303

### THE 'ONE MAN CAN' MODEL: COMMUNITY MOBILISATION AS AN APPROACH TO PROMOTE GENDER EQUALITY AND REDUCE HIV VULNERABILITY IN SOUTH AFRICA

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**Background:** Among other factors driving the HIV epidemic in Sub-Saharan Africa are social norms reinforcing restrictive gender roles and inequitable gender relationships. These limit women's ability to protect themselves from HIV, while simultaneously put social pressure on men to take on a range of sexual health risks. To understand the benefits of engaging men and boys for gender equality and HIV prevention, this study explored the impacts of Sonke Gender Justice's 'One Man Can' (OMC) community mobilisation approach in a multi-level HIV intervention. The study assessed whether OMC community mobilisation activities targeting young men could promote gender-equitable norms that decrease women's HIV vulnerability and men's HIV risk behavior in South Africa.
**Methods:** The OMC community mobilisation intervention evaluation was a randomized controlled trial implemented in Agincourt, rural northeast, South Africa between 2012 and 2014. Young men (18-35 years) were the primary targets for the intervention, which included workshops and innovative outreach activities on gender equality and health. This analysis draws from qualitative data collected from intervention implementers and community members at the last time point during the intervention. Directed content analysis was employed as an analytic approach.
**Results:** Our findings indicate significant attitudinal and some behavioral changes around gender equality and HIV risk amongst OMC intervention implementers and community members. At the interpersonal level, adoption of gender-equitable beliefs had positive effects of improved communication and a more balanced division of labor between intimate partners. At the community level, the results were mixed. OMC activities increased awareness and interest in reducing gender inequality and HIV risk. However, intervention implementers experienced some resistance from community leaders in providing training on aspects of gender equality, condom use, abortion rights, and homosexuality. HIV interventions that incorporate community mobilisation should explore avenues to actively engage local leaders in supporting shifts in norms around these issues.
**Conclusions:** Community mobilisation is potentially a powerful tool to promote equitable gender norms and build consciousness and action around HIV prevention. When men are mobilized to recognize how harmful gender norms negatively impact their lives, the changes they make towards improving their own health can have added benefits for the women in their lives.

## TUPDD0304

### SIMILAR AND DIFFERENT FACTORS ASSOCIATED WITH TRANSACTIONAL SEX WITH MAIN PARTNERS AND CASUAL SEXUAL PARTNERS IN YOUNG WOMEN IN URBAN INFORMAL SETTLEMENTS IN SOUTH AFRICA

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**Background:** Transactional sex is a significant risk factor for HIV-acquisition amongst young women. Yet there may be significant variation in the forms of transactional sex with main partners and transactional sex with casual partners. Our study sought to describe the prevalence of each form of transactional sex and compare the risk factors for each amongst young women in urban informal settlements.
**Methods:** We drew on cross-sectional data from 320 women aged 18 to 38 in informal settlements in Durban, South Africa who comprised the control arm of a cluster randomised RCT. Primary outcomes were transactional sex with a main partner in the past 12m and transactional sex with a kwapheni (casual) partner in the past 12m, both assessed using 5 items. Other measures included socio-demographics, violence experienced and alcohol and drug use. We built Gaussian random effects regression models for each form of transactional sex.
**Results:** Women were young (mean ages 24.4 years). 61.1% (CI 52.1-69.5) reported transactional sex with a main partner in the past 12m and 49% (CI95%41.9-56.2) reported transactional sex in the past 12m with a kwapheni. There was significant overlap between both forms with 41.9% (CI9534.2-49.9) reporting both. Transactional sex with a main partner was significantly associated with being in a more controlling relationship (aOR1.07 p< 0.05), experiencing economic violence from an intimate partner in the past 12m (aOR2.29, p< 0.01), experiencing past year non-partner sexual violence (aOR1.86, p< 0.05) and women's greater alcohol use (aOR1.1 p=0.001). Transactional sex with a casual (kwapheni) partner was associated with greater hunger (aOR2.4, p< 0.05), experiencing economic violence from an intimate partner in the past 12m (aOR1.76, p< 0.05), experiencing non-partner sexual violence in the past 12m (aOR2.26, p< 0.01) and using drugs in the past year (aOR2.57, p< 0.0001).
**Conclusions:** Transactional sex with main partners and casual partners in this population is high. Risks associated with both forms of transactional sex emphasise the ways in which men's controlling behaviours and women's experiences of lack of economic autonomy shape women's engagement in transactional sex. Reducing both forms of transactional sex requires interventions to empower women, including their economic autonomy.

## TUPDD0305

### PAYING FOR SEX AND ASSOCIATED RISKS AMONG YOUNG MALE PAVEMENT DWELLERS IN DHAKA CITY, BANGLADESH

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**Background:** Dhaka City is home to thousands of migrants from Bangladesh's rural areas who live in the streets as "pavement dwellers." Bangladesh development programs often prioritize addressing girls' substantial health needs, but young males also have vulnerabilities. This study assesses their practice of paying for sex, and its association with HIV-related risks.
**Methods:** As part of the global Link Up project, trained interviewers recruited 447 male pavement dwellers from seven Dhaka City pavement dweller "hotspots." At each hotspot, interviewers used random selection techniques (like spinning a bottle) to invite males ages 15 to 24 to participate in a survey that covered HIV-related risks and behaviors. We conducted descriptive analysis to examine sociodemographic characteristics, paying for sex (giving money, goods, or services in exchange for sex in past year), sexually transmitted infection (STI) symptoms (past six months), and high-risk sex (unprotected last sex with non-primary partner). Among those who had ever had sex (N=321), we conducted multivariate logistic regression analysis to assess whether transactional sex was associated with STI symptoms or high-risk sex, controlling for sociodemographic characteristics and early sexual debut.
**Results:** Median participant age was 18 years, 7% completed education above primary school, and 98% reported earning any income, a median of US$76/month. Eighty-nine percent were never married and 4% were living with a parent/guardian. Seventy-two percent had ever had sex and 44% had early sexual debut (< age 15). Physical abuse was reported by 77% of participants and sexual abuse by 13%. Of those who had ever had sex, 80% had paid for sex, 52% engaged in high-risk sex, 79% had had symptoms consistent with STIs, and 3% had ever received an HIV test. In multivariate analysis, those who had paid for sex had significantly increased odds of reporting recent STI-related symptoms (adjusted odds ratio [AOR]=1.75, 95% confidence interval [CI]: 1.14-2.68), and had greater odds of engaging in high-risk sex (AOR=2.13, 95% CI: 1.48-3.08).
**Conclusions:** Young, pavement dwelling males in Dhaka City have unique vulnerabilities. The adverse factors associated with paying for sex highlight the need for targeted programs that promote condom use, STI screening/treatment, and HIV testing in this population.

## TUPDD0306

### LOVE WITH HIV: A LATENT CLASS ANALYSIS OF INTIMATE RELATIONSHIPS AMONG WOMEN LIVING WITH HIV ENROLLED IN CANADA'S LARGEST MULTISITE COMMUNITY-BASED RESEARCH STUDY

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**Background:** Quantitative studies traditionally reduce relationships to single-item variables and investigate sexual risk-taking. To broaden understanding of relationships and sexuality, we characterized types of intimate relationships among women living with HIV (WLWH) using multiple measures and examined differences in affection and associated psychosocial characteristics.
**Methods:** Using a critical feminist approach, we analyzed questionnaire data for 1,335 WLWH
(≥16 years) in the multi-site, community-based Canadian HIV Women's Sexual and Reproductive Health Cohort Study. We conducted latent class analysis, incorporating eight indicators: marital status, duration, sex with regular partner in past 6-months, physical intimacy, emotional closeness, relationship power, exclusivity, and couple HIV-serostatus. We assessed construct validity by examining prevalence of affection ('*Someone to love and make you feel wanted*'), and identified covariates using multinomial logistic regression.
**Results:** We delineated 5 latent classes: no relationship (47%), relationship without sex (9%), and three types of sexual relationships-short-term/casual (16%), long-term/unhappy (7%), and long-term/happy (22%). Women in the latter two classes had high probabilities of reporting an exclusive married/common-law/living-apart relationship of ≥3-years duration relative to women in short-term/casual relationships, yet they diverged on contentment with physical intimacy (44%-unhappy *vs.* 97%-happy), emotional closeness (24% *vs.* 86%), power (43% *vs.* 82%), and couple HIV-serodiscordance (59% *vs.* 71%). Affection was most prevalent in long-term/happy relationships (64%) and relationships without sex (48%), compared to long-term/unhappy (39%), short-term/casual (37%), and no relationship (23%) (p< 0.0001). Relative to no relationship: women >50-years were less likely to be in any relationship; women reporting sex work [AOR:3.03(95%CI:1.64,5.61)] and violence [6.64(3.33,13.26)] were more likely to be in short-term/casual relationships; women without depression [2.90(2.04,4.12)] were more likely to be in long-term/happy relationships. No differences by gender, sexual orientation, or ethnicity were observed.
**Conclusions:** Nearly half of Canadian WLWH were not in relationships. Women's relationships were heterogeneous, though HIV-serodiscordance was common and one-fifth reported long-term/happy and loving sexually active relationships. Sex, however, did not equate with affection, and relationships without sex had higher levels of love than some sexual relationships. A nuanced focus on promoting healthy relationships may offer a more comprehensive approach to supporting women's sexual well-being, particularly among older WLWH and those with experiences of sex work, violence, and depression.

## TUPDE01 QUALITY IMPROVEMENT: AIM HIGH

## TUPDE0102

### THE EFFECTIVENESS OF A QUALITY IMPROVEMENT COLLABORATIVE TO ACCELERATE ELIMINATION OF MOTHER TO CHILD TRANSMISSION (EMTCT): KEY OUTCOMES AND DETERMINANTS FROM A DEMONSTRATION PHASE COLLABORATIVE IMPLEMENTED IN SOUTH AFRICA, 2012 - 2015

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**Background:** South Africa has made substantial improvements in prevention of mother-to-child transmission (PMTCT) services in South Africa as demonstrated by a reduction in vertical transmission in the recent past. Challenges remain in health programme implementation for key antenatal and postnatal services.
We describe impact and determinants for successful implementation of a quality improvement collaborative (QIC) approach as a method to accelerate the achievements of elimination of mother-to-child transmissions (eMTCT) goals in South Africa.
**Methods:** In partnership with the Department of Health, we implemented a QIC in 55 health facilities in three provinces over two phases: a pilot phase and a demonstration phase. Learning sessions and quality improvement (QI) projects were conducted focusing on key elements of the PMTCT cascade. QI teams received coaching and on-site training. To assess performance, we compiled control charts using PMTCT indicators from district health information system. The Wilcoxon signed-ranks test was used to test for significance in increases or decreases between pre-post intervention medians. Influencing factors such as facility level QI skills, organisational culture and facility type and location were measured to understand influencing factors.
**Results:** We observed marked regional variation in improvement for early booking rates in 2 out of 3 provinces (24 % in the Eastern Cape; *p*< .001; 4% in the Western Cape). All sites improved antenatal HIV retest rates (Eastern Cape 31%; *p*< .001; 11% in the Northern Cape 11%; *p*< .001; Western Cape 74%; *p*< .001). Postnatal visit within 6 days rates improved (varying from 6%-15% in supported provinces). Exclusive breastfeeding rates improved (28% increase in the Eastern Cape; *p*< .001, 15%; in the Northern Cape; *p*< .001, 12% in the Western Cape; *p*< 001). The 18 month rapid test uptake rates improved for all provinces (Eastern Cape 28%; *p*< 0.001; 20%, Northern Cape 25%; *p*< 001 and Western Cape 25%; *p*< 001). Factors influencing performance were baseline rates, facility type and size, quality improvement skills, leadership and buy in for quality improvement.
**Conclusions:** The collaborative approach achieved rapid improvements in eMTCT program outcomes in a wide range of facilities across South Africa. Performance variability may be attributed to contextual, organizational and system factors.

## TUPDE0103

### CONTINUOUS QUALITY IMPROVEMENT FOR VOLUNTARY MALE MEDICAL CIRCUMCISION TRAINING: EXPERIENCES AND RESULTS FROM THE FIELD

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**Background:** Continuous quality improvement (CQI) is a deliberate and a systematic process designed to intervene in issues of quality in voluntary medical male circumcision (VMMC) using 8 WHO quality standards. University Research Company (URC) conducted VMMC baseline assessment at 134 Department of health (DoH) facilities where implementing partners (IP's) are providing this service. Following this assessment, gaps were identified which revealed non-compliance of sites to different areas of WHO quality standards. URC saw the need to train those who manages this service at a programmatic level as well as those at site level to improve the quality of service provided as well as to reduce adverse events. A CQI training exercise empowers the providers not only to identify gaps and come up with improvement strategies but also to assess themselves, identify bottlenecks and shortfalls and improve going forward.

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**Description:** MMC baseline assessment was conducted in 8 provinces: Mpumalanga (MP); Eastern Cape (EC); Gauteng (GP); Kwazulu Natal(KZN); Limpopo(LP); Northern Cape(NC) and North West(NW) to look at compliance of sites to WHO quality standards. Three days training was then conducted by URC staff to empower the providers so that they can provide good quality service. In total 279 healthcare workers were trained across the eight provinces. Post training 2 subsequent assessments were then conducted to assess improvement in the quality of service and compliance with the standards.
**Lessons learned:** Post CQI training results shows that provinces improved significantly on average from 76.4 %( baseline) to 92.8 %( reassessment). Individual provinces scored as follows: EC (81.4% to 96%), GP (78.2% to 97.3%), KZN (80.4% to 94.2%), LP (81.4% to 98.5%), MP (63.4% to 90.1%), NC (69.2% to 94.9%), NW (78.0% to 80.6%).
**Conclusions/Next steps:** CQI training has empowered those providing the MMC service with skills, knowledge, and understanding of the program to enable them to provide safe, high quality MMC service. Results after training showed that provinces improved significantly in their performance as far as providing quality service is concerned.

## TUPDE0104

### EFFECTS OF CONTINUOUS QUALITY IMPROVEMENT AS A TOOL FOR INSPIRATION AMONGST HEALTH CARE WORKERS AND HIV+ MOTHERS ON RATES OF HIV AND MALNUTRITION AMONGST HIV-EXPOSED INFANTS IN RURAL RWANDA

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**Background:** Frontline health care workers are most effective when they feel valued, capable, and optimistic about the future. The Ihangane Project and Ruli District Hospital, serving 200,000 people in the Northern Province of Rwanda, created a Continuous Quality Improvement (CQI) program that promotes these principles amongst health care workers and HIV+ mothers as a key strategy to increase adoption of Prevention of Mother To Child Transmission (PMTCT) protocols and ultimately eliminate mother to child HIV transmission and dramatically decrease malnutrition amongst HIV-exposed infants.
**Description:** Health care workers and HIV+ mothers at seven health centers associated with Ruli District Hospital designed and implemented a CQI program that builds trust, fosters capacity and utilizes trends to demonstrate linkages between care quality and durable good health outcomes. Our approach focuses on five pillars of quality care: Clinical Care, Mother-Centered Systems, Data Management, Logistics, and Health Education. Pillars are assessed using an Observational Check List (OCL) every four months, followed by a collaborative meeting to review results. Health care workers identify areas of strength and weakness in current practices and consider interventions for improvement. In collaboration with HIV+ mothers, they design and implement improvements in their system of care.
**Lessons learned:** From March 2013 through December 2015, 332 HIV-exposed infants and 302 HIV+ mothers enrolled in the health centers' PMTCT programs. Quality across all pillars of care increased by 118% (39% to 85%). Nurses' ability to accurately diagnose malnutrition increased by 74% (46% to 80%) and infant HIV testing at appropriate intervals increased by 800% (from 8% to 72%). Improvement in care quality contributed to a 66% (41% to 14%) decrease in acute (underweight) malnutrition and a 62% (61% to 23%) decrease in chronic (stunting) malnutrition amongst HIV-exposed infants, and a 63% (1.6% to 0.6%) decrease in the rate of mother-to-child HIV transmission.
**Conclusions/Next steps:** Good health outcomes are possible even in extremely resource-limited settings. A Continuous Quality Improvement program that enables health care workers and their patients to improve their systems of care and connects actions to good health outcomes is a cost-effective approach to building effective and resilient health systems that can reach and sustain health goals.

## TUPDE0105

### IMPROVING MALE PARTNER TESTING IN PMTCT: A QUALITY IMPROVEMENT INITIATIVE IN KINANGO HOSPITAL, KWALE COUNTY, KENYA

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**Background:** HIV testing for pregnant women during the antenatal period has been successful across Kenya with 92% of ANC mothers having their HIV status determined (KAIS 2013). Despite this success, couple testing has remained low despite intensive health education. HIV-infected male partners with unknown HIV status pose a number of risks including infecting their HIV-negative pregnant partners and potentially increasing the risk of mother to child transmission. Testing couples together removes burden of disclosure from HIV-infected partners and improves adherence, retention in care, and enhanced partner support.
**Description:** To address low couples testing for HIV, the USAID-funded APHIAplus Nairobi-Coast project, led by Pathfinder International, supported Kinango Hospital's quality improvement team to conduct a root cause analysis and implement a quality improvement 'change idea' to improve couple testing at the hospital MCH Department. From August 2014, pregnant women who presented to the MCH were issued letters inviting their partners to accompany them to the facility for ANC visits. The project ensured community awareness of the initiative through mentions during morning health talks and individual counseling sessions. Male partners were offered rapid HIV testing as couples according to the national guidelines. Data was captured on routine MOH data collection tools.
**Lessons learned:** Pregnant women attending first ANC visit and who had their male partners tested for HIV increased from 4 (1%) between August 2013 and July 2014 to 336 (84%) between August 2014 and July 2015. A total of 39 pregnant women and 17 males tested positive and were provided assisted disclosure and enrolled in HIV care. Twenty-six of the 27 infants exposed to HIV tested negative through early infant diagnosis testing by DNA PCR. Seven mother-baby pairs were referred to other facilities and four were lost to follow-up.
**Conclusions/Next steps:** Couple testing for HIV can be successfully integrated with ANC visits by inviting partners to attend ANC visits. This approach can help improve uptake of HIV testing and counseling among male partners, help with disclosure, and improve MTCT rates. Using existing quality improvement teams, change ideas like this one can be successfully replicated.

## TUPDE0106

### INCREASING LINKAGE TO HIV CARE FOR NEWLY DIAGNOSED HIV-INFECTED PERSONS THROUGH QUALITY IMPROVEMENT APPROACH IN URBAN SLUMS IN KENYA

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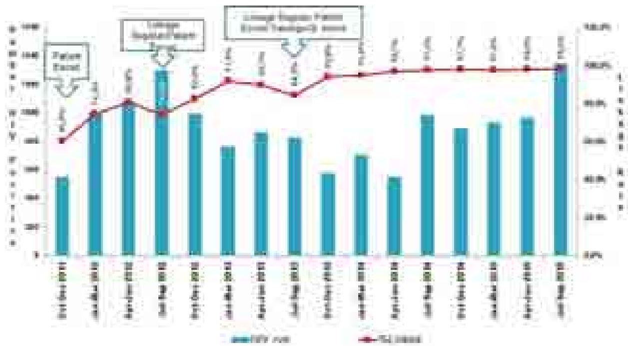
**Background:** Kenya AIDS strategic framework targets to identify 90% of people living with HIV (PLHIV), provide treatment to 90% while ensure 90% on ART achieve virological suppression. Despite scale up HIV testing coverage, only 60% and 31% of PLHIV are linked to care and ART respectively. Pre-enrollment loss to follow-up and delayed linkage to care is associated with increased morbidity and mortality.
Eastern Deanery AIDS Relief Program has 14 facilities within 95 slums in Nairobi serving 2,157,690 people. Despite scaled up HIV testing in facilities and community, enrolment into care remained low necessitating innovative strategies to address the challenge. The program utilized the Kenya HIV Quality Improvement Framework guidance to improve linkages to care.
**Description:** A Continuous Quality improvement (CQI) activity was initiated involving Plan-Do-Study-Act (PDSA) cycles between Oct-2012 and Sep-2015. The goal was to improve linkage to care of newly diagnosed PLHIV from 60% to >95%. PDSA cycle results were reviewed quarterly and lessons learnt summarized, effective strategies retained and new ones adopted where necessary.
**Lessons learned:** PDSA cycle one in Oct-2012 involved use of patient escorts by counselors which led to increased linkage from 60% to 80.8% by June-2012. PDSA cycle two in Sept-2012 introduced linkage registers for counselors to track intra-facility linkages in addition to patient escorts and telephone calls and home visits for patients not linked on the testing day improved linkages from 74.2% to 91.8% by Mar-2013. PDSA cycle three in Oct-2013 and combined patient escorts, linkage register and training of counselors within quality improvement teams. At the end of PDSA cycle three, linkages improved and were sustained at 98% by Sept-2015.



[Graph 1: Trends of improved linkages to care of newly diagnosed HIV infected persons between Oct-2012 and Sept-2015]

**Conclusions/Next steps:** Successful Linkages to HIV care and treatment services may be achieved through adoption of multiple strategies that are feasible and affordable such as use of patient escort, improved HCW skills and use of linkage registers.

Tuesday 19 July

# POSTER EXHIBITION

## MECHANISMS OF ACTIVATION / INFLAMMATION AND IMPACT ON PATHOGENESIS

### TUPEA001

### RANTES, CD169/SIGLEC-1 AND CD38-HLADR ARE INDEPENDENTLY ASSOCIATED WITH CXCR4-TROPISM IN TREATMENT NAÏVE HIV-1 SUBTYPE C INFECTED INDIVIDUALS

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**Background:** Switch from CCR5 (R5) to CXCR4 (X4) co-receptor tropism of HIV-1 subtype B occurs in ±60% of untreated patients and is associated with rapid progression to AIDS. The etiology of this switch is largely unknown, however CD4+ T-cell activation (CD38-HLADR) has been shown to correlate with X4 tropism in HIV-1 subtype B. We investigated the prevalence of X4-tropism in a cross-sectional cohort of antiretroviral therapy (ART)-naïve South African HIV-1 subtype C infected individuals and hypothesized that X4-tropism was correlated with CD4+ T-cell activation, monocyte activation and plasma co-receptor ligand concentration.
**Methods:** One hundred HIV-1 subtype C infected ART-naïve patients, 18-45 years old were enrolled at a rural clinical site in South Africa. Plasma and peripheral blood mononuclear cells were isolated. Genotypic prediction of HIV-1 co-receptor usage was performed based on deep sequencing of the envelope region (gp120-V3) and interpretation with the $\text{geno2pheno}_{\text{co-receptor}}$ algorithm, using a False Positive Rate (FPR) of 3.5%. Cellular markers for T-cell activation and monocyte activation were measured using FACS and soluble leukocyte activation markers and coreceptor ligand concentrations were determined by Luminex xMAP technology.
**Results:** All viral isolates were sequenced successfully and 22% were predicted to be X4-tropic. In a univariate analysis X4-tropism was negatively associated with CD4 counts and positively associated with immune activation (i.e CD38-HLADR) in CD4 cells, CD169/Siglec-1 on monocytes and plasma RANTES levels (p< 0.05). When corrected for CD4 count, age and sex; RANTES, CD169/Siglec-1 and CD38-HLADR expression were independently predictive of X4-tropism in a multivariate analysis, but CD4 count itself was not identified as an independent predictor.
**Conclusions:** In this cohort of HIV-1 subtype C ART-naïve patients 22% harbor the X4 predicted virus. We detected higher levels of CD4 immune activation, plasma RANTES levels and CD169/Siglec-1 expression on monocytes, each independently associated with X4 tropism. CD169/Siglec-1 captures HIV-1 through recognition of the viral envelope glycan shield and transfers the virus through synaptic cell-cell contacts to uninfected cells. Our novel observations may impact the way we understand the transfer of X4-tropic cell-free virus to permissive lymphocytes. These data have important ramifications in the way we understand HIV-1 pathogenesis and tropism in HIV-1 subtype C infection.

### TUPEA002

### CD4+ T CELL ACTIVATION: A NEW LINK BETWEEN INTIMATE PARTNER VIOLENCE AND HIV RISK?

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**Background:** Behavioral pathways linking intimate partner violence (IPV) experience to HIV are well-established, but the biologic pathways remain unexplored. We hypothesized that IPV-induced stress negatively affects HIV systemic immune defenses and aimed to evaluate whether IPV was associated with immune profiles established as harboring increased HIV risk: CD4 activation and decreased regulatory T cell (Treg) frequency.
**Methods:** From Feb-Nov 2014, demographics, past-year and lifetime IPV, child abuse, substance abuse, and post-traumatic stress disorder (PTSD) data were obtained from HIV-negative high-risk women. Blood, urine, and genital ulcer (if present) samples were collected for AM cortisol, immune assays, and STI testing. Frequencies of activated CD4 T-cells (%HLA-DR+/CD38+), Tregs (%CD4+CD25+FoxP3+) and phenotyping of CD4 (using CD27, CD45RA) were assessed by flow cytometry. Nonparametric tests evaluated the association between IPV, covariates (child abuse and demographics), and immune outcomes. Multivariate regression explored confounding of the IPV-CD4 relationship and moderation by cortisol, cocaine use, and PTSD.
**Results:** 75 HIV-negative high-risk women age 18-50 were enrolled. Lifetime IPV was associated with increased CD4 activation ($\rho$=0.331, p=.004), a shift in CD4 phenotype from naïve ($\rho$=-0.339, p=.003) to effector memory ($\rho$=0.367, p=.001), and an increase in activated Tregs (HLA-DR+/ CD45RA-, $\rho$=.260, p=.024), but not total Treg frequency. Past-year IPV was also associated with increased CD4 activation ($\rho$=0.257, p=.026) and had similar trends. After controlling for sexual IPV, the association between lifetime physical and psychological abuse and CD4 activation remained significant (β=.579, p=.004 and β=.362, p=.033, respectively). After controlling for race (the only covariate linked to increased activation), the lifetime IPV-CD4 activation link remained significant (β=.313, p=0.012). While PTSD was associated with increased CD4 activation ($\rho$=0.247, p=.034), neither PTSD, cocaine use, nor cortisol were moderators of the IPV-CD4 activation pathway.
**Conclusions:** Our data is the first to suggest a potential immune link between IPV and HIV and may help explain individual-level differences in HIV susceptibility and response to biologic HIV prevention strategies. The association of psychological and physical IPV with CD4 activation independent of sexual abuse (i.e. genital tract trauma) further supports the existence of a stress-induced immune pathway.

## MECHANISMS OF T CELL DEPLETION AND RECONSTITUTION

### TUPEA003

### THE EFFECT OF HIV-1 INFECTION ON S1P-R1 EXPRESSION AND FUNCTION IN THYMOCYTES AND THEIR PROGENITORS DURING ENTRY INTO AND EGRESS FROM THE HUMAN THYMUS

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**Background:** Lack of T cell regeneration in HIV infected individuals is likely due to a defect in entry of hematopoietic stem cells (HSC) into, and egress of naïve T cells from, the thymus to the periphery. Limited work has been done to elucidate these phenomena. We studied the effect of HIV-1 infection on the receptors to Sphingosine-1-phosphate (S1P), a chemotactic sphingolipid mediator, during thymocyte trafficking. Our novel findings show that HIV changes expression of S1P Receptor 1 (S1P-R1) which is normally only expressed at the mRNA and protein level in mature CD3+CD69- thymocytes about to exit the thymus.
**Methods:** Using flow cytometry and qPCR we examined the dynamics of S1P-R1 expression on Hematopoietic Stem Cell (HSC) progenitors and thymocytes during HIV infection. Mice implanted with human fetal thymus/liver (HIS-mice) infected with CXCR4- or CCR5-tropic HIV-1 were injected intravenously with CFSE-labeled HSC to examine the effect of HIV on HSC entry, thymocyte development and egress.

We also investigated the mechanism of changes in S1P-R1 and its transcriptional regulator, Kruppel-Like factor 2 (KLF2).
**Results:** We found that S1P-R1 is expressed at low-moderate levels on human HSC. In infected HIS mice CFSE-labeled CD34+ progenitors developed into mature thymocytes in the human thymus/liver implant and a subset expressed S1P-R1, indicating that entry into the thymus and development are functional during early HIV infection. Surprisingly, we found that S1P-R1 and KLF2 were significantly upregulated in mature thymocytes post-HIV infection. Intriguingly, S1P-R1 was also upregulated by HIV within the CD3+CD69+ population, which normally does not express S1P-R1. S1P-R1 signaling as measured by pAkt was not impaired in infected thymocytes, which is in contrast to published data that S1P-R1 response in HIV infection may be impaired in other cell types.
Our results show that the mechanism of increased S1P-R1 in the thymus by HIV may be due to cytokines such as TNF-α which significantly increased S1P-R1 expression on thymocytes *in-vitro*. Additional cytokines perturbed during HIV infection are currently being tested.
**Conclusions:** S1P-R1 upregulation post-HIV-1 infection may offer insight into T cell reconstitution mechanisms during infection and provide potential alternate avenues for immunotherapy.

## TUPEA004

### GAMMA-DELTA T CELLS PHENOTYPE AND ACTIVATION IN HIV-INFECTED TREATMENT- NAÏVE PATIENTS: CORRELATION WITH DISEASE STAGE AND IMMUNOLOGICAL RESPONSE

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**Background:** Some severely immunodeficient HIV patients experience poor recovery of CD4+ T-cell counts on antiretroviral treatment (ART). Gammadelta (γδ) T cells play an important role in protective immunity in HIV-infection and alteration of γδ T-cell distribution in the peripheral blood is the earliest defect in cellular immunity after HIV infection. We analyzed γδ frequencies and activation in HIV-infected ART-naive patients and correlated these parameters with disease stage and immunological response to ART.
**Methods:** Retrospective, cohort study in HIV-patients receiving cART for at least 12 months that, prior to ART initiation, had cryopreserved PBMCs. Exclusion criteria: duration of cART < 12 months, failure to achieve virologic suppression after 12 months of cART, treatment with immunomodulatory drugs. Patients were classified as advanced naïve (AN) or less advanced naïve (LAN) if nadir CD4 T cell count was ≤200 or >200 cells/μL, respectively. Frequencies, phenotype and activation of γδ T cells were measured by FACS analysis on baseline cryopreserved PBMCs.
**Results:** Twenty-six patients [10 AN and 16 LAN, 24 males (92%), medians: age 43 years, absolute nadir CD4+ T cell count 280/ml, HIV-RNA 4.9 log10cp/ml] were enrolled. AN had higher prevalence of AIDS-defining illnesses (50% *vs.* 0%, p=0.004), lower nadir CD4+ T cells count [87 (IQR 49-141) cells/ml *vs.* 312 (IQR 276-380) cells/ml], lower CD4/CD8 ratio at presentation [0.10 (IQR 0.07-0.17) *vs* 0.34 (IQR 0.21-0.51)] and higher pre-ART HIV-RNA [5.66 (IQR 5.2-5.9) log10cp/ml *vs* 4.66 (IQR 4.35-4.93) log10cp/ml]. At baseline AN showed significantly higher frequencies of effector-memory (CD45RO+/CD27-/CD28-) subset of Vδ1+ T cells as compared to LAN (p=0.04). Change (%) in CD4+ T cell count after 12 months of ART was negatively correlated to frequencies of activated (CD38+ HLADR- and CD38+ HLADRII+) Vδ1+ CD8+ T cells (rho=-0.447, p=0.029 and rho=-0.533, p=0.005, respectively) and Vδ2+ CD8+ (rho=-0.379, p=0.05) T cells. A similar trend was also observed in cytolytic-like CD57+ Vδ1+ T cells (rho=-0.501, p=0.009).
**Conclusions:** Subsets of γδ T-cell are differently distributed in AN as compared to LAN patients. Increased activation of γδ T cells at baseline predict a worse immune reconstitution after suppressive ART.

## TUPEA005

### IMMUNOMETABOLIC ANALYSIS IDENTIFIES KEY ROLE OF HYPOXIA INDUCIBLE FACTOR-1 ALPHA (HIF-1α) IN HIV-INDUCED CD4+T CELL DEPLETION

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**Background:** In the absence of antiretroviral drugs, persistent HIV-1 infection causes dysfunction and progressive loss of CD4+ T cells, leading to the development of AIDS and ultimately to death. The pathogenic mechanism responsible for CD4+ T cell functional dysregulation and death are still unclear. In this study, we investigated the modulation of glucose metabolism by HIV-1 infection and its relationship with CD4+ T cell depletion.
**Methods:** CD4+ T cells from healthy donors were isolated from peripheral blood, activated in vitro and subsequently infected with HIV-1. At day 5 post-infection, cell viability was analyzed by Annexin V/7-AAD staining. Glucose metabolism was analyzed by quantifying glucose uptake and L-Lactic acid production. Hypoxia-inducible factor 1α (HIF-1α) activity was analyzed by different cellular and biochemical approaches.
**Results:** By using multi-parametric FACS analysis, we found that HIV-1 infection of purified activated blood CD4+T cells increases their glycolytic activity by stimulating the activity of the metabolic regulatory complex mTOR and the transcription factor HIF1α. The HIV-1-induced stimulation of aerobic glycolysis resulted in the intracellular accumulation of L-lactic acid and apoptosis, as detected by Annexin V/7-AAD staining. In vitro silencing of HIF-1α expression reduced L-lactate production induced by HIV-1 and prevented CD4+ T cell death.
**Conclusions:** In conclusion, we have established a novel mechanism by which HIV-1 promotes HIF-1α-mediated induction of aerobic glycolysis and L-Lactic acid production in CD4+ T cells, inducing cell death. Manipulation of glucose metabolism in CD4+ T cell could open a path to the development of a new class of therapy to improve immune reconstitution in treated HIV patients.

## TUPEA006

### MEMORY STEM T CELLS AND MARKERS OF MUCOSAL IMMUNITY IN THE COURSE OF CART

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**Background:** Studies have described a protective role of CD8+ memory stem T cells (Tscm) in HIV disease progression and have shown a beneficial effect of long-term cART in restoring their frequency and function. Nonetheless, data on longitudinal modifications of this subset are lacking. We investigated the kinetics of CD4+ and CD8+ Tscm prior to and following cART aiming to understand their correlation with peripheral T-cell homeostasis/activation and gut function/microbial translocation, recognized markers of clinical outcome and response to treatment.
**Methods:** HIV-infected individuals were studied prior to (T0) and following 12 months of cART (T12). T-cell activation (HLA-DR+CD38+), maturation (CCR7, CD45RA), exhaustion (PD1) as well as subpopulations with a Tscm (CCR7+CD45RA+CD27+CD95+), Th17 (CCR6+CD161+) and gut-homing phenotype (CD4+CCR9+β7+) were studied. Microbial translocation (EndocAb, LPS) and gut function (CDh1, IFABP) markers were measured in plasma. Wilcoxon test and Spearman's correlation were used for statistics.
**Results:** 20 subjects were enrolled. In the course of cART, the decrease in activated CD4+ and CD8+ T-cells paralleled the contraction of exhausted naïve and CD8+ effector memory subsets. A reduction in gut-homing CD4+ and a rise in Th17 was also observed, yet no significant variation was seen in terms of microbial translocation and gut function. The CD4+ Tscm pool also decreased under treatment, while the CD8+ Tscm did not.
CD4+ Tscm positively correlated with Th17 (r=0.6, p=0.01) at T0 and with gut-homing CD4+ (r=0.5, p=0.02) at T12.
Prior to cART, the CD8+ Tscm compartment correlated with activated CD4+ (r=0.6, p=0.006) and Th17 (r=0.6, p=0.007).
**Conclusions:** The kinetics of CD4+ and CD8+ Tscm may differ in the first 12 months of cART, with a rapid contraction of CD4+ Tscm and stable CD8+ Tscm. Th17 subsets correlated with both Tscm CD4+ and Tscm CD8+ cells, suggesting a homeostatic link between these compartments prior to cART. Similarly, the reduction of peripheral CD4+ Tscm and gut-homing CD4+ as well as their positive correlation in the course of treatment, may imply migration of both populations to the gut. Finally, the positive correlation between CD8+ Tscm and activated CD4+ in cART-naïve subjects put forward a role of the former in the pathogenesis of HIV disease.

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## CORRELATES AND BIOMARKERS OF CLINICAL PROGRESSION OF HIV INFECTION

### TUPEA007

### RESIDUAL INFLAMMATION AND ENDOTHELIAL ACTIVATION IN HIV-1 VERTICALLY INFECTED CHILDREN WITH FULLY SUPPRESSED VIRAL REPLICATION ON ANTIRETROVIRAL THERAPY

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**Background:** Chronic inflammation, which may predispose to cardiovascular disease (CVD), persists in HIV-1 infected adults despite sustained viral suppression (SVS). There are limited data on chronic inflammation and endothelial activation (EA) in vertically infected children. This study examines markers of inflammation and EA in virally suppressed, vertically HIV infected children enrolled in the Canadian EPIC4 cohort.
**Methods:** A cross-sectional analysis of pro-inflammatory cytokines (PIC) and measures of EA was performed in HIV-1 infected children with a viral load (VL) <40 copies/mL while on combination antiretroviral therapy (cART). Selected PIC and biomarkers of EA were measured using commercially available cytometric bead array assay (Beckton-Dickinson) and ELISA (R&D Systems).
**Results:** 43 vertically HIV-infected children were included with median age 13 years (range 3-19); 23/43 (54%) were girls. Twenty-two subjects had initiated cART in the first year of life with subsequent SVS. The remaining 21 subjects had either initiated cART after one year of age (n=6), or had at least one regimen failure before achieving SVS (n=15). PIC levels (IL-12p70, TNF, IL-10, IL-6, IL-1β, IL-8) were low (< 20pg/mL) in all but one patient. Median (inter-quartile range) levels of the biomarkers of EA markers angiopoietin-1 (Ang-1), angiopoietin-2 (Ang-2), soluble intercellular adhesion molecule-1 (sICAM-1), soluble vascular endothelial growth factor receptor-1 (sVEGFR-1), and soluble endoglin (sEng) were 16 (12-34), 0.47 (0.31-3.5), 84 (67-97), 0.53 (0.25-2.7), and 17.3 (14.4-24.0) ng/mL, respectively. Biomarkers of EA were correlated: Ang-2 with sVEGFR-1, Ang-2 with sEng, sVEGFR-1 with sEng (ρ>0.5, p< 0.01 for all comparisons). Using principal component analysis to partition the cohort into quartiles based on EA biomarkers, patients in the highest quartile with respect to EA also had higher levels of PIC: TNF (p=0.005), IL-12p70 (p=0.001), and IL-10 (p=0.008).
**Conclusions:** Despite SVS with cART, persistent systemic EA is detected in a proportion of vertically HIV-infected children and is associated with low-level chronic inflammation. Further studies are needed to determine the significance of these findings with respect to future CVD risk and beyond.

## VIRAL DETERMINANTS OF PATHOGENESIS

### TUPEA008

### IDENTIFICATION OF FUNCTIONAL HIV-1 C ENVELOPE VARIANTS CONTAINING A PHENYLALANINE RESIDUE AT POSITION 309 OF THE HYPERVARIABLE REGION 3 IN MATCHED PERIPHERAL BLOOD AND CEREBROSPINAL FLUID

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**Background:** The hypervariable 3 region loop of the HIV envelope protein (Env) is the major determinant of coreceptor-usage. Approximately 99% of sequenced HIV-1 subtype C (HIV-1C) viruses have a conserved isoleucine residue at position 309 (HXB2 numbering) of Env. Viruses with leucine at Env position 309 are rare, and have enhanced infectivity of monocyte-derive macrophages. HIV-1C with phenylalanine at Env position 309 (F309) is extremely infrequent (< 1% of all sequences in the Los Alamos National Laboratory Database) and only one such virus has been functionally characterized and shown to use CCR5 for entry. HIV-1C envelope variants with F309 have not been observed in the central nervous system or reported to use CXCR4.
**Methods:** Using bulk PCR amplification, cloning and Sanger sequencing, we identified HIV-1C Env variants with the F309 residue in peripheral blood and the cerebrospinal fluid (CSF) of one treatment-naive South African study participant diagnosed with Cryptococcal meningitis. Bioinformatic analyses confirm these variants to be HIV-1C. We produced single-round reporter viruses, pseudo-typed with patient-derived envelopes bearing the F309 residue and tested their ability to enter cells expressing CCR5 or CXCR4.
**Results:** We identified 9 (4 peripheral blood-derived and 5 CSF-derived) unique HIV-1C variants bearing the Env F309 residue. Variants with other residues at Env position 309 were not detected. An analysis of 783 CSF-derived HIV-1C envelopes from the Los Alamos National Laboratory database revealed that 99.87%, 0.13% and 0% of the sequences had an isoleucine, leucine and phenylalanine, respectively, at position 309. We successfully produced two pseudoviruses with the Env F309 residue; one of the pseudoviruses was capable of infecting NP-2 cells expressing CCR5 but not CXCR4, whereas the other infected NP-2 cells expressing either CCR5 or CXCR4.
**Conclusions:** We confirm the presence of Env variants bearing the F309 residue in the CSF and peripheral blood of a study participant, and show variants with this residue are capable of using the CCR5 or CXCR4 coreceptor for cell-entry. Our results improve on the understanding of HIV-1C entry into target cells. Further studies are underway to understand other functions of these variants.

## CENTRAL NERVOUS SYSTEM

### TUPEA009

### THE IMPACT OF CONFOUNDING FACTORS ON DETERMINATION OF BIOMARKERS FOR NEUROCOGNITIVE DISORDERS IN HIV-INFECTED SUBJECTS

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**Background:** Despite the introduction of HAART, mild forms of HIV-Associated Neurocognitive Disorders (HAND) remain highly prevalent in people living with HIV. Many potential biomarkers have been studied, but none of them proved to be useful in clinical practice so far. The aim of this study was to looking for neurodegenerative and inflammatory biomarkers in CSF of HIV-infected patients to determine a HAND biomarkers profile. We also analyzed the impact of medication, age, time of infection and other clinical and epidemiological factors on the measurement of biomarkers studied.
**Methods:** 70 HIV+ and 7 HIV- subjects were submitted to a neuropsychological assessment and classified using the Frascati criteria in: ANI, MND, HAD, HIV+ and HIV-controls groups (HIVc). Levels of neurodegenerative markers Tau, p-Tau, Aβ40, Aβ42 and inflammatory marker sCD14 were measured in CSF samples of the subjects. Age, nadir CD4+, CD4+ and CD8+, time of infection, viral load and Efavirenz use were also evaluated regarding to the biomarkers profile.
**Results:** Statistically different levels of Aβ40 between the HIV+c and HIV-c and between HIV+c and HAND groups were founded. p-Tau levels were different between HIV+c and MND, but not within HAND groups. sCD14 levels were significantly different between HIV-c and HIV+c and also between HIV+c and HAND groups. Among patients with HAND, it was possible to distinguish HAD from the milder forms. In comparison with clinical and demographic data, sCD14 showed a linear correlation with age and time of infection. Also, the average age of the groups with more severe disorders was higher.
**Conclusions:** sCD14 was very useful to discriminate HAND from no HAND groups, as well as in the differential diagnostic between HAD and milder forms of HAND. Nevertheless, the linear correlation of sCD14 with age and time of infection make it not valuable in clinical practice alone since older individuals are more likely to develop HAND. On the other hand, Aβ40 showed no correlation with clinical/demographic data and also presented statistically difference between individuals with and without HAND. Despite limitations, results so far suggest that Aβ40 and sCD14 together can be helpful on the diagnosis of HAND.

## TUPEA010

### ASSOCIATION BETWEEN DUAL TIM-3 AND PD-1 EXPRESSING CD4 T CELLS AND NEUROCOGNITIVE FUNCTION IN CHRONIC STABLE HIV DISEASE

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**Background:** HIV-associated neurocognitive disorders (HAND) is hypothesized to be a result of neuro-inflammation in the CNS; however the role of T-cells subsets remains ill-defined.
**Methods:** We utilized multi-parametric flow-cytometry to investigate markers of T-cell activation (CD38+HLA-DR+), senescence (CD57+CD28-), and exhaustion (TIM-3, PD-1 and TIGIT inhibitory receptors) in cryopreserved peripheral blood mononuclear cells in 33 HIV-infected individuals on stable cART with available age- and education-adjusted neuropsychological tests sensitive to HIV, including tests of psychomotor speed, working memory, executive function, and memory. Spearman correlations were conducted to examine relationships between T-cell phenotypes, global or sub-domain-specific standardized z-scores as measure of NP performance (NPZ) and to previously obtained monocyte counts for classical (CD14+CD16-), intermediate (CD14+CD16+) and non-classical (CD14+/lowCD16++) subpopulations.
**Results:** Participants were mostly male (84%) with a median age 52 years, and median current CD4 T-cell count of 479 cells/mm$^3$. Detectable viral load (>50 copies/ml) was noted in 12% of the participants. Results revealed a significant relationship between higher TIM-3+ CD4 T cell frequencies and executive function (rho=-0.371, *p*=0.034) and a trend for working memory NPZ (rho=-0.292, *p*=0.099). Additionally, double positive PD-1+TIM-3+ CD4 T cells correlated significantly with executive function (rho=-0.476, *p*=0.005), working memory (rho=-0.407, *p*=0.019), global NPZ (rho=-0.318, *p*=0.093). Higher percentages of PD-1+TIM-3+ CD4 T-cells were associated with lower immune function as measured by CD4 T-cell counts (rho=-0.545, *p*=0.001). PD-1+TIM-3+ CD4 T-cells correlated with both senescent (CD4+ CD57+CD28-;rho=0.462, *p*=0.008 and CD8+CD57+CD28-;rho=0.458, *p*=0.008) and with CD8 T-cell activation (CD8+HLA-DR+;rho=0.578, *p*=0.002). Moreover, higher PD-1+TIM-3+ CD4 T-cell frequencies were associated with higher counts of CD16+ monocyte subpopulations [intermediate (CD14+CD16+);rho=0.454, *p*=0.020 and non-classical (CD14+/lowCD16++); rho=0.534, *p*=0.005]. Even with the exclusion of individuals with detectable viremia, all these findings remained significant. No associations with NPZ were observed for TIGIT or senescent markers on CD4 T-cells or with any of these surface markers on CD8 T-cells.
**Conclusions:** Dual expression of immune exhaustion markers, PD-1 and TIM-3, on CD4 T-cells is associated with lower neurocognitive performance. CD4 T-cell exhaustion and increase CD16+ monocytes may be interrelated processes involved in HAND. Novel immunotherapy targeting PD-1 and TIM-3 may be considered as treatment modalities for HAND.

## HIV-1 CONTROLLERS (INCLUDING POST-TREATMENT CONTROLLERS)

## TUPEA011

### POST-TREATMENT CONTROL OR TREATED CONTROLLERS? THE IMPACT OF ART ON TIME TO VIRAL REBOUND IN RECENT SEROCONVERTERS

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**Background:** In certain individuals who commence antiretroviral therapy (ART) in primary HIV infection (PHI) stopping treatment is not followed by viral rebound, but rather a period of aviraemia or 'viral remission'. However transient viraemic control may also occur in untreated PHI before the plasma viral load (VL) becomes detectable. Characterising these untreated patients is critical to understanding the additional impact of ART on 'time to rebound' in treatment interruption (TI) studies. We studied patients randomised to initiate immediate or deferred ART at the time of PHI to compare factors impacting time to viraemia.
**Methods:** Participants with PHI in the SPARTAC RCT were randomised to 0, 12 or 48 weeks of ART. We defined 'control' as plasma VL< 400 copies/mL for at least 16 weeks after randomisation if untreated, or from TI if ART was initiated. For treated and untreated controllers we compared Total HIV-1 DNA, HLA Class I alleles, HIV-1-specific CD8 T cell responses, and markers of T cell activation (CD25, CD38, CD69, HLA-DR) and exhaustion (PD-1, Tim-3, Lag-3).
**Results:** 35 of 361 (9.7%) trial participants fulfilled the definition of control; 10/128 (7.8%) were untreated, 9/114 (7.9%) received ≤12 weeks ART (mean 11.9 weeks) and 16/119 (13.4%) >12 weeks of ART (mean 47.7 weeks). At baseline, controllers, both treated and untreated, had lower HIV-1 DNA levels (p< 0.001), lower VLs (p< 0.001) and higher CD4 counts (p=0.002) than non-controllers.
When comparing untreated and treated controllers, those who had received >12 weeks ART had significantly higher pre-therapy VL than untreated controllers (3.8 vs 2.3 log copies/ml; p=0.003). However, there were no differences with respect to demography, viral subtype, HLA allele frequency, baseline HIV-1-specific T cell immunity (median [range]: 1 [0,9], 1 [0,4] Gag OLP responses for >12 and 0 weeks ART, respectively), CD4 count, HIV-1 DNA, immune exhaustion or activation marker expression. Importantly, the duration of viral control did not vary between treatment groups (p=0.218).
**Conclusions:** These data shows that some untreated patients during PHI experience prolonged viral control, and suggest that the impact of early ART on post-treatment control may be overestimated if the dynamics of viral rebound in untreated individuals are not considered.

## TUPEA012

### IDENTIFICATION OF DIFFERENT HIV-CONTROLLER PHENOTYPES: LOOKING FOR THE RIGHT MODEL OF FUNCTIONAL CURE

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**Background:** HIV-controllers are a rare group of patients that maintain HIV viremia at low levels without antiretroviral treatment. However, some HIV-controllers differ in terms of clinical outcomes, CD4 T-cell counts and immune activation. Our aim was to find unbiased and premature markers that enable to discern HIV-controller phenotypes regarding clinical progression (CD4+ T-cell drop).
**Methods:** We have analysed the prevalence of IFNL4 ss469415590 polymorphism and HLA-B haplotypes among 100 HIV-controllers (< 2000 HIV-RNA copies/ml in absence of antiretroviral treatment for at least 1 year) Long Term Non-Progressors (CD4+T cells counts>500 for more than 7 years since HIV-infection) (LTNP-C) and 40 HIV-controllers non Long Term Non-Progressors (nonLTNP-C) coming from the Spanish AIDS Research Network HIV-Controllers Cohort (ECRIS). We validated these results in 914 white HIV-controllers (52.8% LTNP-C) included in a genome wide association study (GWAS) from the International HIV-controller Study. The IFNL4 polymorphism included in the GWAS was rs12980275 which is in strong linkage disequilibrium with ss469415590 ($r^2$=0.901). In a subgroup of patients HIV-specific T-cell response and soluble cytokines array were analysed.
**Results:** After adjusting for sex, age at HIV-diagnosis, favorable IFNL4 genotype, HLA-B27, HLA-B57, HLA-B35 and HLA-B08 haplotypes, the factors independently associated with LTNP-C in both cohorts were favorable IFNL4 genotype (as a risk factor, OR=0.401 (0.171-0.942) *p*=0.036 and OR=0.643 (0.439-0.944) *p*=0.024, respectively) and HLAB-57 (as a protective factor, OR=3.056 (1.029-9.069) *p*=0.044 and; OR=1.909 (1.243-2.931) *p*=0.003, respectively). In the ECRIS cohort it was also associated with sex, while in the International HIV-controller Study there was an association with age at HIV diagnosis. LTNP-C showed lower plasma IP-10, IL-8 and TRAIL levels (*p*= 0.019, 0.053 and 0.039, respectively) and higher IL1RA, IFNγ and IL13 (*p*= 0.02, 0.016 and 0.05, respectively). Moreover, LTNP-C exhibited higher IL2+CD8+CD57- and IFNγ+CD8+CD57- HIV-specific T-cells (*p*=0.002 and 0.041, respectively) than nonLTNP-C.
**Conclusions:** We have unveiled genetic markers able to segregate HIV-controllers into LTNP-C and nonLTNP-C. This finding makes possible to identify those controllers at risk of a CD4 T cell drop and opens the door to potential therapeutical interventions. These results encourage reconsidering LTNP-C as a right model of HIV functional cure.

## TUPEA013

### HIV VIROLOGICAL CONTROLLERS IN AN AFRICAN COHORT

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**Background:** The existence of HIV virological controllers shows that it is possible for the human immune system to robustly control HIV. It is hoped that a better understanding of the mechanisms of control will assist efforts to develop a functional cure. This report describes HIV controllers in an African cohort, examining their features in relation to those of their better-described counterparts in the United States and Europe.

**Methods:** Virological controllers were identified from a prospective seroincidence cohort of young women aged 21-33 years in KwaZulu Natal, South Africa (n = 245), and classified as either viraemic or elite controllers (ECs) according to their plasma viral load levels in the absence of antiretroviral therapy (ART). The clinical features, $CD4^+$ T cell and viral load trends of the elite controllers were examined in more detail, and their genetic features, including HLA and KIR haplotypes, were sequenced and analysed in relation to existing published data.

**Results:** In the cohort there were 12 viraemic (5%) and 2 elite controllers (1%). The first EC presented post-seroconversion with multiple recurrent infections of the skin, genitourinary tract and tonsils, suggestive of some degree of immune dysfunction. The second displayed no features of HIV-associated morbidity. Both ECs showed an initial viral load spike (33 500 and 741 copies/mL respectively) but shortly thereafter achieved and maintained undetectable plasma viral loads and stable $CD4^+$ counts (>500 cells/mm$^3$, average 900 cells/mm$^3$) for more than 6 years without ART. Both ECs were found to have HLA haplotypes well-described as being associated with slow progression, most notably HLA-B81* and HLA-B57* respectively. Furthermore, the first EC was found to have a KIR2DL2 subtype, also associated with slow progression.

**Conclusions:** While the overall subtype-C infected African cohort differed substantially from subtype-B infected cohorts in other parts of the world, the features of the African elite controllers correspond with those of their international counterparts, in terms of epidemiology, host genetics and associated immunological features. This suggests that progress in HIV controller science may be directly applicable in certain underresearched populations.

## HOST CELLULAR FACTORS AND LATENCY

## TUPEA014

### IDENTIFICATION OF A NEW HOST CELL HDAC COMPLEX THAT CONTROLS HIV LATENCY THROUGH DIRECT BINDING TO THE CORE PROMOTER

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**Background:** Strategies to achieve a cure for HIV/AIDS will require the therapeutic control of HIV latency whether they involve "shock and kill" activation or "deep latency" repression of HIV transcription. We have previously reported that the HIV core promoter is selectively recognized by cellular pre-initiation complexes of HIV (PICH) via its TATA box and adjacent sequences of HIV essential for Tat *trans*-activation (TASHET) element. To uncover molecular targets to therapeutically control latency we have now identified protein components of PICH and characterized their impact on HIV transcription.

**Methods:** DNA affinity chromatography coupled to mass spectrometry analysis was used to identify host cell PICH proteins that recognize TASHET. Co-immunoprecipitation was used to determine interacting partners of identified PICH proteins. Biophysical techniques including fluorescence anisotropy and circular dichroism (CD) were used to demonstrate direct PICH-DNA interactions. Chromatin immunoprecipitation (ChIP) assays were used to test PICH interactions with the HIV promoter *in cellulo*. siRNA were employed to test the impact of PICH proteins on HIV transcription *in cellulo*. HIV reporter viruses were used to test the requirement of PICH-binding sequences of TASHET for reactivation by latency-reversing agents (LRA) in infected T cells.

**Results:** We identified two new proteins in nuclear extracts from uninfected PBMC, HeLa cells, and Jurkat T cells that specifically bind to the HIV core promoter *in vitro*. These proteins, termed PICH-130 and PICH-37, interact tightly in cells as demonstrated by co-immunoprecipitation. PICH-130 and PICH-37 form part of a HDAC complex of previously unknown function that contains HDAC1 and HDAC2. Strikingly, PICH-37 directly and selectively binds the TATA and adjacent CTGC motifs within TASHET *in vitro*. PICH-37 binds the HIV promoter in infected HeLa and Jurkat cells. siRNA-mediated knock-down of PICH-130 and PICH-37 strongly reduced both Tat-activated and basal HIV transcription *in cellulo*. Intriguingly, mutation of the PICH-37-binding CTGC motifs in reporter virus completely blocked reactivation of HIV by pharmacological LRA that act via the Tat/TAR/7SK axis in T cells, but only partially reduced reactivation by HDAC inhibitors.

**Conclusions:** PICH-37 and PICH-130 form part of a novel HDAC complex that controls HIV latency and is essential for reactivation via the Tat/TAR/7SK pathway.

## HOST GENETICS OF HIV SUSCEPTIBILITY AND DISEASE PROGRESSION

## TUPEA015

### THE INFLUENCE OF HLA-TYPES ON DISEASE PROGRESSION AMONG HIV-2 INFECTED PATIENTS IN GUINEA-BISSAU

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**Background:** HIV-2 is endemic to West Africa and is characterized by lower transmissibility due to lower viral load and HIV-2 infected persons usually have a slower progression to AIDS. The mechanisms behind the slower disease progression are unknown, but host genetics play an important part for progression during HIV-1 infection. Thus, several studies have found a relationship between HLA profile and time to onset of AIDS in HIV-1 infected persons while research in the relationship between HLA profile and HIV-2 disease progression is scarce.

The aim of this study was to identify specific HLA-types that influence disease progression of HIV-2 infection.

**Methods:** High resolution HLA Class I and II typing of the HLA-A, HLA-B, HLA-C, HLA-DRB1, HLA-DPB1 and HLA-DQB1 loci was performed on DNA from 54 antiretroviral treatment naïve HIV-2 infected patients from the Bissau HIV Cohort, Guinea-Bissau. HIV typing was confirmed using INNO-LIA HIV-1/2 Score. The effect of HLA type on HIV-2 RNA and CD4 cell count was assessed by multivariable linear regression analysis adjusted for sex and age.

**Results:** The included patients were a mix of seven of the most populous ethnic groups in Bissau, among these mainly Fula and Balanta. Twelve men (22%) and 42 women (78%) were included, mean age was 45 years (range 22-70) and median CD4 cell count was 361 cells/µL (IQR 167-633).

The HLA alleles DPB1*02:01 and DRB1*04:05 were associated with higher CD4 cell count at HIV diagnosis (mean difference, carriers - non-carriers: 210 cells/µL, 95%CI [37, 385] and 297 cells/µL, 95%CI [73, 521], respectively), indicating that these alleles have a protective role against HIV-2 disease progression.

DRB1*11:01 was associated with higher HIV-2 RNA level (mean difference, carriers - non-carriers: 0.75 log10 HIV-2 RNA copies, 95%CI [0.014, 1.482]), suggesting that this allele may be positively correlated with HIV-2 disease progression.

**Conclusions:** In preliminary analysis, HLA-DPB1*02:01 and HLA-DRB1*04:05 possibly protect against HIV-2 disease progression, while HLA-DRB1*11:01 may cause a faster disease progression of HIV-2. An additional 450 samples from HIV-2 infected individuals in Bissau have been collected and will be HLA typed.

## TUPEA016

### MANNOSE BINDING LECTIN GENETIC POLYMORPHISM: ABSENCE OF AN ASSOCIATION WITH HIV-1 VERTICAL TRANSMISSION IN A PMTCT CROSS-SECTIONAL SURVEY IN ZIMBABWE

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**Background:** Mannose Binding Lectin (MBL) is a normal liver-derived protein, which is a key component of the innate immune system. In the absence of serum/plasma measurements, *MBL2* genotypes can be used as proxy. MBL deficiency leads to defective opsonisation activities of the innate immune system and increased susceptibility to several infections including HIV-1. The main objective of this study was to determine prevalence of MBL deficiency, as estimated by *MBL2* haplotypes among Zimbabwean mothers and their children aged 9-18 months old as well as its association with risk of HIV-1 infection and vertical transmission from their HIV positive mothers.
**Methods:** We assessed *MBL2* polymorphisms in Zimbabwean HIV positive mothers and their children enrolled in a national PMTCT survey carried out in 2012. MBL deficiency was defined as presence of *A/O* and *O/O* genotypes in the mothers and their children. We extracted DNA from two dried blood spots for 622 mothers and infant pairs using the Gene Extract and Amp kit reagents. *MBL2* Exon 1 genotypes and promoter region alleles *-221(X/Y)* and *-550(H/L)* SNP were detected by pyrosequencing. Differences in distribution frequency between HIV infected and uninfected children, of the *MBL2* genotypes, promoter region variants and *MBL2* haplotypes, were determined by Chi square test or Fisher's exact tests.
**Results:** The median age (IQR) of the mothers was 30 (26 - 34) years and the children mean age (IQR) was 12 (11-15) months old at the time of enrolment. All 622 mothers were HIV-1 infected, 574 babies were HIV negative and 48 were HIV-1 positive babies. *MBL2* normal structural allele *A* and variants *B (codon 5A>G)*, *C (codon 57 A>G)* and promoter region SNPs *-550(H/L)* and *-221(X/Y)* were detected. Prevalence of MBL deficiency was 34% among the mothers and 32% among the children. We found no association between maternal *MBL2* deficiency and HIV-1 transmission to their children. We found no difference in the distribution of HIV-1 infected and uninfected children between the *MBL2* genotypes of the mothers and those of the children.
**Conclusions:** MBL deficiency was not associated with HIV-1 infection among the children nor was it associated with HIV-1 vertical transmission in this study population.

## MUCOSAL TRANSMISSION

## TUPEA017

### SERUM ESTRADIOL LEVEL AND SUBJECT AGE ARE ASSOCIATED WITH *EX VIVO* HIV INFECTION IN HUMAN CERVICAL TISSUE

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**Background:** There is an ongoing debate whether sex hormone levels at the time of HIV exposure impact mucosal infection. Macaque studies demonstrated that pretreatment with estrogen protects against vaginal SIV transmission. The current study evaluated if serum and tissue estradiol (E2) and progesterone (P4) levels predict the *ex vivo* susceptibility of cervical tissue to HIV and the tissue level of HIV infection.
**Methods:** Cervical tissues and peripheral blood samples were derived from 44 subjects undergoing routine hysterectomies (31 not using hormonal contraception/treatment and 13 using hormonal contraception/treatment). Ecto- and endocervical explants (3x3mm) were challenged with 500 or 50 $TCID_{50}$ of HIV-$1_{Bal}$ vs. 3TC control for ~18h. Following washout, tissues were cultured for 14d. Infection was monitored in tissue supernatants by HIV *gag* qRT-PCR. SOFT and CUM endpoint analyses were performed. E2 and P4 concentrations were measured in serum and tissues (RIA). Log-normal generalized mixed models were used for statistical analysis.
**Results:** Higher serum E2 level was associated with lower cervical tissue susceptibility to HIV infection (decreased number of productively infected tissue replicates; p< 0.01) and lower HIV infection level (p< 0.01 for SOFT and CUM). A 100 pg/ml increase in serum E2 corresponded to a decrease in the odds of infection and level of infection by 48% and ≥49%, respectively. No E2
(LLOQ < 10 pg/ml) was detected in tissues. P4 (LLOQ < 0.2 ng/ml) was detected only in two tissue samples from subjects with serum P4 levels ≥9 ng/ml. Age was associated with tissue susceptibility to infection and infection level (p< 0.05). With each year increase in age, the odds of infection increased by 36% and infection level increased by 13-14%. Race, serum P4, serum P4/E2 ratios, endometrial histology (secretory or proliferative endometrium), and cervical histology (inflammation, metaplasia) did not predict cervical tissue susceptibility to infection or infection level. All results were adjusted for the use of hormonal contraception/treatment.
**Conclusions:** Agreeing with the protective effect of estrogen treatment against vaginal SIV transmission, our data suggest a protective role of E2 against HIV transmission in cervical mucosa. The data also suggest that increased age may increase susceptibility to mucosal HIV infection.

## TUPEA018

### HIV-1 CONSTRUCTS DO NOT TRIGGER MACROPHAGE INFLAMMATORY PROTEIN - 3 ALPHA SECRETION IN HUMAN GENITAL EPITHELIAL CELL MODELS

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**Background:** Macrophage inflammatory protein - 3 alpha (MIP-3α), a chemoattractant for plasmacytoid dendritic cells, was shown in a landmark study to accumulate in the endocervix in the first three days post exposure to SIV-containing inoculum and prior to recruitment of SIV RNA+ CD4+ T cells in macaques. We hypothesized that MIP-3α secretion is upregulated in the endocervical sub compartment of humans following HIV exposure, when the viral envelope proteins interact with the apical epithelial surface. We assessed patterns of its secretion, changes in which could potentially alter the risk of HIV infection in women.
**Methods:** We studied patterns of constitutive secretion of MIP-3α in various female genital tract (FGT) models including cell lines; primary epithelial cells (EPEC), cervicovaginal fluid (CVF) and endocervical explant tissue (EET). We then stimulated HEC-1A cells grown on permeable supports and EET with various envelope and non envelope HIV-1 preparations including s*oluble gp140 trimeric protein*, *gp120 virus-like particles (VLPs)*, *R5 tropic whole virus, HIV-1 strain BaL,* and NL4-3 deleted in Env. We also induced with Toll like receptor ligands (TLRs) 1 through 6. We analysed MIP-3α levels in supernatants by a sandwich quantitative ELISA and Luminex immunoassays.
**Results:** We showed that MIP-3α is secreted constitutively at high levels throughout the studied FGT sites with the levels being highest in the endocervical tissue models at 941pg/mL (SD±221) and 715pg/ml (SD±84.7) in the EET and EPEC, respectively. However, levels were not further elevated after stimulation with either various HIV-1 preparations or TLR ligands in the EET. Contrary to EET, HEC-1A cells responded differentially to TLR ligands while similarly to EET they did not respond to various viral preparations - using various viral concentrations and stimulating from both poles of the membrane did not have any further impact on triggering MIP-3α levels.
**Conclusions:** Given that levels of expression of MIP-3α by human FGT epithelial models (unlike in macaques) are not influenced by HIV-1 preparations, its role in modulating initial events of HIV-1 infection remains to be defined. It is hence important to consider the extent of the mediatory role of MIP-3α in the association between HIV exposure and the outcome of infection.

## TUPEA019

### DYNAMICS OF HIV AND ITS TARGET CELLS IN THE FEMALE REPRODUCTIVE TRACK DURING ACUTE INFECTION AND AFTER THERAPY

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**Background:** The landmark HIV prevention trials network study 052 demonstrated that HIV transmission in discordant couples can be dramatically reduced by treating the infected individual with antiretroviral therapy (ART). However, the cellular and virological events in the female reproductive tract (FRT) during ART that results in such a decrease in transmission rates were not studied and remain unknown.

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**Methods:** To asses HIV infection in the female reproductive tract and the dynamics of HIV target and effector migration/exit we used humanized BLT mice. Mice were infected with transmitted/founder viruses. Virus replication in plasma,cervicovaginal secretions and vagina was monitored using viral load analysis. For suppression of HIV replication in vivo BLT mice were treated with raltegravir, emtricitabine and tenofovir.

**Results:** Our results demonstrate that the entire FRT of BLT mice is reconstituted with human $CD4^+$ cells that are shed into cervicovaginal secretions (CVS). A high percentage of the $CD4^+$ T cells in the FRT and CVS express CCR5 and are potential HIV target cells. Infection with HIV causes an increase in the numbers of $CD4^+$ and $CD8^+$ T cells in CVS. Furthermore, during infection HIV is present in CVS. Finally, we evaluated the effect of ART on HIV levels in the FRT and CVS. Our results demonstrate that ART can efficiently suppress cell-free HIV-RNA in CVS, despite residual levels of HIV-RNA+ cells in both the FRT and CVS.

**Conclusions:** Our results demonstrating parallel reductions in the percentage of $CD4^+$ T cells in the FRT and CVS of BLT mice indicate that the cell populations are closely linked throughout the course of infection. These striking similarities between the dynamics of T cells present in CVS and the FRT after HIV infection suggest that cells from CVS could be potentially used as a reasonable surrogate reflecting some of the changes occurring in the FRT. The finding showing the absence of cell-free HIV in CVS during ART, but the continued presence of infected cells producing HIV-RNA could have potentially important implications for HIV prevention and eradication strategies. In summary, our results demonstrate that the FRT represents an important HIV reservoir during therapy.

# VERTICAL TRANSMISSION

## TUPEA020

### EARLY REVERSE TRANSCRIPTS, AN EARLY INDICATOR OF CART EFFICACY IN NEONATAL HIV

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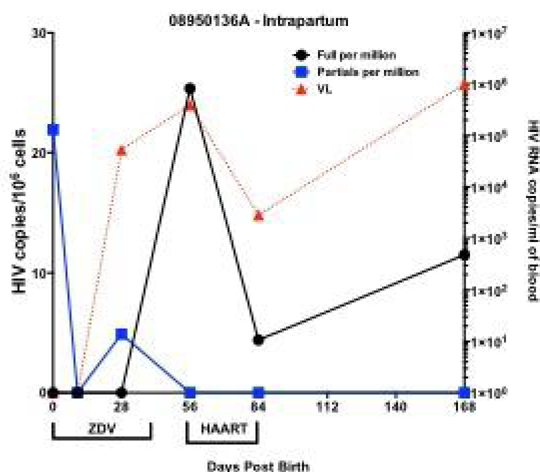
**Background:** Little is known about the early dynamics of HIV cDNA species in recently exposed, and infected infants while receiving ARV prophylaxis.

**Methods:** In a sub set of high-risk, non-breast fed infants enrolled in a perinatal trial comparing different antiretroviral regimens for post-exposure prophylaxis to prevent HIV mother-to-child transmission, we serially analyzed kinetics of partially and completely reverse transcribed HIV cDNA in the first 24-weeks of life (< 48hr, 2 , 4 , 8 , 12 , and 24 weeks of age) in 10 infants in whom timing of infection was known (*in-utero* or intrapartum based on presence of HIV DNA /RNA by PCR at birth). HIV-1 cDNA species were quantified using digital droplet PCR in genomic DNA isolated from peripheral blood mononuclear cells.




[Figure 1]

**Results:** We studied 10 HIV infected infants (3 in-utero, 7 intrapartum). Overall, the results show that proviral HIV cDNA levels generally correlate with HIV RNA levels in response to ARV (range 0.5-20 cp per million cells). Preliminary data of HIV kinetics suggests that early detection of incomplete reverse transcripts prior to detection of HIV cDNA or RNA in some intrapartum neonatal HIV infections and their appearance in response to ARV provides new insights into early infection. For example, in Figure 1, this intrapartum infected infant tested negative for HIV DNA but had detectable incomplete reverse transcripts. While ZDV treatment partially blocked reverse transcription, it was not sufficient as reverse transcripts reappeared leading to productive infection.

**Conclusions:** Immediate cART as prophylaxis markedly decreases the quantity of proviral reservoirs and alters early viral kinetics in infected neonatal cells. However, the rapid rescue of reverse transcription, an event not common in adult naïve T cells, suggests HIV replication in neonates is more efficient. Consequently, detection of early reverse transcripts in addition to proviral DNA provides new insights into the dynamics of very early infection.

# ACUTE AND EARLY INFECTION

## TUPEA021

### ACUTE HIV-1 INFECTION IN MEN WHO HAVE SEX WITH MEN ATTENDING THE CLINIC FOR VOLUNTARY COUNSELING AND TESTING SERVICES IN BANGKOK, THAILAND

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**Background:** Detection of acute HIV-1 infection (AHI) is critical for early HIV treatment and prevention. We identified AHI in men who have sex with men (MSM), and in transgender women (TGW), attending the Silom Community Clinic (SCC) for voluntary counseling and testing (VCT) services in Bangkok, Thailand and assessed associated risk factors.

**Methods:** The SCC offers voluntary HIV-1 counseling and rapid serologic testing for MSM and TGW. We used an HIV-1 rapid test (Determine) to screen for HIV. Positive results were confirmed by two additional rapid tests (DoubleCheck, SD Bioline). Persons with negative rapid tests were screened for AHI using a pooled HIV-1 nucleic acid amplification test (NAAT, Aptima). AHI in those with a NAAT-positive result was confirmed by viral load (Roche) or fourth-generation enzyme immunoassay (EIA, Abbott). AHI was defined as being anti-HIV-1 antibody negative with the presence of HIV-1 RNA or p24 antigen. We describe behavioral and laboratory factors for persons with AHI.

**Results:** From June 2009 to November 2015, 9,167 persons made 21,773 visits to VCT services. Overall, 8,747/9,167 (95%) assented to HIV testing; the prevalence of HIV-1 infection by rapid tests was 32.8% (95% CI 31.9-33.8). Among 5,874 persons with negative rapid tests, we performed NAAT testing in 5,806 (98.8%), and detected AHI in 68 (1.1%, 95% CI 0.9-1.4). Persons with AHI had a median age of 27 years (IQR 23-32), and 62% were aged 17-29 years. Characteristics of persons with AHI included recent unprotected anal sex (n=63, 93%), history of a sexually transmitted disease (n=28, 41%), hepatitis immunity (hepatitis B surface antibody, n=27, 40%, hepatitis A, n=16, 24%), and any AHI symptoms (n=19, 28%). However, 72% of persons with AHI did not report any AHI symptoms.

**Conclusions:** We detected AHI in 1.1% of MSM and TGW who initially tested HIV negative at SCC VCT. Incorporating screening for HIV-1 NAAT and p24 in persons reporting risk exposure or factors linked with AHI leads to detection of acute infection as resources allow, and increases the possibility of early treatment and prevention of HIV transmission.

## TUPEA022

### COMPARISON OF HIV EPITOPES AVAILABILITY BETWEEN ACUTE AND CHRONIC INFECTION

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**Background:** Recent studies indicate that there is selection bias for transmission of viral polymorphisms associated with higher viral fitness. Furthermore, after transmission and before a specific immune response is mounted in the recipient, the virus undergoes a number of reversions which allow an increase in their replicative capacity. These aspects, and others, affect the viral population characteristic of early acute infection.
**Methods:** 70single *Gag*-gene amplifications were obtained by limiting-dilution RT-PCR from plasma samples of 5 ARV-naïve patients with early acute infection (< 60days, 29 days average) and 5 ARV-naive patients with a year of infection (7amplicons per patient). Sanger sequencing and NGS SMRT technology (Pacific Biosciences) were implemented to sequence the amplicons. HLA-I typing was performed by SSOP-PCR method. The chromatograms were analyzed with Sequencher 4.10. Epitopes prediction was performed with NetMHC CBS prediction server for the 19 HLA-A and -B alleles most prevalent in our population with peptide lengths from 8 to 14 Aa. Citotoxic response prediction was performed by using the IEDB Analysis Resource.
**Results:** After implementing epitope prediction analysis, we identified a total number of 110 viral epitopes present in two or more acute or chronic patients. 63.6% (n=70) of them were present only in acute infection (prevalent acute epitopes) while 36.4% (n=40) were present only in chronic infection (prevalent chronic epítopes). Within p24, the difference was even more dramatic with 85.7% (18/21) being acute epitopes. This is consistent with progressive viral adaptation to immune response in time and further supported by the fact that citotoxic response prediction shows that acute epítopes are more likely to generate immune response than chronic epítopes. Interestingly, only 15.2% of acute epítopes match the population-level consensus sequence of the virus. Deep NGS indicates that there is not significant variability in epitopes sequences.
**Conclusions:** Our results indicate that certain non-consensus viral residues might be transmitted more frequently than consensus-residues when located in immulogicaly relevant positions (epítopes).This observation might be relevant to the rationale behind development of an effective vaccine.

## TUPEA023

### IDENTIFICATION OF A CYTOKINE EXPRESSION PATTERN SPECIFIC FOR THE FIRST MONTH OF HIV INFECTION

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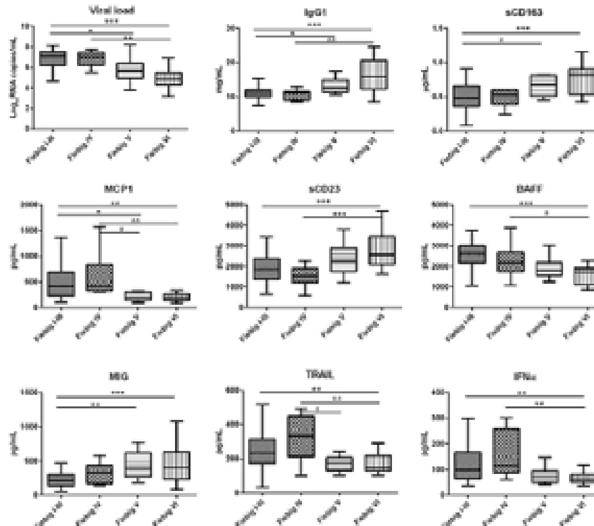
**Background:** Acute HIV infection (AHI) is the initial phase of infection where HIV is actively replicating but seroconversion has not yet occurred. AHI is characterized in most of the cases by a transient non-specific febrile illness. Massive inflammatory response and intestinal damage are also developed at this stage. The main objective of this study was to identify patterns of immune biomarkers which differentiate the early Fiebig stages of AHI during HIV subtype C infection.
**Methods:** A fever based screening was used to identify AHI in subjects presenting at the Manhiça District Hospital (MDH) in Southern Mozambique. AHI was defined as HIV serology rapid test negative or indeterminate and HIV RNA positive. Plasma levels of inflammation, immune response and intestinal damage biomarkers were determined by luminex or ELISA techniques. Western blots were performed to complete Fiebig staging. Identification of patterns of biomarkers by Fiebig stage was assessed by multivariate analysis using a Random Forest model.
**Results:** Of 3111 eligible individuals with a negative or indeterminate HIV rapid test result, 85 (2.7%) had positive HIV RNA viral load and were enrolled as AHI of which n=45, 8, 12 and 20 were classified as Fiebig I-III, IV, V and VI stages respectively. Median age of the AHI group was 24 years (IQR 10.0), and 58.8 % of the subjects were female. Group comparison showed Fiebig-differentiated patterns of expression of cytokines (Figure 1). Random Forest analysis revealed that sCD163, BAFF, MIG and MCP 1 distinguished between Fiebig I-IV and Fiebig V-VI with a sensitivity of 75% and a specificity of 87%.
**Conclusions:** Identification of plasma biomarker expression pattern specific for early HIV is a useful tool for understanding early HIV pathogenesis and may be used to identify those individuals whose intestinal damage and chronic immune activation could be potentially prevented by therapeutic interventions at this stage.




*[Figure 1. Expression of selected biomarkers varies by Fiebig stage. Of a total of 49 biomarkers assayed, n=8 were selected for significant differences between Fiebig groups by Kruskall-Wallis range comparison (Bonferroni adjusted p-value <0.01). Comparison of individual difference in expression level by Fiebig group was performed by Dunn's comparison test adjusted by Bonferroni for multiple comparisons as shown above. Significance is indicated as *** if p<0.001, ** if p<0.01 and * if p<0.05. Box as IQR, middle line as median, whiskers as Tukey values (1.5 IQR)]*

## PRECLINICAL PROPHYLACTIC DRUG DEVELOPMENT

## TUPEA025

### HIV PRE-EXPOSURE PROPHYLAXIS FOR WOMEN AND INFANTS PREVENTS VAGINAL AND ORAL HIV TRANSMISSION IN A PRE-CLINICAL MODEL OF HIV INFECTION

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**Background:** Approximately 1.5 million HIV-positive women become pregnant annually. Without treatment, up to 45% will transmit HIV to their infants, primarily through breastfeeding. These numbers indicate the fact that HIV acquisition is a major health concern for women and children globally. They also highlight the urgent need for novel approaches to prevent HIV acquisition that are safe, effective and convenient to use by women and children in places where they are most needed.
**Methods:** The efficacy of oral EFdA PrEP to prevent vaginal and oral HIV infection *in vivo* was evaluated by exposing EFdA-treated and untreated BLT humanized mice vaginally ($HIV\text{-}1_{JR\text{-}CSF}$, $HIV\text{-}1_{CH040}$ and $HIV\text{-}1_{RHPA}$) or orally ($HIV\text{-}1_{JR\text{-}CSF}$, $HIV\text{-}1_{CH4419}$ and $HIV\text{-}1_{THRO}$) to three consecutive high dose HIV challenges. EFdA was administered via oral gavage (10 mg/kg) once daily for eight days and mice were challenged with HIV 3-4 h after the second, fourth and sixth EFdA doses. A power analysis was performed to determine experimental group sizes needed to achieve ~90% power.
**Results:** Using highly relevant transmitted-founder (T/F) viruses, we evaluated the ability of a novel and potent reverse transcriptase inhibitor, EFdA, to prevent vaginal and oral HIV transmission using a pre-clinical model of HIV infection. Our results show strong HIV inhibitory activity in serum, cervicovaginal secretions and saliva obtained from animals after a single oral dose of EFdA demonstrating efficient drug penetrance into highly relevant mucosal sites. Importantly, a single daily oral dose of EFdA resulted in efficient prevention of vaginal and oral HIV transmission after multiple high-dose exposures to T/F viruses, offering in vivo pre-clinical data supporting the use of EFdA as a pre-exposure prophylaxis (PrEP) agent to prevent HIV infection in both women and infants.
**Conclusions:** Significant gender inequalities limit the ability of women to access and exercise HIV prevention options resulting in earlier acquisition of infection, higher transmission rates and increased mother-to-child transmission of HIV. Our results demonstrating excellent efficacy in preventing both vaginal and oral HIV transmission together with EFdA's relatively low toxicity and high potency against drug-resistant HIV strains support its use in both women and infants, the two of the most vulnerable populations at risk for acquiring HIV.

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## MYCOBACTERIA AND TUBERCULOSIS

### TUPEA026

### EVALUATION OF THE LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) ASSAY FOR THE DETECTION OF M. TUBERCULOSIS (TB) IN SYMPTOMATIC TUBERCULOSIS PATIENTS ATTENDING A PRIMARY HEALTHCARE CLINIC (PHC) IN DURBAN

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**Background:** Tuberculosis remains a major global health problem. Delays in diagnosis and treatment initiation result in prolonged transmission and increased infectiousness of the patients.
KwaZulu-Natal is the epicenter of the HIV epidemic with approximately 70% of people co-infected with HIV and TB. Undiagnosed TB is a major contributor to the high mortality in HIV infected patients. We evaluated and compared the diagnostic accuracy of the TB LAMP assay, smear microscopy and GeneXpert to the gold standard of TB culture in TB suspects.
**Methods:** Two sputum specimens (one for routine GeneXpert test and the second for TB LAMP, smear microscopy and TB culture) were collected after obtaining informed consent from eligible TB suspects attending a Primary Health Care Clinic. DNA was extracted from raw sputum and amplified according to the manufactures instructions (Eiken Chemical Company, Japan) using the Loopamp™ Extraction and Detection Kits. The remaining sputum were examined using florescent microscopy (Auramine O staining) and cultured into the BACTEC MGIT 960 system. Culture positive samples were confirmed with Ziehl-Neelson staining and a Line-probe assay.
**Results:** A total of 695 samples were collected for the TB LAMP test. The TB LAMP test has a slightly lower sensitivity (72.6% vs 76.0% p = 0.4487) and significantly higher specificity (96.8% vs 92.9%, p = 0.0242) than the GeneXpert assay when compared to all Culture Positive samples, respectively. In Smear-positive-Culture-positive samples, the sensitivity of TB LAMP versus culture compared to GeneXpert versus culture was 95.9% and 97.6% respectively. Within Smear-negative-Culture-positive samples, the sensitivity of the TB LAMP was lower (55.9%) than that of GeneXpert (66.1% p = 0.2654). The lower sensitivity could be due to the shorter assay time to diagnosis (1 vs 2 hours) and less sample input volume (60μl vs 1000μl).
**Conclusions:** The TB LAMP test has ease of operability and the findings of this study suggest similar sensitivity to the GeneXpert. This test has the potential to be implemented as a point-of-care test in the Primary Health Care setting and can contribute to reduction in primary defaulters, reduction of treatment waiting times, reduction of TB prevalence and improve health outcomes in HIV positive patients.

## OTHER PATHOGENS (INCLUDING HPV, SYPHILIS AND CRYPTOCOCCUS)

### TUPEA027

### HIGH-RISK HUMAN PAPILLOMAVIRUS TYPES IN HIV-INFECTED AND UNINFECTED YOUNG WOMEN IN A CROSS-SECTIONAL STUDY IN KWAZULU NATAL, SOUTH AFRICA: IMPLICATIONS FOR VACCINATION

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**Background:** High-risk human papillomavirus (hr-HPV) infections and low-grade squamous intraepithelial lesions occur frequently in young women. The available vaccines cater for up to nine hr-HPV genotypes, which may not necessarily be the most predominant types in every region worldwide. The objective of this study was to describe the hr-HPV genotypes present among HIV uninfected and infected young women in rural areas of the KwaZulu-Natal province of South Africa.
**Methods:** Cervico-vaginal lavages were obtained from sexually active young women recruited from high schools in KwaZulu-Natal (n=1223). HPV detection and genotyping were done by polymerase chain reaction using GP5+/GP6+ primers and enzyme immunoassay. HIV testing was done on serum using SD Bioline 1/2/3.0 rapid test kit and confirmatory testing with a Sensa HIV 1/2/0 Tri-line test.
**Results:** Of the 1223 cervico-vaginal lavages, 301 (25%) were positive for hr-HPV. The HPV prevalence was higher in HIV infected (32.2%, 95 CI, 0.27-0.38) than in HIV uninfected women (22.5%%, 95% CI, 0.21-0.26), p=0.001. Similarly, multiple infections were more common in HIV infected (59.3%) than in HIV uninfected women (53.5%), p=NS. The nine most predominant genotypes in descending order were HPV types 16 (n=99, 22.1%), type 51 (n=58, 12.9%), type 18 (n=56, 12.5%), type 35 (n=50, 11.1%), type 33 (n=47, 10.5%), type 56 (n=42, 9.4%), type 45
(n=34, 7.6%), type 52 (n=32, 7.1%), type 59 (n=31, 6.9%). Specifically, HPV 35, 51, 56 and 59 (40.5%) were amongst the most prevalent in the schools of KwaZulu-Natal yet not covered by the nine-valent vaccine.
**Conclusions:** Four of the most predominant high-risk HPV types in this region are not covered by the new nine-valent HPV vaccine. HPV infections in young women often clear spontaneously and the lesions regress however, this study was done in young women of an HIV high-endemic area and further research must be done to determine the clinical significance.

## ANIMAL MODELS OF TRANSMISSION, DISEASE RESISTANCE AND PROGRESSION

### TUPEA028

### TRANSCRIPTOME ANALYSIS OF DIFFERENTIALLY EXPRESSED ISG SUBSETS IN ACUTE AND CHRONIC PHASE SUGGESTS INFG PARTICIPATE IN SUSTAINING PERSISTENT ISG EXPRESSION IN PATHOGENIC SIV INFECTION IN CYNOMOLGUS MACAQUES

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**Background:** Interferons play a major role in controlling viral infections. They are key elements in innate immunity and are needed for efficient adaptive immunity. Nevertheless, they are associated with inflammation/immune suppression/chronic-immune-activation. Persistent up-regulation of IFN-regulated-genes (ISGs) is a molecular signature of chronic-immune-activation and progression in SIV-infected non-human-primates.
IFNs/IFN-receptors interactions induce ISGs by targeting specific sequences upstream promoters (GAS, ISRE) through signal transduction (phosphorylation of latent transcription factors belonging to STAT family mediated by Janus kinases). STAT dimers directly activate ISGs containing GAS-sequences. The association of STATs with interferon regulatory factor (IRF9) activates genes by interacting with ISRE-sequences.
Our aim was to better understand the respective involvement of type I and type II IFNs in ISG induction in both acute and chronic infection, and respective functional enrichments of genes regulated by GAS or ISRE or both (GAS+ISRE) in specific biological functions.
**Methods:** Six macaques were exposed to SIVmac251 intravenously and were subjected longitudinally to Agilent Rh DNA array, in different tissues (PBMCs, lymph-nodes, rectum) focusing on acute and chronic infection. In addition, virus loads and IFN expression were monitored. We analyzed differential expression of IFNs and 1,638 ISGs that were splitted into three distinct groups, GAS-, ISRE- and GAS/ISRE-regulated-ISGs.
**Results:** Increased IFNα,b-expression was detected in lymphoid tissues during acute infection but was barely detectable during the chronic stage. In contrast, IFNg production was detected during both phases. Among 297 differentially up-regulated ISGs, 72 displayed ISRE-, 113 GAS- and 112 both ISRE/GAS-sequence(s) within 5,000bp upstream promoter. The induction of ISGs was higher in acute than in chronic phase. ISRE/GAS-ISGs were more induced than ISRE and GAS genes. Some were induced in acute or chronic or both phases (MX1,ISG15,OAS1,IRF9). ISRE+GAS ISGs were over-represented in inflammation and anti-viral canonical functions than were GAS-ISGs or ISRE-ISGs.
**Conclusions:** These results suggest that, in acute phase, both type I and type II IFNs sustain ISG expression. In the chronic phase, the absence of detectable IFN I (a,b,l) induction combined with persistent IFNg and IRF9 over-expression suggests that up-regulation of ISGs may be mainly supported by type II IFN which is produced by activated NK and T cells.

## TUPEA029

### PNS INFLAMMATION DURING ACUTE SIV

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**Background:** Peripheral neuropathy continues to be a frequent and challenging neurologic complication of HIV infection despite antiretroviral therapy. Relatively little is known about peripheral nervous system damage during early stages of HIV infection, a time when interventions aimed at preventing nerve injury could prove most beneficial.
**Methods:** We used a well-established SIV/macaque model of HIV peripheral neuropathy to examine molecular and morphologic alterations occurring within the peripheral nervous system of 6 SIV-infected macaques during acute infection 7 days post-inoculation; 8 uninfected macaques served as controls. Comparisons were performed using nonparametric approaches corrected for multiple comparisons. A combination of mRNA, protein, and immunohistochemical analyses of the lumbar dorsal root ganglia (DRG) were performed to measure alterations in cell-specific immune activation and oxidative stress responses.
**Results:** Analyses of mRNA expression by Nanostring and qRT-PCR demonstrated significant upregulation of genes involved in Type I IFN signaling and the early antiviral response in the DRG including IRF7, Mx1, CCL8, CXCL10, and CXCL11. In addition, cellular immune activation of macrophages, represented by increased CD68 mRNA ($P < 0.001$; Mann-Whitney) and glial cell activation, represented by GFAP mRNA levels ($P = 0.0047$; Mann-Whitney) also were detected. To assess induction of an oxidative stress response we measured expression of SOD2, which encodes the mitochondrial SOD isoform, and found significant upregulation of RNA and protein with SIV infection ($P < 0.001$, Mann-Whitney). SOD2 immunostaining demonstrated an increase in the intensity of SOD2 localized primarily to the satellite glial cells and interstitial macrophages.
**Conclusions:** These findings suggest that immune activation and oxidative stress responses in the dorsal root ganglia precede and contribute to early sensory nerve injury, thereby setting the stage for progressive neuronal dysfunction. A comprehensive understanding of the early pathogenic mechanisms leading to HIV-induced peripheral nervous system damage may reveal novel neuroprotective approaches for HIV patients.

## NOVEL ANIMAL/VIRUS MODELS FOR VACCINE, CURE RESEARCH, AND INHIBITOR DEVELOPMENT

## TUPEA030

### DISTRIBUTION AND LOCALIZATION OF FLUORESCENTLY TAGGED PASSIVELY TRANSFERRED ANTIBODIES: DEFINING ANTIBODY DYNAMICS AND LOCALIZATION *IN VIVO*

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**Background:** In the world of host-HIV interactions, non-neutralizing and broadly neutralizing antibodies have been illustrated to provide protective responses against lentiviral infections. Antibody passive transfer studies in non-human primates have demonstrated protection against HIV infection; however, the mechanism of this protection at mucosal sites is unknown. Through various approaches, we have determined antibody half-life, along with where these antibodies localize and how they enter into mucosal tissues.
**Methods:** To define antibody dynamics and localization *in vivo*, rhesus macaques were intravenously administered fluorescently tagged non-specific Gamunex-C, HIV-specific VRC01, VRC01-LS (kindly provided by John Mascola) or a combination of two of aforementioned antibodies. Additional macaques were also injected with fluorescently tagged Gamunex-C and human serum albumin. Following injection, serum, vaginal wecks, sequential vaginal biopsies, and whole necropsied vaginal tissues were collected at time points ranging from 24hours to 8 weeks. For each animal, antibody levels in serum and wecks were analyzed using fluorometric spectroscopy. Tissue fluorescent levels were measured with deconvolution microscopy.
**Results:** Antibodies were detectable in sera, wecks, and tissue as early as 24 hours and up to ~4 weeks. In all samples, antibodies reached a steady state between 1-2 weeks, however Gamunex-C persisted longer in sera than VRC01 or VRC01-LS. Antibodies, both non-specific and HIV-specific, were found to first appear in the vaginal lamina propria and move into the superficial layers through epithelial cell differentiation. Likewise, human serum albumin moved through the vaginal epithelium in a similar fashion.
**Conclusions:** Here, our data illustrate how antibodies can passively enter mucosal tissues after intravenous administration and reveal endogenous pathways of antibody distribution in mucosal squamous epithelia. Within the vaginal epithelium, we observe an apparent cell-based mechanism of antibody delivery where subsets of basal epithelial cells capture circulating passively transferred antibodies, migrate towards the surface, eventually delivering these antibodies to the lumen to interact with mucosal fluids.
Additionally, we illustrate the intra-epithelial movement of human serum albumin and antibody being synchronized, suggesting we are observing the kinetics and mechanism of transudation. These data prove essential for understanding and developing novel antibody-based preventions of HIV infection.

## DISEASE BURDEN: MORBIDITY / MORTALITY / LIFE EXPECTANCY

## TUPEB031

### GETTING THERE? LIFE EXPECTANCY BY HIV STATUS AND EDUCATION IN SWITZERLAND

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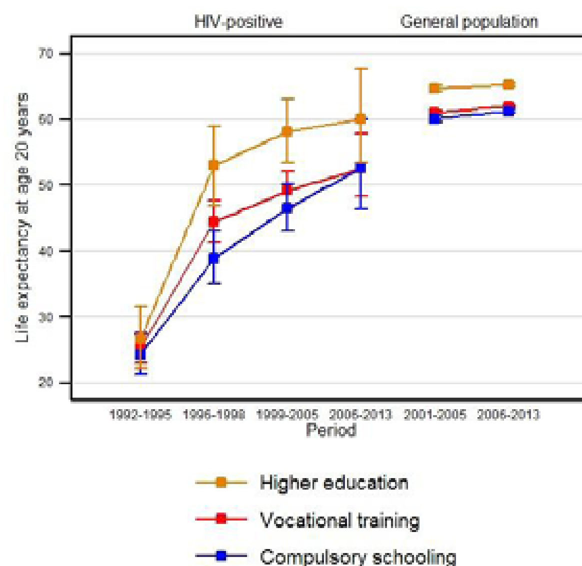
**Background:** The greater life expectancy among the highly educated compared to the less educated is well documented in many countries. We examined life expectancy by education in the Swiss HIV Cohort 1992 to 2013, and compared it with recent life expectancy by education in the general Swiss population.
**Methods:** We estimated remaining life expectancy at age 20 years using parametric survival models based on the Gompertz distribution. For each HIV-positive individual we drew a random sample of up to 100 people from the 2000 census, matched for age (year of birth), sex, and educational level (higher education, vocational training, compulsory education only). We then estimated life expectancy in the Swiss National Cohort, which links census to mortality records.




*[Figure 1. Additional life expectancy at age 20 years in the Swiss HIV Cohort and the general Swiss population by level of education]*

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## RETENTION IN CARE

### TUPEB046

#### FACTORS ASSOCIATED WITH LONG-TERM ANTIRETROVIRAL THERAPY RETENTION AMONG ADOLESCENTS IN TASO UGANDA: A RETROSPECTIVE STUDY

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**Background:** In many sub-Saharan Africa countries, HIV programs are organized around pediatric or adult care. This has important implications for retention of adolescents in HIV care programs especially as they transition from pediatric to adult care. Retention is important for positive clinical outcomes (e.g., viral load suppression and survival). The extent to which HIV-infected adolescents have been retained in care is not well understood. We examined retention and the factors associated with non-retention among HIV-positive adolescents in Uganda's The AIDS Support Organization (TASO) clinics. TASO provides facility- and community-based antiretroviral treatment (ART) care services.
**Methods:** Using a retrospective cohort analysis, we examined clinical data of HIV-positive adolescents aged 10-19 years who initiated ART at 6 TASO clinics between January 2006 and December 2011. We defined retention as the percentage of patients known to be on treatment 12, 24, 36 and 48 months after initiation of ART. Descriptive statistics and Cox proportional hazards regression models were used to determine levels of retention and factors associated with non-retention at 24 months following ART initiation.
**Results:** A total of 617 adolescents started ART between 2006 and 2011, with an overall retention rate following ART initiation of 70% over 48 months, of which 63% were females, 55% were aged 10-14 years, 75% had primary education, and 25% were sexually active. Retention was 90% at 12 months, 83% at 24 months, 76% at 36 months, and 70% at 48 months. Retention varied by duration of treatment, with higher retention observed for patients on longer duration of treatment. Non-retention was significantly associated with clinic-based (vs. community-based) ART delivery (AHR=2.58, 95%CI: 1.26-5.29 at 12 months); CD4 >100/mm$^3$ at ART initiation (AHR=1.38, 95%CI: 1.01-1.90 at 12 months); and older adolescent age (15-19 years) (AHR=1.88, 95%CI: 1.01-3.48 at 12 months).
**Conclusions:** We observed that community-based ART delivery and early initiation on ART improved retention in treatment. There is thus a need for early diagnosis of HIV infection and community-based approaches to reach and retain HIV+ adolescents on treatment, and identification of specific groups that are at high risk of dropping out for targeted care and support.

### TUPEB047

#### IMPACT OF RELIGIOSITY ON HIV/AIDS PATIENT RETENTION IN CARE AND ART ADHERENCE IN UGANDA: A CASE STUDY OF THE INFECTIOUS DISEASES INSTITUTE, IN KAMPALA, UGANDA

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**Background:** While implementation of multifaceted programs has led to substantial decline to HIV/AIDS rates, societal especially religiosity, though neglected; play an important role. Religiosity rarely attracts attention from funders and service providers, and its impact on HIV/AIDS programs is poorly understood. We aim to assess the impact of religious beliefs on the pattern of HIV service seeking behavior, at the Infectious Diseases Institute (IDI) clinic in Kampala, Uganda.
**Methods:** A cross-sectional study of 406 adult HIV patients and staff was conducted at IDI, in 2012. We used quantitative and qualitative methods of data collection. Specifically, patients were asked about their religious beliefs, divine healing and adherence to clinic appointments and antiretroviral drugs. We conducted 360 individual interviews that were stratified by religious affiliation, gender and age, and 4 focus group discussions (FGDS) for patients, and 10 key Informant interviews (KII) of selected IDI clinic staff. We used SPSS version 14 to analysis the quantitative data and thematic analysis to analyze the qualitative data.
**Results:** From 360 individual interviews, majority were Catholics 105(29.2%), then Anglicans 104 (28.9%), Pentecostals 90 (25.0%) while Muslims 48(13.3%) and Adventists 13(3.6%). Pentecostals 64(37.9%) were religiosity active and engaged in the practice of divine healing, followed by Catholics 45(26.6%), Anglicans 41(24.2%), Muslims 15 (8.9%) and Adventists 4(2.4%). Patients who engaged in divine healing reported lower rates of adherence to antiretroviral therapy (ART) and missed more clinic appointments in the prior three months (P-value < 0.001). Five themes emerged regarding religiosity including: Divine healing, Level of religiosity, benefits and risks of religiosity, and how to address religious beliefs.
**Conclusions:** There is an urgent need for HIV programs to recognize that belief in divine healing can affect ART adherence. In Uganda and similar settings, there is need to develop sensitization messages addressing religious beliefs, actively engaging religious leaders to support treatment programs. Further research is needed to elucidate the impact of religious beliefs on treatment outcomes in HIV programs.

### TUPEB048

#### RISK FACTORS FOR UNSTRUCTURED TREATMENT INTERRUPTIONS AND ASSOCIATION WITH SURVIVAL IN ART PROGRAMMES IN LOW-MIDDLE INCOME COUNTRIES

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**Background:** Treatment interruptions (TIs) to antiretroviral therapy (ART) are associated with increased risk of mortality and other adverse clinical outcomes. This study reports frequency and risk factors for unstructured TIs (uTIs) and association with survival in Médecins Sans Frontières ART programmes.
**Methods:** Programmatic data from 33 ART sites in 11 countries between 2003 and 2013 were analysed. Included variables were: gender, age, marital status, CD4 cell count and WHO stage at ART initiation. uTI was defined as a ≥ 90 day break from ART calculated from the day the previous prescription ran out until date of the next prescription. Factors predicting uTI were assessed with a conditional risk-set multiple failure time-to-event model. uTI predicting mortality was assessed using a Cox proportional hazards regression with a competing risks extension for lost to follow-up (LTFU).
**Results:** Of 40632 patients, 3386 (8.3%) died, 3453 (8.5%) were LTFU and median duration of follow-up was 1.61 years (IQR: 0.54-3.31). There were 14817 uTIs of ≥ 90 days with 10162 (25%) patients having more than one uTI. In the adjusted model male sex was associated with a lower rate of any uTI (aHR: 0.94, p< 0.01), and age of 20-59 was associated with a 13% reduction in the rate of TI compared to < 20 years of age (20-59 years aHR 0.87, p< 0.01). Preserved immune function was associated with a reduced rate of TI compared to CD4 cell count < 200 cells/μL (CD4 200-350 cells/μL aHR 0.89, p< 0.01; CD4 > 350 cells/μL aHR 0.87, p< 0.01), whereas advanced clinical disease was associated with increased rate (WHO stage 3 aHR 1.10, p< 0.01; WHO stage 4 aHR of 1.21, p< 0.01). There was no relationship between uTI and mortality after adjusting for disease status and considering LTFU as a competing risk.
**Conclusions:** uTIs were frequent and associated with younger age, female gender and more advanced HIV. uTI did not predict survival when lost to follow-up was considered a competing risk for this association. Further evaluation of predictors of uTI and the links between uTI and clinical outcomes are needed to design targeted interventions.

## TUPEB049

### HIGH LEVELS OF ONE-YEAR RETENTION IN CARE IN A UNIVERSAL TEST AND TREAT SETTING

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**Background:** Retention in care is critical to the success of universal test and treat strategies. We sought to characterize predictors and barriers to retention within a streamlined model of care in a population-based universal test and treat trial.
**Methods:** Retention in care at one year (attending a follow-up visit or evidence of HIV care at another site within 90 days of scheduled 12-month visit) was measured among HIV-infected adults who linked to care following a multi-disease community health campaign in the SEARCH trial in rural Uganda and Kenya (NCT01864603). Patients received a streamlined care package consisting of appointment reminders and quarterly visits with patient-centered care providing reduced waiting and overall visit duration. Predictors of not being retained were estimated using Cox proportional hazards modeling with death as a competing risk.
**Results:** Among 5,429 HIV-infected adults (age≥15) who linked to care, 1,801 (33.2%) were male and 5,293 (97.5%) were stable residents residing in the community for >6 months in the last year. Overall 5,048 (93.0%) were in care one year after their first post-health campaign visit with 88.2% at their original clinic and 4.8% at an alternative site. One-year retention was 95.3% in patients in continuous care, 95.4% among those re-engaging, and 87.3% in patients newly linking to HIV care. Retention did not differ between stable and mobile residents (93.1% vs 91.2%, p=0.4), gender (92.3% men retained vs 93.4%, p=0.17), or pre-ART CD4 above vs below country treatment initiation guidelines (92.4% vs 93.2%, p=0.3). Younger patients (age 15-24 HR 3.3[95% CI 2.5-4.3]; age 25-29 HR 2.1[1.6-2.7]) and those newly linking or re-engaging who took >30 days to link (HR 1.4[1.1-1.7]) were more likely to be out of care at one year. Of those not retained, 1/3 dropped out within 30 days.
**Conclusions:** In this universal test and treat program that utilizes a streamlined care model, 93% were retained in care at one year, including those with high CD4, men, and mobile residents. Those taking longer to link, linking to care for the first time, and young adults are at increased risk for dropping out of care with highest risk immediately after linkage.

## TUPEB050

### RETENTION OVERTIME AND REASONS FOR STOPPING LIFELONG ANTIRETROVIRAL THERAPY IN A GROUP OF CAMEROONIAN PREGNANT AND BREASTFEEDING HIV-POSITIVE WOMEN INITIATING "OPTION B+" IN THE SOUTH-WEST REGION

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**Background:** The uptake of lifelong antiretroviral therapy (ART) for HIV-positive pregnant and breastfeeding women has significantly increased with the introduction of the Prevention of Mother to Child Transmission Option B+. It is also expected to benefits the HIV-infected women, their exposed infants, uninfected male partners and the overall ART programme. However, these benefits hinges on adherence and long term retention in care which tends to vary with settings and overtime. We assess retention overtime and reasons for stopping lifelong ART in HIV-positive pregnant and breastfeeding women initiating option B+ in Cameroon.
**Methods:** We examined retention at 6 and 12 months after ART initiation between October 2013 and December 2014 in five health facilities in the Kumba Health District. During follow-up, women missing clinic appointments were traced by peer educators through phone calls and home visits. Tracing outcomes and reasons for stopping were documented.
**Results:** Overall, 268 women started option B+ during their current pregnancy or in breastfeeding, and 86(32.1%) appeared to have discontinued treatment during follow-up. Of these, 19(22.1%) were self-transferred to another ART clinic. For the remaining 67 clients, 2(3%) had died, 29(43.3%) were not traceable and 36(53.7%) had stopped treatment. The 247 women remaining in the analysis (excluding deaths and self-transferred), 13% discontinued treatment at or before 6months and cumulatively 21.1% at 12 months. Starting treatment in a small site with lone staff and younger age (< 25 years) were associated with treatment discontinuation.
The main reasons for stopping treatment were; denial of HIV status, stigma and discrimination in 19 cases (52.8%), religious reasons in 9 cases (25.0%), lack of transport for clinic visits in 4 cases (11.1%), and 4 women (11.1%) declined providing any reasons.
**Conclusions:** Retention on option B+ decreases overtime and varies with facilities with small sites with lone staff recording lower retention rates. Though same day initiation is necessary for the success of option B+, adequate preparation is necessary for treatment success. HIV status denial, stigma and discrimination and religious beliefs were top reasons for stopping treatment. Improved staffing and community interventions to track defaulters and reduce stigma and religious beliefs would improve retention.

## TUPEB051

### HIGH RATES OF LOSS TO FOLLOW-UP AMONG WOMEN ON OPTION B+ ATTENDING CARE IN URBAN KAMPALA, UGANDA

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**Background:** The successful rollout of option B+, life long treatment for HIV+ pregnant women in sub-Saharan Africa is currently challenged with poor retention in care. Early drop out of care may compromise the health of mothers. We sought to quantify the amount of lost to follow-up among women receiving option B+.
**Methods:** Data was collected from 5 Kampala Council City HIV clinics supported by the Infectious Diseases Institute, Uganda. We followed up HIV+ pregnant women on ART under the Option B+ strategy since its roll out in 2012. Lost to follow-up was defined as having not seen in care within three months at time database closure.
**Results:** A total of 23319 patients were registered in care, and 3138(13.5%) were women on option B+ strategy. The median age of the women was 25(IQR: 22,30) and median CD4 cell count at entry was 447 cells/µL(IQR:284,625). The proportion of HIV+ women on option B+ increased from 0.4% in 2012 to 20% in 2015. The median days spent in care among the women on option B+ reduced from 182 days in Jul-Dec2012 to very early drop out in Jan-Jun 2015 (0 days).

| Year | Period | Number | Option B+ Mothers, n (%) | CD4 cells/µL at entry median (IQR) | Proportion of LTFUP among overall patients n (%) | Proportion of LTFUP among Option B+ patients n(%) | Days retained in care among patients LTFUp median(IQR) |
|---|---|---|---|---|---|---|---|
| 2012 | Jan - Jun | 2890 | 12 (0.4) | 289 (144,327) | 1556 (54.2) | 3 (25.0) | 825 (328,1191) |
| 2012 | Jul - Dec | 2365 | 100 (4.2) | 557 (366,686) | 1381 (58.4) | 67 (67.0) | 182 (0, 678) |
| 2013 | Jan - Jun | 3064 | 509 (16.6) | 459 (306,638) | 1658 (54.1) | 326 (64.0) | 86 (0, 381) |
| 2013 | Jul - Dec | 4435 | 379 (8.6) | 426 (228,634) | 2284 (51.5) | 226 (59.6) | 85 (0,399) |
| 2014 | Jan - Jun | 3410 | 673 (19.7) | 454 (278,639) | 1835 (53.8) | 401 (59.6) | 59 (0,208) |
| 2014 | Jul - Dec | 3243 | 674 (20.8) | 449 (295,600) | 1705 (52.6) | 419 (62.2) | 31 (0,153) |
| 2015 | Jan - Jun | 3912 | 791 (20.2) | 435 (278,614) | 1705 (43.6) | 402 (50.8) | 0 (0,53) |
| Total | | 23319 | 3138 (13.5) | 447 (284,625) | 12314 (52.0) | 1844 (58.8) | 35 (0,184) |

*[Table 1]*

**Conclusions:** These alarmingly high rates of LTFUp are critical in the success of the Option B+ strategy and denote. There is need for immediate strategies to ensure retention in care.

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## TUPEB052

### PILOT STUDY TO RE-ENGAGE PATIENTS WHO DROPPED OUT OF ARV TREATMENT IN YUNNAN, CHINA

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**Background:** Since in 2004 the establishment of China National Free Antiretroviral Therapy (ART) program in Yunnan Province, almost 70,000 people infected with HIV have entered treatment around the province. But the rate of drop-out is almost 11%. Failure to engage in care is associated with poorer health outcomes and increases the risk of further transmission. Therefore, understanding reasons for dropping-out and finding methods to re-engage into care are needed.
**Description:** The pilot project involved four counties in Yunnan. National ART Database was reviewed to develop a list of patients dropping out of care between 2004 and 2015. The clinical staff at the ART clinics worked with local CDC, township health center staff, and peer-volunteers to make contact with these patients either through phone or by home-visits. For these who gave consent, in-person interviews were conducted to understand their experiences in treatment, and their reasons for dropping out. Following the interview, counseling was given to the patients to re-start ART.
**Lessons learned:** Out of 485 patients that were identified as lost-to-follow-up through the national database, staff was able to get in contact with 173 (35.7%). Out of these, 130 (75.1%) completed the interview. Among these, 53% were aware that low adherence or stop taking the medicine can lead to bad health outcomes. Over 62% of the subjects said side-effect of the ARV was a reason for them to drop out. Schedule too busy or migrant work (28.7%) and self-assessment of better health (24.3%) were the next biggest reasons for dropping-out. After counseling with the clinical staff, 73 people (56.2%) have re-started treatment.
**Conclusions/Next steps:** Using information from treatment database in combination with efforts by local health workers, patients who had been lost-to-follow-up can be re-engaged. Re-engagement could help getting a proportion of these patients back into care. However, if only relying on the local health system, almost two-thirds of the patients still cannot be contacted. The results suggest that ARV adherence counseling and support services must be strengthened. Also, strengthening the linkage between ARV sites nationally could not only improve re-engagement of patients, but also make retention in care more accessible to these who are migrant workers.

## TUPEB053

### CLINIC AND COMMUNITY BASED FACTORS INFLUENCING PATIENT DIS-ENGAGEMENT FROM HIV CARE AND TREATMENT IN ZAMBIA

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**Background:** As Zambia scales-up HIV care and treatment, more focus is being placed on understanding and supporting retention in HIV-care. Despite strong efforts, substantial numbers of people leave or disengage from HIV-care and systematic evidence to explain the phenomenon remains sparse. Nested within a larger study of HIV care and treatment outcomes, this qualitative research sought to explore such patient disengagement.
**Methods:** In-depth interviews were conducted with a random sample of 17 disengaged (no presentation at clinic for >=90 days since last scheduled visit or 180 days since any clinic visit) male and female adults from four provinces. Sixteen focus group discussions were additionally convened with lay and professional health workers. Audio transcripts were translated, transcribed and uploaded to Nvivo QSR™ for thematic analysis incorporating largely inductive coding.
**Results:** At the clinic level, discussed factors influencing patient disengagement included perceived negative attitudes of health workers, intensified clinic visits for patient 'defaulters', and frustration with clinic processes - specifically loss of test results/medical records and long waiting times. Relative lack of privacy due to clinic structures and procedures also contributed, as PLHIV feared 'involuntary disclosure'. Within the community level, participants narrated livelihood constraints and economic costs of accessing treatment including time and transport costs. Participants also described negative 'myths' about anti-retroviral drugs. A profound fear of stigma associated with HIV and and life-long treatment persists and continues to impact treatment decisions.
**Conclusions:** Patient decisions to disengage from care are influenced by factors emanating from both the clinic and community domains. To effectively support retention in care of PLHIV, strategies must be developed to address: i) clinic service processes that impact waiting times and privacy, ii) the financial and logistical burden which static clinic-based care models create for patients, and iii) the continued social impact of community attitudes on PLHIV. Specifically, processes to engage communities in developing localised strategies to counter myths and stigma relating to patient treatment are required.

## TUPEB054

### HIV TREATMENT PROTOCOLS AND PERCEPTIONS OF THE 'IDEAL' PATIENT: IMPLICATIONS FOR LONG-TERM ENGAGEMENT IN CARE

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**Background:** With growing numbers HIV-infected individuals needing to access care and treatment, strategies to strengthen long-term engagement in care are critical. Nested in a 4-province study of HIV care and treatment outcomes, we examined how Zambian patients' and healthcare workers' (HCW's) perceptions of care and care-practices are influencing this engagement.
**Methods:** In-depth interviews were conducted with a stratified random sample of 75 adults across five patient categories: engaged in-care, pregnant in-care, disengaged, facility transfer, friend/family of deceased patient. Sixteen focus group discussions were also convened with lay and professional HCW serving the same catchment areas. Audio transcripts were translated, transcribed and uploaded to Nvivo QSR™ for inductive analysis.
**Results:** Patients and HCW had strong shared understanding of what constitutes a 'good patient'. For HCWs 'good patients' were characterised by their respect for staff and adherence to 'the rules' of visit and medication schedules stipulated by clinical protocols. HIV-patients similarly described 'good patients' as those who 'obey HCW' and 'follow the rules'. Despite this, HIV-patients and HCW reported logistical (e.g. time/distance to clinic) and interpersonal factors (e.g. patient-HCW clashes) that undermined patients' capacity to meet such requirements. This included frequent clashes between protocol-driven visit-schedules and HIV-patients' familial, livelihood or work commitments. Inability or unwillingness to adhere to schedules often resulted in HCW characterising patients as 'troublesome' or 'rude' which, combined with other points of conflict, led to breakdowns in trust and communication.
**Conclusions:** Despite widespread recognition of HIV-patients' varied socio-cultural and economic backgrounds, HCW in Zambia remain remarkably rigid in their characterisation of 'good' or 'bad' HIV-patients based in part on adherence to protocol-driven rules. In an era of rapidly increasing patient numbers, static facility-based care combined with inflexible application of protocols that are associated with a normative or 'ideal' patient, are likely undermining rather than encouraging long-term engagement in care.

## TUPEB055

### RETENTION IN CARE AMONG HIV-INFECTED PREGNANT MOTHERS ON LIFELONG ANTIRETROVIRAL THERAPY (ART) IN UGANDA

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**Background:** In an endeavour to improve maternal health and survival, as well as reduce vertical transmission of HIV in Uganda, lifelong ART is provided to all HIV-infected pregnant mothers (Option B+) irrespective of CD4 count or clinical stage. However, retention in care among HIV-infected pregnant mothers is unknown but suspected to be low. We evaluated retention in care and explored reasons why mothers drop out of care.
**Methods:** We performed a retrospective cohort analysis of data abstracted from health facility records of 2,169 pregnant mothers who had enrolled on ART between January and March 2013 in a representative sample of 145 health facilities in all 24 districts in the central region of Uganda. Using survival analysis, we calculated retention in care at 6, 12 and 18 months post-ART. To explore reasons why mothers drop out of care, we performed 21 in-depth interviews (IDIs) with mothers who

dropped out, 21 IDIs with mothers who were retained in care and 29 focus group discussions (FGDs) with peer mothers and village health team (VHT) members.
**Results:** The overall median follow-up time after enrolment on Option B+ was 20.2 months (IQR 4.2-22.5). The proportion of mothers retained in care at 6, 12 and 18 months post-ART was 74.2%, 66.7% and 62.0%, respectively. Retention in care at each time point varied considerably by health facility level and was highest among mothers seen at hospitals and lowest among those seen at lower level facilities (p< 0.05). Mothers who dropped out of care expressed concerns about fear of disclosure of HIV status and resulting stigma; insufficient partner support; difficulty with transportation to clinics; by poor provider attitudes and stock outs of ARV drugs. In addition, VHT members and peer mothers complained about inadequate support to track mothers in the community.
**Conclusions:** Retention in HIV care in this population is moderate. Poor provider attitudes, high levels of stigma and discrimination in the community, stock-outs of ARV drugs and barriers to transportation to clinics are some of the factors that could undermine the program and need to be addressed.

## TUPEB056

### DESCRIBING POINT OF ENTRY INTO CARE AND LOST TO PROGRAM IN A COHORT OF HIV-POSITIVE PREGNANT WOMEN IN A LARGE URBAN CENTRE IN UGANDA

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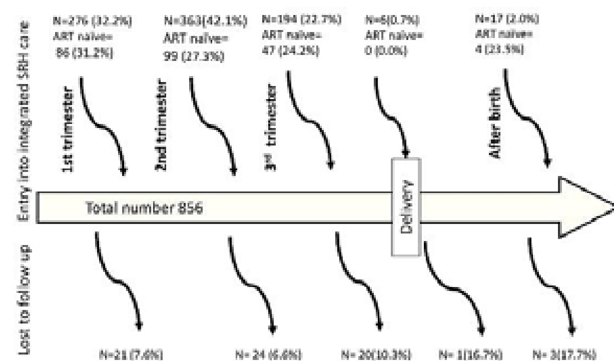
**Background:** Published data from sub-Saharan Africa suggest high rates of lost to follow-up (LTFU) among women on prevention of mother-to-child (PMTCT) programs. At the Infectious Diseases Institute (IDI, Kampala, Uganda), an HIV centre with over 8,000 HIV-positive individuals enrolled, we started an integrated PMTCT-HIV integrated clinic where pregnant women receive both PMTCT and HIV care including the recommended WHO regimen (currently TDF+FTC+EFV).
**Methods:** We included women who became pregnant between 1/Jan/2012 and 1/Aug/2014. We used proportions to describe the point of entry into the integrated clinic (1st, 2nd, 3rd trimester, delivery, post-partum) and the magnitude of LTP. We used logistic regression methods to determine the characteristics associated with LTP including age, WHO stage, parity, CD4 count, ART status (ART-naïve vs on ART), and time on ART. LTFU was defined as being out of care for at least 3 months.
**Results:** 856 women were included in the analysis; median age was 31 years (IQR: 26-35); median CD4 count was 433 cells/μL (IQR: 301-638), 236 (27.6%) were ART naïve, 329 (39.5%) had >2 pregnancies. The figure shows the point of entry into integrated care and the time of LTP by gestation age and the proportion who were ART naive. Only 36.4% (86/236) of the women were enrolled in the first trimester. Overall 69 (8.1%) were LTP. In the multivariate analysis older women (OR: 0.96 per year increase, CI: 0.91-0.99, P=0.042) and women on ART at the time of pregnancy (0.52, CI: 0.31-0.88, P=0.015) were more likely not to be LTP.
**Conclusions:** As a result of integrated PMTCT and HIV services we observed a low rate of LTP; however our data suggests the need for interventions to enhance linkage of HIV positive women for prompt ART initiation and for increased retention in care of young and ART naïve women.



*[Point of entry into integrated care and the time of LTP by gestation age]*

## TUPEB057

### INVESTIGATING ASSOCIATIONS BETWEEN USE OF CHEMSEX DRUGS AND HIV CLINIC ATTENDANCE AMONG GAY AND BISEXUAL MEN IN THE UK

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**Background:** The benefits of HIV treatment are only realised when people are aware of their HIV status and engaged in care. There are limited data on the association between engagement in HIV care and use of "chemsex" drugs among gay and bisexual men in the UK. We investigated this as part of the REACH project.
**Methods:** We conducted a cross-sectional survey among patients attending seven HIV clinics in London (May 2014-August 2015). We recruited regular attenders (RA: all appointments attended in past year), irregular attenders (IA: 1+ appointments missed in past year) and non-attenders (NA: attended in past year after absence of 1+year). The sample was stratified to over-represent IA and NA. We selected men who identified as gay or bisexual.
We examined the association between socio-demographic, economic and HIV-related factors and use of crystal methamphetamine (crystal meth), gamma-butyrolactone (GBL) and mephedrone. We used binary logistic regression to examine the association between use of chemsex drugs and HIV clinic attendance, adjusting for associated variables.
**Results:** Gay and bisexual men represented 58.0% (570/983) of the sample (median age=45 years; 76.8% white; 59.0% RA, 26.7% IA, 14.4% NA). At survey completion, 87.5% were on ART and 19.5% had a detectable VL (>50 copies/ml). In the past year, 22.8% reported using crystal meth; 23.7% GBL; and 31.4% mephedrone.
Using crystal meth was associated with a detectable viral load (27.8% vs 17.2%), GBL with being younger (mean age=40.4 vs 46.7 years) and more recently diagnosed (mean=9.3 vs 12.2 years), and mephedrone with being younger (39.7 vs 47.7 years), more recently diagnosed (9.0 vs 12.7 years) and ART naïve (14.5% vs 6.0%), (all p< .01).
Men were significantly more likely (p< .05) to be IAs than RAs if they had used crystal meth (33.1% vs 17.6%; aOR=1.93 [95%CI: 1.13-3.29], p=.024) or GBL (32.4% vs 19.4%; aOR=1.82 [1.41-2.33], p=.001) but not mephedrone (37.2% vs 27.9%; aOR=1.73 [0.97-3.11], p=.06). Use of chemsex drugs was not significantly more likely among NAs than RAs.
**Conclusions:** Use of chemsex drugs is associated with irregular clinic attendance. This should be considered when developing interventions to improve engagement in HIV care among gay and bisexual men.

## TUPEB058

### RISK OF CLINICAL PROGRESSION AMONG PATIENTS RE-ENTERING IN CARE AFTER BEING LOST

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**Background:** A non negligible proportion of patients with HIV may re-engage in care after being lost at different steps of the cascade of care. We evaluated in the Icona cohort the risk of clinical progression of patients re-entering in care.
**Methods:** Persons enrolled in 1997-2014 were included. Patients were considered lost to care if they had no clinical visit for at least one year. CD4-cell count and HIVRNA before and after the gap in care (GIC) were evaluated by paired t-test or by McNemar's test. A Poisson regression analysis was used to investigate the association between having a gap in care and the risk of clinical events (AIDS, serious non-AIDS events (malignancies, severe infections, ESKD, cardiovascular events, ESLD) hospitalization or death).
**Results:** 2,708 (21.8%) out of 12,429 patients were lost to care; the incidence rate ranged from 12.3 in 1998 to < 1 per 100 PYFU in 2014. 433 patients (16.7%) re-entered the cohort after a mean gap in care of 2.8+/-2 years.
At last visit before GIC, median CD4 were 551+/-323 cells/uL while after re-entering care this value decreased to 444+/-359 (p< 0.001). The proportion of patients having CD4-cell count< 200 increased from 10.7% before to 25% after re-entering

in care (p< 0.001). An increase was observed in median HIVRNA (4,103 before vs 11,030 copies/mL after); also the proportion of patients with>100000 copies/mL doubled after re-entering in care (8.8% vs 15.2%, p=0.028).
Clinical events occurred in 100 patients (23%) within 6 months after re-entering in care: 9 (2%) died, 22 (5%) developed AIDS, 21 (5%) a serious non-AIDS event and 48 (11%) had an hospitalization. In a multivariable model adjusted for gender, risk factors, late presentation, HCV-coinfection and current CD4-cells count, patients with a GIC had an increased risk of clinical events (RR=2.36, 95%CI:2.06-2.71, p< 0.001).
**Conclusions:** Patients re-entering care after a gap of at least one year have an increased risk of presenting with a clinical event and viro-immunological deterioration and an increased potential for viral transmission linked to the increase in HIV viral load. HIV clinical cohorts data may contribute to the monitoring of HIV continue of care at national level.

## TUPEB059

### Lottery incentives to improve adherence to antiretroviral (ARV) drugs: Evidence from a randomized controlled trial in Uganda

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**Background:** Innovative approaches are needed to improve adherence to ARV medication in sub-Saharan Africa to maintain HIV patients' health and avoid drug resistance. The objective of our study is to evaluate whether small prizes allocated by a drawing conditional on timely clinic visits and high levels of pill-taking can increase ARV adherence.
**Methods:** We implemented a randomized trial beginning in March 2013 for 20 months among 155 HIV-positive men and women aged 19-78 in Kampala, Uganda who were randomized to 1 of 2 intervention groups or a control group. Prizes were awarded to participants in the first intervention group conditional on timely clinic visits; eligibility in the second group was based on high adherence measured by medical event monitoring system (MEMS) caps. Upon drawing a winning number with a chance of 1:6, participants were given a prize valued at about 6,000 Ugandan shillings (≈US $2). The control group was not eligible to participate in the prize drawings.
**Results:** MEMS-caps measured 20-month mean ARV adherence was 8.5 percentage points higher in the pooled intervention groups (82.7%, 95% CI, 79.2 - 86.2) than in the control (74.3%, 95% CI, 67.5 - 81.1), and the pooled intervention groups were more likely to maintain 90% or higher adherence (OR 2.3, 95% CI, 1.2 - 5.4) than in the control group. Assignment to the directly incentivized intervention group was associated with a higher likelihood of at least 90% adherence relative to the control group (OR 2.5) than the intervention group eligible based on timely clinic visits (OR 1.7), but this differential treatment impact was not statistically significant (p=0.16). In the directly incentivized treatment group, mean adherence improvements persist through six months post-intervention (11.6% higher than control, 95% CI, 1.0 - 22.3), indicating a sustained effect of the intervention.
**Conclusions:** The promising results that lottery incentives worth only approximately US $2 resulted in a sizeable increase in ARV adherence among adults in HIV care in Uganda deserve further research, in particular into the appropriate frequency of rewards and the prize amounts that optimally support high adherence while also being sustainable.

## TUPEB060

### 6-months treatment outcomes of patients initiating ART under the WHO Test & Treat approach

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**Background:** WHO recommends anti-retroviral therapy (ART) for all people living with HIV regardless of CD4 count, known as Test and Treat (T&T). However, T&T is feared to lead to inferior treatment outcomes in patients initiating ART at high CD4 counts, specifically in men. We report on early outcomes of one of the first T&T demonstration projects in the public health sector in Sub-Saharan Africa.
**Methods:** This is a prospective cohort of non-pregnant patients (aged ≥16 years) who initiated ART in 9 public health facilities in the rural Nhlangano health zone in Swaziland, from October 2014 to April 2015. Follow-up time was until the occurrence of an unfavourable treatment outcome (death/lost-to-follow), or censored at date of transfer-out and database closure (September 2015). Kaplan-Meier estimates described 6-months retention on ART rates, and Cox proportional hazard models assessed predictors of the unfavourable outcome while adjusting for baseline characteristics (gender, CD4 count, WHO stage, same-day treatment initiation, newly diagnosed/ known HIV+ case, body-mass index, baseline TB status).
**Results:** Of 625 patients initiated on ART, 427 (68.3%) were females, the median age was 33 (IQR 27-42) years and 302 (48.3%) were newly diagnosed with HIV. At ART initiation, 280 (44.8%) patients had a CD4 count ≤349; 159 (25.4%) between 350-499; 182 (29.1%) ≥500 and 4 (0.6%) had missing value. The overall crude six-month retention on ART was 86.8% and it was similar between women (87.0%) and men (86.2%) (p=0.74). Retention was higher in the CD4 strata 350-499 (89.2%) and CD4≥500 (90.0%) when compared to CD4≤349 (83.5%) (p=0.05). In multivariate analysis, there was not a difference in outcomes by gender (women: adjusted Hazard Ratio [aHR] 1.08, 95%CI 0.68-1.72). However, higher CD4 levels (CD4 350-499: aHR 0.75,95%CI 0.42-1.31; CD4≥500: aHR 0.71, 95%CI 0.40-1.24) showed a trend of decreased probability, and combined WHO stage III/IV (aHR 2.35, 95%CI 1.41-3.89) and same-day ART initiation (aHR 1.68, 95%CI 1.02-2.79) an increased probability of an unfavourable outcome.
**Conclusions:** Patients with high baseline CD4 counts and both gender had good early treatment outcomes when ART was started under the T&T approach. Program managers in similar settings should not fear to quickly adopt T&T.

## TUPEB061

### Re-initiation of antiretroviral therapy (ART) following treatment interruption among HIV-positive people who inject drugs (PWID)

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**Background:** HIV-positive people who inject drugs (PWID) often experience interruptions in antiretroviral therapy (ART), contributing to poor treatment outcomes among this population. ART re-initiation is critical to reducing HIV/AIDS-associated morbidity and mortality, and maximizing the preventive potential of HIV Treatment as Prevention (TasP) initiatives among PWID. We undertook this ethno-epidemiological study to explore individual, social, and structural influences on ART re-initiation among PWID in a setting with a community-wide TasP initiative (Vancouver, Canada).
**Methods:** Through a linkage between provincial pharmacy records and a prospective cohort comprised of HIV-positive people who use drugs, we recruited 39 participants who experienced ART interruptions (defined as ≥30 days without refilling an ART prescription) within the previous two years to participate in semi-structured qualitative interviews. We employed deductive and inductive methods of analysis to examine influences on ART re-initiation among a sub-sample of 24 PWID who had resumed treatment.
**Results:** While concerns regarding health-related impacts of ART interruptions (e.g., HIV disease progression) led some participants to re-initiate treatment, others resumed ART therapy as a result of efforts by a physician or a nurse, including outreach activities. Numerous participants re-initiated ART during periods of hospitalization or incarceration. Re-initiation often involved efforts to address forces that resulted in treatment interruptions, and managing these obstacles was important for participants' willingness to begin ART again. These efforts included changing to different ART regimens with simpler dosing requirements and/or fewer side effects, and altering dispensing arrangements to receive medications daily, observed ther-

apy and co-dispensation of ART with methadone. Similarly, re-initiation sometimes coincided with increased stability in participants' lives, stemming from reduced drug use or obtaining housing, which reduced potential for non-adherence.
**Conclusions:** Our findings illustrate how extra-individual forces influence ART re-initiation among PWID, and have the potential to inform targeted interventions to improve treatment retention for this key population. Programmatic interventions (e.g., housing, maximally assisted therapy, ART co-dispensation with methadone) have potential to engage PWID and promote re-initiation of ART. Barriers to adherence can be addressed as ART is re-initiated, and the process may provide an opportunity to optimize dispensing and care arrangements to minimize potential for further treatment interruptions.

## TUPEB062

### FACTORS ASSOCIATED TO ATTRITION AT THE ART PROGRAM IN MOZAMBIQUE

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**Background:** In Mozambique, 497.455 individuals initiated ART in 2013. Retention remains the main challenge despite efforts to provide life-saving therapy. High rates of lost-to-follow up (LTFU) characterize the Mozambican ART program and reached 30% in 2013. In this study we explored the clinical and sociodemographic factors associated to attrition in Maputo (MP) and Cabo Delgado (CD) provinces from January 2012 to December 2013.
**Methods:** This was a retrospective analysis of secondary data from patients on ART extracted from an electronic database. Risk factors were evaluated by data comparison from LTFU to patients that remained in care. Descriptive analysis was performed based on clinical and sociodemographic characteristics, and factors associated to LTFU assessed through uni- and multivariate logistic regression analysis. Statistical analysis was performed using STATA 13. Study was approved by the bioethics committee of the Faculty of Medicine of UEM.
**Results:** Of the 46123 patients who initiated ART, 7.5%(3451) were children with a median age at ART initiation of 4.1yrs (IQR 1.6-8.3) for MP and 2.5yrs (IQR 1.1-6.3) in CD. In total 23% (10639) were LTFU. Of the LTFU patients, 52% and 48% occurred in MP and CD, where the LTFU rate was 15.9 and 40.1 per 100pyr, respectively. Significantly higher rates were observed in male patients in both provinces (20.6 vs 13.9 per 100pyr, p< 0.001 and 41.3 vs 39.5 per 100pyr, p< 0.030). Male gender and living in rural area where factors associated to LTFU in both provinces. Education, being single, WHO stages II-IV at ART initiation and ART initiation in 2012 were factors associated to LTFU in MP. Immunosuppression and ART initiation in 2013 were associated to LTFU in CD. In children LTFU rate was 16.4/100pyr (CI95%:14.9-18.1) in MP and 44.5/100pyr (CI95%: 40.6-48.6) in CD. In both provinces, factors associated to LTFU were advanced disease staging [CD=RR1.51(1.09-2.10) p< 0.001 and MP= RR1.91 (1.35-2.71)p< 0.001] and age ≤2yrs [CD=RR1.43(1.15-1.76) p< 0.001 and MP=RR1.6(1.28-2.08)p< 0.001].
**Conclusions:** Our results identified key factors associated to LTFU such as education, gender and advanced disease staging in general population, and young children, showing the need for strategic directed interventions that would prevent and/or timely identify potential losses.

## TUPEB063

### PSYCHIATRIC DISORDER, SUBSTANCE ABUSE AND DISTRESS DURING THE FIRST SIX MONTHS OF EARLY ANTIRETROVIRAL TREATMENT

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**Background:** Individuals initiating antiretroviral treatment (ART) experience high rates of psychiatric disorders and psychological distress, affecting many health-related outcomes (retention in care, virological control, quality of life). It is not clear whether these rates subside as individuals link to services, accept ART, and adjust to living with HIV. We examined whether psychiatric disorders, substance/alcohol use problems and psychological distress would diminish in a significant number of individuals six months after entering care and initiating ART.
**Methods:** IsiXhosa-speaking, Black South African HIV+ adults eligible for ART were enrolled into an ART adherence intervention trial and completed baseline (n=454) and six-month follow-up (n=343) assessments, which included the Kessler-10 and Substance Abuse and Mental Illness Symptoms Screener (SAMISS). Generalized estimating equations were used to examine changes in psychiatric and substance/alcohol problems status from baseline to follow-up.
**Results:** At baseline, 56.4% screened positive for a substance/alcohol problem, and 41.7% screened positive for a psychiatric condition. Using a cut-off score of ³16 on the K10, 35.2% reported at least mild psychological distress. At follow-up, 34.3% screened positive for a substance/alcohol use problem, 0% screened positive for a psychiatric condition, and only 12.3% had a K10 score of ³16. When controlling for baseline gender, age, CD4 count, and TB status, analysis indicated that participants were significantly less likely to screen positive for an alcohol/substance problem (OR=.28,95%CI=[0.19, 0.40],p< 0.001), and have a score of ³16 on the K10 (OR=.41, 95%CI=[0.32,0.52],p< 0.001) at follow-up (note: Odds Ratios not available when rate is 0% as with psychiatric conditions).
**Conclusions:** High rates of psychiatric disorders, substance/alcohol problems and psychological distress present in individuals initiating ART may be the result of a recent HIV diagnosis and or other life stressors. Following ART counseling, ART initiation and linkage to HIV services, the rates of substance/alcohol problems significantly dropped, particularly for psychiatric disorders. Rates of at least mild psychological distress also substantially abated. These findings suggest that ART counseling may play a substantially more important and broader role in recently diagnosed and treated HIV patients. ART counselors may greatly benefit from increased training and supervision to address mental health and substance use problems.

## TUPEB064

### NATIONAL LABORATORY DATA TO ASSESS RETENTION IN CARE AFTER CLINIC TRANSFER IN SOUTH AFRICA

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**Background:** PEPFAR funding changes have led to HIV clinic closures and patient transfers to government-funded, community-based clinics in South Africa. Data on retention in care following such transfers are limited.
**Methods:** All adults (≥18y) on ART who visited a PEPFAR-funded hospital-based HIV clinic in Durban from March-June 2012 were transferred to community-based clinics. As a proxy for retention in care, we used CD4 count or viral load (VL) follow-up in the National Health Laboratory Services (NHLS) centralized data warehouse (CDW). The NHLS provides laboratory services to >80% of South Africa. Deaths were ascertained from the National Population Registry. We matched patient records from the hospital-based HIV clinic with CDW data to estimate the proportion of patients with

a CD4/VL record in the CDW during the year before transfer. We then evaluated whether patients had a post-transfer CD4/VL documented at another facility within 2 years. Among those with a matched value pre-transfer, we assessed predictors of not having post-transfer laboratory data in the CDW using multivariable logistic regression.
**Results:** Of 3,905 patients transferred, 59% were female and median age was 39 years (IQR 34-46). 3,469 (89%) patients had at least one matched pre-transfer CD4/VL in the CDW. Excluding 270 participants who either died within 9 months of transfer or transferred to a private clinic, 3,635 patients were assessed for post-transfer matching, of whom 2,384 (66%) had a post-transfer laboratory test from another facility. Of those surviving who had a pre-transfer matched record (3,228 patients), being male (aRR 1.2, 95% CI 1.0-1.3) and shorter ART duration at transfer (≤ 3 months, aRR 1.5, 95% CI 1.1-2.1; 3 months - 1 year, aRR 1.3, 95% CI 1.1-1.5, each compared to >1 year) were predictors of not having a post-transfer record in the CDW.
**Conclusions:** Two-thirds of patients had evidence of a post-transfer visit to another facility after closure of a large South African HIV clinic. Males and those with shorter ART duration at transfer were at highest risk for lacking follow-up laboratory data. As PEPFAR-funded clinics close, national data sources can be used to evaluate the long-term patient care trajectories within public clinics.

## TUPEB065

### LOW RETENTION OF PATIENTS IN ANTIRETROVIRAL TREATMENT DURING RECENT EBOLA OUTBREAK IN CONAKRY

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**Background:** Rapid transmission of the Ebola virus, the associated high mortality rate and the concentration of health resources towards the fight against the recent Ebola epidemic have disrupted the health-care system, undermining efforts made in other health programs. We analysed the impact of epidemic on retention of people living with HIV (PLWH) in antiretroviral treatment (ART) care in Conakry, where 75% of people receiving ART in Guinea live.
**Methods:** The nationwide database with aggregate number of PLWH receiving ART and database with repeated visits of PLWH receiving ART during 2014-2015 at Donka national hospital (DNH) in Conakry were used. DNH is the largest HIV facility in Guinea and hosted one of the Ebola treatment centres. To increase sensitivity of the epidemic on continuity of HIV care, a patient was defined as not retained in ART care if they did not attend the last scheduled visit at least 30 days after a given time point. Kaplan-Meier estimates of retention were compared between groups. Cox models were used to identify factors associated with retention in ART care.
**Results:** In 2014, the number of PLWH receiving ART in Conakry increased from 16,400 to 19,400 between January and August and then decreased to 18,600 in November, while the cumulative number of PLWH receiving ART outside Conakry increased from 5,500 to 7,300. At DNH, 13,939 PLWH including 63% of women received ART from January 2014 to June 2015 during a total of 44,518 visits. The median duration of retention in ART care was longer among PLWH who initiated ART before the Ebola outbreak compared to PLWH who initiated ART during the Ebola epidemic (9.4 versus 5.9 months; p< 0.001). In multivariate analysis, initiating ART during the Ebola epidemic versus before (adjusted hazard risk (aHR)=2.56; p< 0.001) and be followed in a pediatric ward (aHR=1.3; p=0.004) or in a general medicine ward (aHR=1.55; p< 0.001) increased the risk of not being retained in ART care.
**Conclusions:** The number of people receiving ART declined during the recent Ebola epidemic in Conakry. This decrease is likely due to the quality of healthcare provision available. This study will contribute to improve epidemics preparedness.

## TUPEB066

### SOCIAL DETERMINANTS OF HEALTH AND RETENTION IN HIV CARE IN A CLINICAL COHORT IN ONTARIO, CANADA

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**Background:** Continuous HIV care supports antiretroviral therapy initiation and adherence, and prolongs survival. We investigated the association of social determinants of health (SDH) and subsequent retention in HIV care in a clinical cohort in Ontario, Canada.
**Methods:** The Ontario HIV Treatment Network Cohort Study (OCS) is a multi-site cohort of patients at 10 HIV clinics. Data were collected from medical charts, interviews, and via record linkage with the provincial public health laboratory for viral load tests. For participants interviewed in 2009, we used three category multinomial logistic regression to identify predictors of retention in 2010-2012, defined as (1) continuous care (≥2 viral loads ≥90 days in all years; reference category); (2) discontinuous care (only 1 viral load/year in ≥1 year); and (3) a gap in care (≥1 year in 2010-2012 with no viral load).
**Results:** In total, 1838 participants were included. In 2010-2012, 71.7% had continuous care, 20.9% had discontinuous care, and 7.5% had a gap in care. Discontinuous care in 2009 was predictive (p< 0.0001) of future retention. SDH associated with discontinuous care in 2010-2012 were hazardous drinking (vs. none; Adjusted Odds Ratio, 95% Confidence Interval: 1.4, 1.1-1.8) and non-injection drug use (vs. no drug use; 1.4, 1.0-2.0). Indigenous ethnicity (vs. White) was positively associated with experiencing discontinuous care (1.9, 1.3-2.8). Participants who were 35-49 (0.6, 0.4-0.9) or >50 (0.6, 0.4-0.9) years of age (vs. < 35), who immigrated ≤ 10 years ago (vs. Canadian-born; 0.4, 0.2-0.8), and who were not in the labour force (0.5, 0.3-0.7) or on disability (vs. being employed; 0.7, 0.5-0.9) were less likely to experience discontinuous care. Being a heterosexual male (2.4, 1.4-4.4) was associated with having a gap in care compared to men who have sex with men. Participants who were 35-49 (0.4, 0.3-0.8) or >50 (0.3, 0.1-0.5) and married (vs. single; 0.6, 0.4-0.9) were less likely to experience a gap in care.
**Conclusions:** Various social determinants of health were associated with retention. Care discontinuity was highly predictive of future gaps. Targeted strategic interventions that better engage those at risk of suboptimal retention merit exploration.

# INDICATORS OF QUALITY OF CARE

## TUPEB067

### SOCIOECONOMIC POSITION IS UNRELATED TO SURVIVAL AND VIROLOGIC OUTCOMES IN A TEN-YEAR FOLLOW-UP COHORT OF UGANDAN PATIENTS RECEIVING ANTIRETROVIRAL THERAPY

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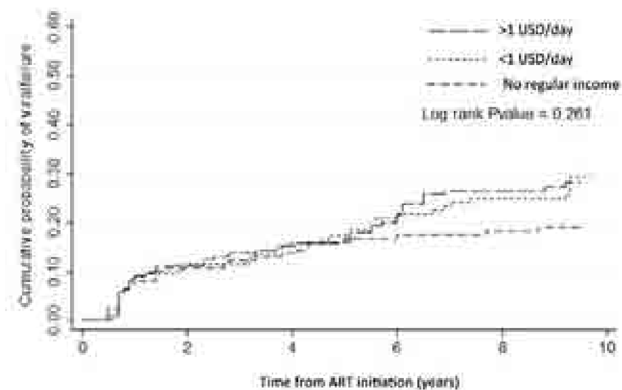
**Background:** Substantial evidence links low socioeconomic position with negative disease outcomes in various populations and settings. As ART access improves and HIV has become a chronic disease, differential outcomes are increasingly observed between patients of high and low socioeconomic position. We investigated if low socioeconomic position predicts mortality and HIV viral failure among individuals

receiving ART at an urban HIV clinic in Kampala, Uganda.
**Methods:** We enrolled 559 HIV-positive adults starting ART in a prospective cohort from 2004-2005 and followed them for 10 years. Upon enrollment we collected baseline demographic and clinical data and we measured socioeconomic position by assessing employment status, monthly household income, education level and housing description (to measure wealth). Follow-up visits, including laboratory testing, were completed every 6 months. Viral failure was defined as two consecutive measurements greater than 1000 copies/mL or a single measurement greater than 5000 copies/mL when a second measurement was not available. We used Cox regressions to assess if indicators of low socioeconomic status were associated with increased mortality or viral failure.
**Results:** 127/559 participants died (23%). We observed no independent associations between any socioeconomic indicator and mortality after controlling for clinical stage and CD4 count at presentation. 166/472 (35%) experienced viral failure. We observed no independent associations between any socioeconomic indicator and viral failure after controlling for clinical stage and CD4 count at presentation. There was no difference in the cumulative probability of viral failure when subjects were grouped by education level or monthly income (Figure).
**Conclusions:** In our cohort of HIV-infected Ugandan adults receiving ART we observed no significant differences in 10-year survival or virologic outcomes that could be attributed to household income, employment status, level of education or housing description. These results are encouraging for free ART programs that predominantly serve patients of low socioeconomic position.



*[Figure. Viral failure among patients receiving ART grouped by monthly household income]*

# ACROSS THE CASCADE FROM HIV TESTING TO CARE AND TREATMENT TO RETENTION

## TUPEB068

### ATTRITION ACROSS THE HIV CASCADE OF CARE AMONG A DIVERSE COHORT OF WOMEN LIVING WITH HIV IN CANADA

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**Background:** In North American settings, women are less likely to be engaged across the HIV care cascade. Among Canadian women living with HIV (WLWH), we explored cascade attrition by stage and key sub-populations, and assessed correlates of attrition from 'antiretroviral (ART) adherence' to 'viral suppression'.
**Methods:** We analyzed baseline survey data from 1,425 WLWH (≥16 years; trans-inclusive) enrolled in the Canadian HIV Sexual and Reproductive Health Cohort Study (CHIWOS), Canada's largest community-based cohort of WLWH. We measured the proportion of women engaged in seven nested stages of the care cascade, via self-report: HIV-diagnosed, linked to HIV care, retained in HIV care, initiated ART, currently on ART, ART adherence (≥90%), and viral suppression (< 50 copies/mL). We examined attrition across stages overall and by age, ethnicity, housing stability, food security, illicit drug use, and violence. Among those currently on ART, multivariable logistic regression identified factors associated with not being suppressed.
**Results:** Median age was 43 (IQR: 35-50); 96% of women identified as cis-gender; 22% were Indigenous, 29% African/Caribbean/Black, and 41% Caucasian/White. Median years living with HIV was 11 (IQR: 6-17). Overall: 98% were linked to care; 96% retained; 88% initiated ART; 83% were currently on ART; 68% were adherent; and, among those on ART, 72% were virally suppressed with variation (45%-84%) by sub-population. The largest attrition occurred between 'on ART' and 'ART adherence' (-17%), with the greatest losses among women with Indigenous ancestry (-25%), current violence (-27%), and current illicit drug use (-32%). Substantial attrition also occurred between 'linked to HIV care' and 'initiated ART'(-11%), with the greatest losses occurring among women 16-29 years (-20%) and with unstable housing (-27%). Adjusted odds of not being virally suppressed were significantly higher among women who were young [aOR: 1.4 (95% CI: 1.1-1.79) per 10 years younger], food insecure [1.77 (1.03-3.05)], incarcerated in the past year [3.84 (1.56-9.45)], and currently using illicit drugs [3.25 (1.46-7.25)].
**Conclusions:** Nearly one-in-three WLWH in this Canadian cohort were lost across the HIV care cascade, with significant differences by stage, sub-population, and social inequities. Targeted interventions are needed to improve engagement across the care cascade for a diverse community of WLWH.

## TUPEB069

### INVESTIGATIVE STUDY ON MASSIVE HIV TESTING AND LINKAGE TO CARE AT HIGH BURDEN COMMUNITIES IN BENUE STATE, NIGERIA

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**Background:** HIV counseling and Testing (HCT) remains the entry point for HIV prevention, care and treatment. Despite this fact HCT uptake in Nigeria is still low. Mass HIV testing campaigns, in high burden communities with low uptake have proven to scale up HCT access and lead to successful linkage to care and treatment. Models such as PITC have showed promising results. This study demonstrates that structured HCT campaigns in communities with poor HIV treatment services, through client initiated counseling and testing leads to expansion of HCT services and consequently scale up clients enrolled to care and treatment.
**Methods:** A descriptive cross-sectional study was used by AHF Nigeria to select 15,785 individuals between 8 hours in a day from high burden communities of Agasha, Awuapila, Agu and Pevi in Guma, Buruku and KatsinaAla LGAs in Benue State who volunteered for testing. Participants were counseled, tested and received results according to the Nigeria National guidelines using an approved semi-structured questionnaire to collect socio-demographic information, knowledge and HIV risk assessment.
**Results:** Of all 15,785 participants that were screened for HIV according to the national HIV testing algorithm, 10,558 (67.5%) were males while 5,104 (32.3%) were females. 18.6% of the testers were between 0 months old-14 years of age, 43.3% were between 15 and 25 years of age, 31.4% were 25 to 49 years of age, the remaining group (6.7%) were aged 50 years and older. 73.2% got tested because they had unprotected sex, 13.1%, 9.4% and 4.3% got screened due to blood transfusion, MTCT and Injection Drug Use, respectively. 366 (2.3%) reactive cases were identified and 295 (80.6%) linked to care & treatment within 30 days. Majority (56.3) of the clients had no prior access to HIV test and were unaware of their status.
**Conclusions:** Mass testing campaigns in high burden communities without access to HIV services significantly increased knowledge of people's HIV status. Essential is that after testing active client follow-up enhances and scales up linkage to care and treatment.
It is recommended that structured HCT campaigns in communities with poor access to testing services will promote HIV treatment and contribute to the fight against AIDS.

## TUPEB070

### FEASIBILITY AND EFFECTIVENESS OF PEER NAVIGATORS TO INCREASE UPTAKE OF HIV TESTING, CARE AND TREATMENT AMONG STREET CHILDREN AND YOUTH IN ELDORET, KENYA

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**Background:** Preliminary research suggests a substantial epidemic of HIV among street-connected children and youth (SCY) in Eldoret, Kenya. It also suggests that very few HIV-positive SCY are engaging with HIV care or using antiretroviral therapy (ART).
We piloted and evaluated the use of Peer Navigators (PN), used successfully in other settings, to increase SCY's uptake of interventions along the HIV prevention-care continuum.
**Description:** We defined a PN as an HIV-positive person aged <25 years, with >1 year of direct experience being street-connected, current knowledge of the local SCY community, and an ability to read, write, and do arithmetic up to a Standard/Grade 4 level. One male and one female PN underwent multi-disciplinary training and subsequent mentorship and supervision. Using community outreach including daily visits to known locations SCY frequent, and accompaniment to the facility, the PN engaged 330 SCY aged <25 between May-December 2015, 28% female. Twenty-nine (9%) SCY were known positive at first contact (including 21/93, 23% of females). Another 261/301 (87%) agreed to HIV testing (including (72/72, 100% of females), of whom 27/261 (10%) tested positive (including 18/72, 25% of females). Overall, 56/330 (17%) SCY in this program were HIV-positive; 7% of males and 33% of females. Twelve are connected to care intermittently, and only 2 were on ART.
**Lessons learned:** The pilot was successful at getting SCY to test for HIV. One PN was discovered mid-way through the pilot to be HIV-negative. It was decided to maintain them in the position as having PN of mixed serostatus was thought to reduce potential stigma from having only 'known HIV-positive' PN. The very low number of positive SCY who accessed care and ART was found to be caused by HIV stigma among the SCY community, generalized stigma against SCY among healthcare providers and other HIV-positive patients, long clinic waits, a lack of safe storage for medicines, and food insecurity.
**Conclusions/Next steps:** The PN program is feasible and in some ways very effective. Next steps are to pilot creative strategies to facilitate uptake of and adherence to ART in this vulnerable and hard-to-reach population.

## TUPEB071

### TIME SINCE DIAGNOSIS TO ART INITIATION IN INDONESIA: IMPLICATIONS FOR CARE LINKAGES

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**Background:** This study examined the trend in time intervals between diagnosis to ART initiation in the periods leading up to the test-and-treat ART regime in application since 2013. We estimated the time taken to initiation by risk group, gender, and across diagnosis time.
**Methods:** Dataset was a Community Access to Treatment, Care and Support (CAT-S) study in 7 provinces of Indonesia, comprising 1,655 HIV+ surveyed participants. We used data from 1,098 on-ART participants, or 89% of the total in this category. Finite mixture models were used to differentiate distributions based on the length of time to ART initiation. These two distributions were labeled 'slow' and 'swift', respectively.
Our final model comprised risk groups, gender identity, age (and age-squared), year of initiation, whether symptoms were present at diagnosis (yes/no), and self-reported initial CD4 count.
**Results:** We included participants initiating ART from as earliest as year 2001. The 'swift' initiation group had a mean length of time to initiation of 4.78 months, whereas the comparable figure for the 'slow' initiation group was 25.37 months. People who inject drugs had the longest time to initiation in both groups. By gender, transgenders on average took an extra 3.27 months (95% CI: 2.42-4.12) to initiation compared to males. Each calendar year added less than one month to initiation time but this was highly significant for both 'slow' and 'swift' groups ($p < 0.001$). Older age was associated with more timely initiation.
**Conclusions:** Being symptomatic at diagnosis was an indication of deferred ART initiation, yet shortens time to initiation for those in the 'slow' group. People who inject drugs, younger age groups, and transgenders were at an increased risk of late ART initiation.

## TUPEB072

### INTERVENTION AND IMPACTS: TREND ANALYSIS OF RETENTION CASCADE OVER 5 YEARS IN RAJASTHAN, INDIA

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**Background:** Rajasthan is a low prevalence state with high vulnerability for HIV, geographically largest state situated in Western India, having an estimated 103148 PLHIV. There are 23 ART Centers catering to 30,153 PLHIV, of whom 25,995 were on ART. The number of ART centers have been scaled up from 02 in 2005 to 23 in 2015. Analysis of retention cascade for 2010-11 revealed that there were significant gaps at each step.
**Description:** Review and analysis of the cascade at state level was done to identify the gaps that existed between HIV diagnosis and linkage to care, baseline CD4 testing, ART initiation and retention at 12 months. Large number of vacancies and delays in recruitment, lack of optimal coordination between the testing and treatment divisions and incomplete and poor data (for linkages, referral and drug stocks) were the key bottlenecks identified that contributed to these gaps. Programmatic and administrative interventions coupled with supportive supervision and follow up visits to all the ART centers, regular review meetings and mentoring of the staff on guidelines, data management, collection and validation were done. Capacity building at all levels for undertaking the cascade analysis, identify and fill the gaps was done. A system of sending quarterly feedback to the nodal officers and head on institutions was started to enhance the ownership of the ART centers.
**Lessons learned:** There was a rapid improvement in all the steps of the treatment cascade form 2010-11 to 2014-15.

| Year | ICTC-ART center Linkage | Baseline CD4 testing for eligibility for ART | ART initiation in eligible PLHIV | Retention at end of year |
|---|---|---|---|---|
| 2010-11 | 76% | 97% | 69% | 38% |
| 2011-12 | 81% | 98% | 68% | 39% |
| 2012-13 | 85% | 99% | 79% | 51% |
| 2013-14 | 87% | 98% | 85% | 79% |
| 2014-15 | 90% | 99% | 89% | 83% |

*[5 year performance of retention cascade]*

**Conclusions/Next steps:** Existing programmatic guidelines if implemented and enforced well can have a remarkable impact on the retention cascade. Supportive supervision and on site mentoring as well as training of the state level managers is important for resolving the administrative and programmatic issue in program implementation.

## TUPEB073

### RETENTION CASCADE IN HIV CARE SETTINGS IN INDIA: TRENDS OVER TWO YEARS

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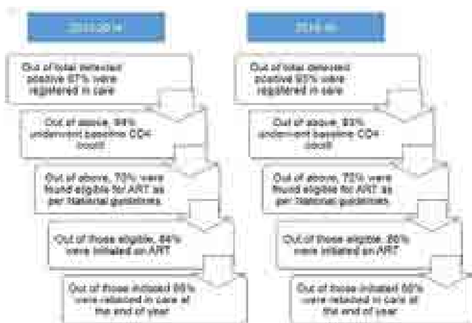
**Background:** Approximately 0.2 million newly detected HIV positive person register every year in National ART programme at 520 ART across the country. The National programme aims in providing universal access to comprehensive care package and improvement in quality of life of PLHIV through a network of ART facilities and Care and support centers. Retention in care is a vital component of programme to achieve and sustain high level of viral suppression. Cascade model for measuring sequential retention at each stage is a useful way of monitoring trends and planning need based interventions.
**Description:** The retention cascade refers to the flow of patients from diagnosis of HIV to screening for ART eligibility, ART initiation for eligible patient and retention of patients who start ART. It outlines the proportion of individuals living with HIV who

are engaged at each stage of cascade. It provides information that is very important for programme to constitute measures to plug the losses at each steps. It also gives an indirect measure of quality of services provided at service delivery site.
**Lessons learned:** As per data available from Monthly reports of HIV care settings, it was observed that in year 2013-14, out of total new HIV +ve diagnosed in 2013-14 and 2014-15 following is the scenario:



[National level retention cascade-comparing two consecutive years]

The improving trend has been observed in critical steps of linkages from testing to treatment sites and initiation of ART, also programme continues to maintain high level of retention. This is mainly due to regular facility level cascade analysis, supportive supervision and mentoring by regional coordinators and administrative interventions. However continuous focus is needed to sustain and improve performance to achieve target of universal coverage.
**Conclusions/Next steps:** Close monitoring of data using cascade based approach can be an effective way of improving programme performance. Need based interventions should be planned to plug the leaky cascade.

## TUPEB074

### THE HIV TREATMENT CASCADE AMONG MEN WHO HAVE SEX WITH MEN IN COTE D'IVOIRE: CHARACTERIZING THE ABSOLUTE AND RELATIVE UNMET TREATMENT NEEDS

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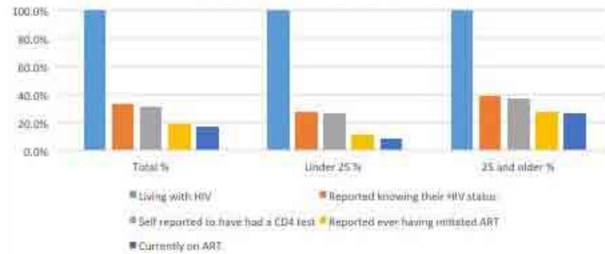
**Background:** Men who have sex with men (MSM) are disproportionately affected by HIV compared to other men—globally. In the West African nation of Cote D'Ivoire (CDI), MSM have consistently been shown to have high prevalence of HIV in small studies with separate qualitative data suggesting significant structural barriers to the uptake of anti-retroviral therapy (ART). The objectives of these analyses are to characterize the determinants of engagement in the HIV treatment cascade among MSM in CDI to inform the scale and implementation of ART programs.
**Methods:** From 03/2015-10/2015, 1101 MSM were sampled in 4 cities Abidjan(n=351), Bouake (n=350), Gagnoa (n=150), Yamoussoukro (n=250), administered a structured-survey instrument, and completed HIV testing according to national guidelines. EpiData was used for data management, and Stata 14 was used for data cleaning and analysis including fisher's exact test for comparison of proportions by age and city.
**Results:** The HIV prevalence varied significantly ($p < 0.01$) by city with the highest prevalence in Abidjan (29.3%), then Yamoussoukro (10%), Gagnoa (4.7%), and then Bouake (3.5%) for an overall HIV prevalence of 12.9% (Figure 1). Overall, 32.8% (n=45/137) of those living with HIV reported knowing their status, of whom 95.6% had a CD4 count (n=43/45), 57.8% had ever initiated ART (n=26/45), of whom 88.5% (n=23/26) reported current ART use with no viral load (VL) data available. However, those >25 years were significantly more likely to have ever initiated ART and currently be on ART ($p < 0.05$).
**Conclusions:** These data demonstrate significant losses in the HIV treatment cascade especially where MSM have limited awareness of their HIV status. Moreover, this may represent an overestimation of ultimate viral suppression given known ART adherence challenges and the lack of VL data. Taken together, these data suggest the need for significant scale-up of linkage and retention to ART programs for MSM in CDI implemented together with stigma mitigation programs to optimize the provision and uptake of these services.




*[Figure 1. HIV cascade amongst MSM by age]*

## TUPEB075

### UPTAKE OF AND EARLY ADHERENCE TO LIFELONG ART (OPTION B+) AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN IN UGANDA

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**Background:** Use of antiretroviral treatment (ART) by HIV+ pregnant women has significantly reduced mother-to-child transmission of HIV. However, uptake of and adherence to lifelong ART, and associated factors among pregnant women have not been fully evaluated in many Ugandan settings.
**Methods:** A cross-sectional study was conducted in six health facilities offering ART in Masaka, Mityana, and Luwero districts in Uganda. We analyzed data for 385 women who came for their first post enrollment visit during antenatal and were part of 507 women enrolled into a prospective cohort within four weeks of ART initiation. Uptake was defined as the proportion of women that had swallowed ARVs, while adherence was classified as good if women reported swallowing at least 95% of ART doses in the 30-days prior to the interview or poor adherence if swallowed less than 95%. Independent factors associated with adherence were obtained through multivariable logistic regression model using STATA version 12.
**Results:** Half (50.7%) of women were young (16-24 years). 96.9% (373/385) were prescribed ART with Mityana Hospital at 100% (170/170) followed by Luwero HCIV and Masaka RRH at 98.8% (79/80) and 91.9% (124/135) respectively prior to the first follow-up visit. Uptake of ART was nearly universal (362/373, 97.1%), and early adherence was suboptimal (78.4%). Being immediately ready to start ART (adj. PRR= 3.2; 95% CI: 1.16-8.87) and disclosure of being on ART (adj. PRR= 1.22; 95% CI: 1.04-1.44) were associated with higher prevalence of good adherence. The prevalence of good ART adherence was higher at Mityana Hospital (adj. PRR= 1.47; 95% CI: 1.19 - 1.81) and Masaka RRH (adj. PRR=1.35; 95% CI: 1.09-1.67) relative to Luwero HCIV.
**Conclusions:** Uptake of lifelong ART was nearly universal but adherence in the first 2 months was sub-optimal. Efforts to enhance education and support HIV status disclosure are required to maximize the benefits of ART for HIV positive pregnant women.

## TUPEB076

### INNOVATIVE MODELS FOR MONITORING LINKAGE AND ADHERENCE TO ART AMONG KEY POPULATIONS TO ACHIEVE THE 90-90-90 STRATEGY IN MARPI ART CLINIC

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**Background:** Majority of KPs in Uganda access services within their hotspots including HCT, thus requiring referrals for linkage to care. Once linked the next challenge is retention in care accompanied by adherence to medications for populations that face a lot of stigma and discrimination and often live hidden and sometimes mobile lives. Retention in care and adherence to medications has remained a very big challenge for many providers of ART care to sex workers and many get lost to follow-up given the test and treat policy for SW once diagnosed with HIV. This is also not helped by hostile legal environment. We developed a model of care involving KPs in the delivery of ART care to improve retention in care and adherence to ART for KPs attending the MARPI clinic.

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**Methods:** KPs diagnosed with HIV are linked to the MARPI clinic by KP peers and once enrolled onto ART are followed by K-peers at the hotspots for adherence to medication, honoring clinic appointments and following and finding those that fail to return to the clinic either by refusal or after moving to another hotspot. KPs with HIV are initiated on ART using standard procedures by a health team that includes the hotspots KP peer as the facility-community liaison.
**Results:** From April 2013 to the end of 2015, 750 KPs were enrolled in MARPI ART clinic (89% were sex workers and 11% LGBTI) and have been in care for at least 6 months. Of these 83% were initiated on ART and by the end of 2015, 14% (106 KPs) had not returned to the clinic for 3 or more months. Of those attending 83 (15%) were in another health unit. Of those in the clinic 16 (3%) had died). Of the remaining 445, after 6 months on ART, 79% had undetectable viral load.
**Conclusions:** Including KPs as part of the health care team for KPs on ART achieves a reasonable degree of viral suppression by improving adherence and clinic attendance. ART Care Models for KPs on ART should include KPs on the health team if ART care among KPs is to achieve the 90-90-90 target.

## TUPEB077

### LEAKS IN THE HIV TREATMENT FAILURE CASCADE: THE REALITY IN RURAL LESOTHO

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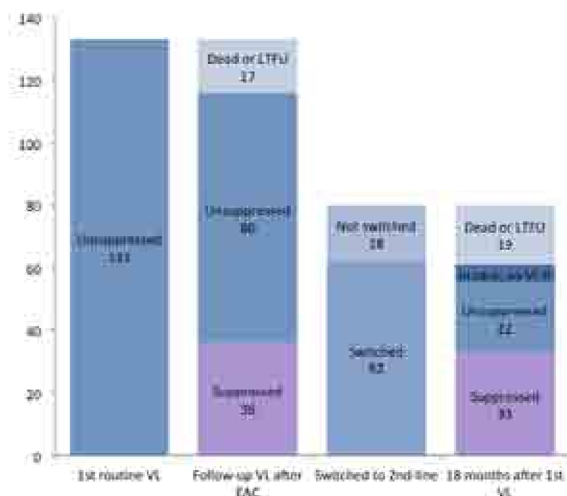
**Background:** Based on WHO recommendations many resource-limited settings have started rolling out routine viral load (VL) monitoring. In a prospective study on comorbidity and virologic outcomes among patients on ART in rural Lesotho (CART-1, clinicaltrials-ID: NCT02126696) we followed clinical and virological outcomes of patients who had unsuppressed viremia at their first-time VL.
**Methods:** Adult patients ($^{\geq}$16 years) on first-line ART for $^{\geq}$6 months at 10 facilities of two districts in Lesotho received a first routine VL. As recommended by the WHO guidelines, patients with unsuppressed VL received enhanced adherence counselling (EAC) and follow-up VL after 3 months. Patients with sustained unsuppressed VL, defined as both VL ≥100copies/mL, were considered eligible for switch to second-line ART. Clinical and virological outcomes were assessed 18 months after the first unsuppressed VL.
**Results:** The treatment failure cascade of 133 individuals on first-line ART (65.9% female) with VL≥100copies/mL is shown in figure 1.




*[Figure 1: The treatment failure cascade in 133 adult patients on first-line ART with a first-time unsuppressed viral load (VL)]*

A considerable loss in the effectiveness of the roll-out of VL testing could be observed at all steps: Of 80 patients with sustained unsuppressed VL 33 (41%) were retained in care with documented viral suppression at 18 months. Among the 62 switched to second-line 33 (53%) fully resuppressed HIV. Age, gender, household wealth, self-reported adherence, distance to facility, time on ART, educational level were found not to be associated with successful viral resuppression.
**Conclusions:** Attrition from care and incorrect management of patients with unsuppressed VL (i.e. failure to switch to second-line despite sustained unsuppressed VL) were the main drivers decreasing effectiveness of VL-monitoring in this setting. In addition, among those who switched to second-line only 53% had documented viral resuppression 18 months after first indication of treatment failure, indicating that persistently poor adherence may be the main parameter in the treatment failure cascade.

# DIAGNOSIS OF HIV DISEASE IN INFANTS, CHILDREN, AND ADOLESCENTS

## TUPEB078

### HIV TESTING FOR OLDER CHILDREN: A MIXED-METHODS STUDY EXAMINING CHALLENGES IN DECISION TO TEST, TESTING PROCESS, AND COPING POST-TESTING

A.D. Wagner[1], G. O'Malley[1], O. Firdawsi[1], C. Mugo[2], I. Njuguna[1,2], E. Maleche-Obimbo[2], I. Inwani[3], D. Wamalwa[2], G. John-Stewart[1], J. Slyker[1]
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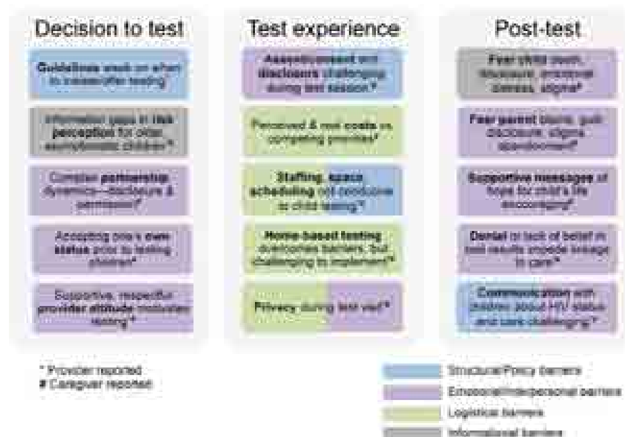
**Background:** Prompt testing and treatment of HIV-infected children is critical; yet, programs that routinely test older children prior to symptomatic disease are largely absent. Testing children of HIV-infected adults in care presents an opportunity for efficient case detection prior to symptomatic illness; understanding the challenges associated with this testing model can provide insights to increase uptake of testing.
**Methods:** Three focus group discussions with health care workers and 18 semi-structured, in-depth interviews with HIV-infected adults in care with children of unknown status were conducted at Kenyatta National Hospital. Structured questionnaires were conducted with 116 HIV-infected adults in care with children of unknown HIV status, and quantitative data were used to generalize and validate the qualitative findings.
**Results:** Qualitative data revealed challenges during three periods of the pediatric HIV testing process: concerns about the decision-making process to test, the test visit itself, and coping during the post-test period. The greatest challenges from both qualitative and quantitative sources were inaccurate information about the likelihood of child infection and prognosis (most parents assumed either that older children could not be infected or were inevitably infected), challenges with permission and disclosure with partners, experiences with discouraging provider attitudes, lack of clear pediatric testing guidelines around consent/assent and disclosure to children, insufficient staff and inappropriate space for children, concerns about privacy, and real and perceived costs of testing and treatment.
**Conclusions:** Interventions are needed to address client, provider, and clinic-level challenges to pediatric HIV testing. Assisted disclosure services, small financial incentives, peer support groups, in-service provider training, and weekend and school holiday clinic dates merit evaluation to address challenges to pediatric testing.




*[Challenges to pediatric HIV testing]*

## TUPEB079

### WHO HIV TESTING ALGORITHM FAILS TO IDENTIFY SUBSTANTIAL PROPORTION OF INFANTS WITH HIV INFECTION

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*Presenting author email: anjuliw@uw.edu*

**Background:** The WHO HIV testing algorithm for infants at sick care visits involves HIV serologic testing followed by virologic testing if seropositive. Additionally, in PMTCT programs, HIV-exposed infant testing algorithms include virologic testing at 6 weeks, and serologic testing at 9 and 18 months. PCR testing is conducted on infants with positive HIV serology while seronegative infants receive repeat serotesting at future visits.
**Methods:** Within a clinical trial (NCT02063880) conducted among critically ill, hospitalized children in 4 Kenyan hospitals, serologic and virologic tests on all HIV-exposed infants ≤9 months were performed. Maternal and infant serologic tests (using Determine® or KHB® for first test and Unigold® or First response® for second test per Kenyan guidelines) were performed in tandem. Dry blood spots were collected and tested using HIV DNA PCR irrespective of serological test results to determine the proportion of infant infections missed by the WHO algorithm.
**Results:** Among 142 HIV-exposed infants ≤9 months with both serologic and PCR testing, 44 (31%) were PCR positive. Among 50 seronegative infants 12 (24%) were PCR positive; among 82 seropositive infants 29 (35%) were PCR positive; among 10 serology indeterminate infants 3 (30%) were PCR positive. The research algorithm, which included PCR testing of seronegative infants, identified 38% more infant infections, compared to the WHO algorithm (44 vs 32 infections, respectively). Among the 12 serology negative, PCR positive infants, 7 (58%) were missed by PMTCT programs because their mothers reported testing HIV negative during pregnancy, likely representing acute infections during latepregnancy and postpartum; 2 (17%) infants of known HIV-infected mothers had tested negative earlier during infancy, likely representing breastfeeding transmissions; 2 (17%) infants were not previously tested despite known maternal HIV status; and 1 infant's mother was not tested for HIV in pregnancy.
**Conclusions:** The current WHO HIV testing algorithm for sick infants using serology for screening did not detect a substantial number of infants with HIV infections detected by PCR. Virologic testing of HIV-exposed infants presenting for sick visits, regardless of their serologic status, may be warranted to improve early detection and treatment of HIV.

## TUPEB080

### THEY ARE LIKELY TO BE THERE: FAMILY TESTING APPROACH TO FACILITATE ACHIEVEMENT OF 90-90-90 STRATEGY IN KENYA

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**Background:** In Kenya, less than half of all children 18 months to 14 years old with a HIV-positive parent have ever been tested for HIV. Strategies to identify and test children at increased risk for HIV are critical. This study examined the impact of a family-centered approach to reach children (0-14 years) with HIV testing.
**Methods:** We conducted a retrospective review of clinical records among a convenience sample of 60 high-volume clinics in Kisumu, Homabay and Migori counties. We reviewed the records of adult index patients who were enrolled in family-centered HIV care between May-July 2015 and followed family outcomes through October 2015. Family member testing status, results, enrollment in care and ART initiation for those positive were abstracted; chi-square test was used to compare the positivity proportion differences among children to
1) prior studies[1,2] that used the family approach in the same region and
2) outpatient and inpatient testing data performed in the same region from July-September 2015.
**Results:** Review of 1,937 adult patient charts led to the identification of 3,033 eligible children for testing. There were 1,869 (62%) children tested, among which 100 (5.4%) were HIV-positive, of whom 87 (87%) were successfully linked to care and 73 (84%) had initiated ART by October 2015. Compared to prior evaluations, a declining trend in HIV positivity among children was found with the family-centered approach: the proportion of children testing positive went from 18% in 2009 to 7.4% in 2012 to 5.4% in 2015 (p< 0.001). Positive proportions among children reached through the family approach were higher than inpatient 24/1,636 (1.5%; p< 0.001) and outpatient 309/46,002 (< 1%; p< 0.001) testing proportions.
**Conclusions:** The family approach leads to high proportion of HIV positive children identified, linked to care, and initiated on ART. Although HIV positive proportions among children were lower than observed in previous family approach studies and appear to be declining, it continues to have a higher yield than program-wide inpatient and outpatient testing. The family-testing approach offers an important entry point for identification of children at risk of HIV and the opportunity for targeted follow-up through the HIV care cascade.

## TUPEB081

### EVALUATION OF HIV TESTING AND ANTIRETROVIRAL THERAPY INITIATION AT BIRTH: PRELIMINARY RESULTS FROM A PRIMARY AND SECONDARY CARE SETTING IN JOHANNESBURG, SOUTH AFRICA

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**Background:** In June 2015, birth HIV testing for all HIV-exposed infants was included in the South African National Consolidated Guidelines for the first time. We describe the preliminary impact of very early infant diagnosis on combined antiretroviral therapy (cART) initiation and the feasibility of implementation in a primary (PHC) and secondary care setting.
**Methods:** A retrospective review of all birth HIV PCRs was conducted at the labour wards of two large health care facilities in Johannesburg from 1st June to 31st December, 2015. Infant birth HIV status was determined by heel prick HIV dried blood samples at the referring National Health Laboratory Service (NHLS), with results available within 48 hours. All mothers were counselled regarding HIV testing and results. At the 3-day postnatal visit, infants found to be HIV-positive were initiated on ART either at the facility's HIV clinic or referred to the nearest initiating facility.
**Results:** Of 2170 infants delivered at the PHC facility, 27% (576/2170) were HIV-exposed and tested at birth. Of these infants, 7(1.2%) had a positive HIV-DNA PCR. The HIV sero-prevalence rate in this maternal population is around 25%, a proxy for the expected number of HIV-exposed infants requiring birth testing. Of these, 6 infants were initiated on cART, with a median time to initiation of 7 days. 1 infant was lost to follow-up despite vigorous tracing. Of 1701 infants delivered at the secondary facility, 18% (318/1701) were tested for HIV at birth and 2(0.6%) were found to be HIV-positive. All infants at this facility are down-referred to a PHC facility before birth HIV DNA PCR results are available; therefore initiation of these infants could not be confirmed and could not be traced.
**Conclusions:** Our preliminary results suggest that HIV birth testing at PHC level is both feasible and effective at identifying HIV-exposed infants early and initiating them on cART. However, gaps in the referral system at secondary level hindered early initiation of HIV-positive infants, ultimately undermining the goal of the new consolidated guidelines of birth testing. Further studies and consideration from policy makers are required.

## TUPEB082

### THE VALUE OF A POSITIVE ANTIBODY TEST AT 9, 12, AND 15 MONTHS IN HIV EXPOSED INFANTS ENROLLED AT THE BAYLOR CENTER OF EXCELLENCE (COE) IN MWANZA, TANZANIA

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**Background:** Tanzania national guidelines recommend different HIV testing algorithms based on age: 0-9 months DNA/PCR is the initial test and at 9-18 months rapid antibody tests are performed first then DNA/PCR if the rapid test is positive. At the COE, DNA/PCR is done at 4-6 weeks or at the initial visit for children under 9 months at enrollment who have not previously been tested, and rapid tests at 9, 12, 15 and 18 months. This study compares the results of rapid tests and DNA/PCR at 9, 12 and 15 months.
**Methods:** This is a cross-sectional descriptive study looking at exposed infants enrolled in care from January 2014 to December 2014. Patient test results were ob-

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tained from reviewing the patients' electronic medical records. Data analysis was done by SPSS 20.

**Results:** 146 infants (72 males, 74 females) were enrolled. 88 were <6 months, 27 were 6-12 months and 31 were 12-18 months. Modes of feeding: 57 infants were exclusively breastfed, 53 were mixed feeding, 3 were formula fed and 33 did not have their feeding status documented. 64.4% of mothers were on ART and 58.3% infants received NVP for 6 weeks.

| Age | Rapid Test Done | Rapid Test (+) | Rapid Test (-) | DNA PCR Done | DNA PCR (+) | DNA PCR (-) |
|---|---|---|---|---|---|---|
| < 6 months | | | | 108 | 17 | 91 |
| 9 months | 99 | 44 | 45 | 41 | 6 (14%) | 35 |
| 12 months | 37 | 13 | 24 | 11 | 8 (72%) | 3 |
| 15 months | 23 | 10 | 13 | 8 | 7 (88%) | 1 |

*[Rapid test and DNA/PCR results]*

Infants with positive DNA/PCR were more likely to be enrolled in care late, be mixed feeding, have mothers who were not on ART, and not to have received NVP prophylaxis.

**Conclusions:** Rapid antibody tests done at 12 and 15 months were more reflective of a child's true status than at 9 months. With frequent shortages of DNA/PCR test kits and a poor correlation between rapid antibody tests and DNA/PCR at 9 months, delaying surveillance testing using rapid antibody tests until 12 months may improve the clinical utility of the test as well as provide a more cost effect approach to early infant diagnosis.

## TUPEB083

### WHERE HAVE ALL THE CHILDREN GONE? HIGH HIV PREVALENCE RATES IN INFANTS ATTENDING NUTRITION AND INPATIENT WARDS

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**Background:** Early infant diagnosis (EID) testing to identify HIV-infected children remains the gateway for life-saving pediatric anti-retroviral treatment (ART). Despite notable progress in elimination of mother-to-child transmission (EMTCT) programming, EID testing coverage of the annual UNAIDS estimated 1.3 million HIV-exposed infants in sub-Saharan Africa remains inadequate; less than 50% received an EID HIV test within the first two months of life in 2014, and only 30% of HIV-infected infants are on ART. EID programs continue to face unique challenges, including where to find the children who are in need of this test. Current WHO guidelines suggest the expansion of testing and screening outside of EMTCT, but an assessment of prevalence and yield at various entry points has not been explored previously. Our study assessed the HIV infection prevalence of children receiving care at various service entry points in health facilities in Uganda.

**Methods:** We consecutively enrolled and tested infants 24 months of age and below at four major hospitals across Uganda. Six hundred children across four hospitals were included for each of the six major infant/child service entry points of the facilities: EMTCT, immunization, inpatient, nutrition, outpatient, and outreach. Each infant received a virological EID test to determine infection status.

**Results:** A total of 117 infants were HIV-positive for an overall prevalence of 3.25%. The traditional EID entry point, EMTCT, had a prevalence of 3.84%, representing 19.6% of the HIV-infected infants identified. Fifty percent of the 117 identified HIV-positive infants were found in the nutrition wards, which had a prevalence of 9.83% (p< 0.001 compared to EMTCT). Inpatient wards had a prevalence of 3.50% and yielded 17.9% of the infected infants identified. Immunization wards and outreach had the prevalence at less than 0.35%, and yielded 0.8% and 1.7% of the infected infants identified, respectively.

**Conclusions:** More effective identification of HIV-infected infants is critical to improve case-finding and initiate infants on life-saving ART. While EID testing should remain at EMTCT, strengthened, testing approaches should consider high HIV prevalence rates at nutrition and inpatient wards, which indicate that universal virological testing should be prioritized routinely at those entry points.

# PHARMACOKINETICS / PHARMACODYNAMICS / PHARMACOGENOMICS IN INFANTS, CHILDREN, AND ADOLESCENTS

## TUPEB084

### IMPACT OF HIV INFECTION ON THE PHARMACOKINETICS OF FOUR FIRST-LINE ANTITUBERCULOSIS DRUGS IN CHILDREN WITH TUBERCULOSIS IN GHANA

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**Background:** HIV/TB co-infected children have a higher risk of dying from TB than children with TB alone during antituberculosis (anti-TB) therapy. The poor outcome may in part be due to lower anti-TB drugs exposure in the co-infected children. This study compared the pharmacokinetics of four first-line anti-TB drugs in children with TB/HIV coinfection to those with TB alone.

**Methods:** Children with TB with or without HIV coinfection on first-line anti-TB therapy for at least 4 weeks had blood samples collected at pre-dose, 1, 2, 4, and 8 hours post-dose. Drug concentrations were determined by validated liquid chromatography mass spectrometry methods and pharmacokinetic parameters calculated using noncompartmental analysis. Differences in PK parameters for each drug between children with TB alone and those with HIV/TB coinfection were compared.

**Results:** Of the 113 study participants, 59 (52.2%) had HIV coinfection, 63 (55.8%) were male, the median (IQR) age was 5.0 (2.2 - 8.5) years old, 23 (20.3%) were aged < 2 years old and 53 (46.9%) aged < 5 years old. The baseline characteristics and drug dosages for the two groups were similar except HIV/TB co-infected patients were more likely to have a lower weight-for-age and height-for age z-scores ($P < 0.05$). The median plasma area under the concentration-time curve from 0 to 8 hours for isoniazid in the children with TB/HIV coinfection and TB alone were (18.4 vs. 21.2 µg*hr/mL; $P$=0.231), rifampin were (24.9 vs. 30.5 µg*hr/mL; $P$ = 0.030), pyrazinamide (126.5 vs. 151.0 µg*hr/mL; $P$ = 0.034) and ethambutol (4.8 vs. 7.6 µg*hr/mL; $P$ = 0.0003), respectively. The median weight-normalized apparent oral clearance for isoniazid in the children with TB/HIV coinfection and TB were (0.50 vs. 0.44 L/hr/kg; $P$=0.405), rifampin were (0.53 vs. 0.45 L/hr/kg; $P$=0.044), pyrazinamide (0.12 vs. 0.10 L/hr/kg; $P$=0.010) and ethambutol (2.95 vs. 1.96 L/hr/kg; $P$=0.0009), respectively.

**Conclusions:** HIV coinfection is associated with a higher clearance and a lower plasma exposure of rifampin, pyrazinamide and ethambutol in Ghanaian children with TB. Whether higher drug dosages may improve drugs pharmacokinetics and treatment outcomes in co-infected children need to be investigated.

## TUPEB085

### GROWTH RESPONSE TO ANTIRETROVIRAL THERAPY (ART) INITIATION AMONG HIV-INFECTED CHILDREN IN CARE IN WESTERN KENYA

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**Background:** In children HIV infection may cause growth failure which can be a proxy for treatment failure and disease progression. We investigated the rapid growth response to initiation of antiretroviral therapy shown by studies among HIV-infected children and associated factors.

**Methods:** We conducted a retrospective of analysis of prospectively collected data in the database on HIV infected ART-naïve children aged below 13 years attending the AMPATH pediatric clinics between 2005 -2009.A two-piece structural causal model was used to characterize the effect of ART initiation on anthropometric measures. Models were fitted separately by age (<2 vs >2 years) and CDC class at enrollment.

**Results:** Of 4147 participants included, 2208 (53%) were ever on ART and 3362 (81%) were aged below 2 years at enrollment. Average baseline weight-for age (WAZ), height-for-age (HAZ) and weight-for-height (WHZ) z scores among those <2 years were -1.97 ±1.83, -1.69 ± 1.60 and -0.57 ± 1.76 respectively. Those aged <2 years had dramatic improvement in WAZ scores during the first year stabilizing at

-1; those aged >2 years, had rapid improvement in WAZ scores during the first 6 months stabilizing at -1.5. Within CDC classes, benefits of ART on WAZ were realized within the first year.
**Conclusions:** ART initiation in children leads to growth recovery which plateaus below normal. Degree of recovery is more pronounced among younger children.

## CLINICAL TRIALS AND ANTIRETROVIRAL THERAPY IN INFANTS, CHILDREN, AND ADOLESCENTS

### TUPEB086

### STRUCTURED ANTIRETROVIRAL TREATMENT INTERRUPTIONS IN VERTICALLY HIV-1 INFECTED CHILDREN WITH COMPLETE PRO-VIRAL DNA PCR REVERSIONS IN NAMIBIA, FOLLOWING DURABLE VIRAL SUPPRESSION, LED TO RAPID REBOUND VIREMIAS AND SIGNIFICANT IMMUNOLOGIC DESTRUCTION

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**Background:** Early anti-retroviral therapy (ART), in vertically HIV-1 infected children, can lead to reversion of pro-viral HIV DNA PCR test to negative. This may pose clinical dilemmas to healthcare workers (HCWs) leading to misclassification of HIV status. We followed five children who had DNA PCR and antibody reversions, in whom primary healthcare providers erroneously ruled-out HIV infection.
**Description:** Review of the medical records revealed that three of them were females. Four were tested positive with single HIV DNA PCR within six months of age and one at 10 months. Four started ART before the age of 1 year and one at 21 months. Viral loads (VLs) were undetectable in all children by 21-35 months of treatment. After about 2 years of ART, HIV antibody and DNA PCR tests turned negative in all cases. Undetectable VLs in these children prompted HCWs to repeat DNA PCR and antibody tests, both of which returned negative. HCWs then mistakenly informed the parents that their children were HIV un-infected. To clear the clinical dilemma, we instituted structured treatment interruption with close follow up and VL monitoring.
**Lessons learned:** Following structured treatment interruption for a median duration of 6 weeks, we detected high level rebound viremias in all children in the range of 135,409 and 8,400,337 RNA copies/ml. CD4 loss of up to 15% was observed within 3 months from the points of ART interruption. Care givers received counseling and the children were re-started and maintained on ART. All children fully suppressed the virus again within 6 to 9 months of re-treatment and maintained suppression for 18 to 24 months now.
**Conclusions/Next steps:** These cases illustrated pro-viral HIV DNA reversions in vertically HIV-1 infected children, on ART, following durable viral suppression. The rapid post-treatment interruption viral rebound illustrated that prolonged viral remission is unlikely unless very early treatment is started. Treatment interruptions lead to significant immunologic destructions and shall not be implemented in such children in resource constrained settings. Reversion phenomena may become commoner with increasing access to early ART in vertically infected children in Africa. HCWs shall be made aware of such phenomena and children should receive timely HIV disclosure.

### TUPEB087

### TARGETING GUT MICROBIOTA OF VERTICALLY HIV-INFECTED CHILDREN AND ADOLESCENTS: A PILOT STUDY

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**Background:** Recent studies have confirmed a microbial gut dysbiosis in HIV adults on antiretroviral therapy (ART) that correlates with chronic bacterial translocation and systemic inflammation. Changes in microbial communities in vertically HIV-infected children, whose immune system has developed in the presence of the virus and bacterial products from the impaired gut, remain unexplored. We aim to characterize the intestinal microbiota of HIV-infected children compared to healthy children, and to modulate it using a nutritional supplement.
**Methods:** Pilot, double blind, randomized placebo-controlled study including HIV-infected children receiving a pre/probiotic supplement. DNA was extracted at baseline and after a 4-week intervention from stool samples and 16S rRNA gene amplicons were pyrosequenced. The sequences were analyzed using the Qiime pipeline. Bacterial biomarkers were identified using the LEfSe Biomarker discovery tool. Uninfected siblings were recruited as controls.
**Results:** 22 HIV-infected children completed the follow-up, and were compared to 11 controls. Mean age was 11.4±3.4, 8 (32%) were male. All were on ART and had VL< 50/ml. Their microbiota showed reduced alpha diversity compared to controls (P=0.042) and distinct composition at the genus level (Adonis P=0.042). Patients showed decreased abundance of commensals Faecalibacterium and Lachnospira and increase of the pathogenic Fusobacterium but not imbalance of Prevotella trade-off, as observed in adults. After the intervention, changes between the microbiota of cases and controls were non-significant and an increase of the butyrate producers Faecalibacterium and Butyricicoccus was documented.
**Conclusions:** Vertical HIV infection is characterized by intestinal dysbiosis despite ART, but the abnormalities at the compositional level are distinct to the ones observed in adults. Although not fully effective to restore the microbiota, a short intervention with pre/probiotics attenuated bacterial dysbiosis, increasing butyrate producing bacteria, which may play an anti-inflammatory role.

## ADHERENCE IN CHILDREN AND ADOLESCENTS

### TUPEB088

### SUCCESSFUL TRAINING OF HIV+ YOUTH IN A TRAUMA-INFORMED COGNITIVE BEHAVIORAL INTERVENTION FOR HIV+ ADOLESCENTS IN RWANDA

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**Background:** ART adherence among HIV+ adolescents is a global concern. Innovative responses include training peers to provide interventions. The Kigali Imbereheza Project (KIP) trained HIV+ Rwandan youth to deliver a trauma-informed cognitive behavioral intervention to improve adherence to ART in HIV+ adolescents. Rigorous training, supervision, and in-person mentoring were integral components of the program.
**Description:** Rwandan psychologists provided general counseling and group facilitation skills training to 16 youth leaders (YLs) (ages 21-25). US-based and Rwandan psychologists conducted 14 days of training, five-days on basic cognitive behavioral concepts and nine-days learning and practicing the structured six-session intervention. Four YL's were selected as facilitators (YFs), four as observers (YOs), based on demonstrated skills in practice sessions.
A RCT compared the intervention to standard of care. Rwandan psychologists provided supervision following each completed session and preparation prior to the next session. Individual supervision and training to increase knowledge was available as needed. Rwandan psychologists participated in weekly mentoring Skype calls with US-based psychologist. In addition, the US-based psychologist returned for in-person review and refresher trainings twice annually over the course of the study.
**Lessons learned:** To assess fidelity and skill, YFs were rated by YOs (e.g. followed script, explained and demonstrated activities, responded appropriately to questions). Ratings ranged from 0 "not very well" to 4 "very well." Observers mean ratings were between 3.25-3.83 indicating YF's performed "well" in adhering to curriculum and responding appropriately (e.g. praised correct responses, provided corrective feedback, limited unproductive discussion). YFs' self-evaluations were rated as: 1 "poor," 2 "fair," 3 "good," 4 "very good," 5 "excellent". YFs reported at least "good" for how well they delivered intervention except where one facilitator reported "fair." Measures by YOs and YFs suggest they learned and delivered with fidelity the trauma-informed cognitive behavioral intervention.
**Conclusions/Next steps:** With rigorous training and supervision, HIV+ youth can successfully provide mental health interventions. Monitoring and evaluating are important. Including biannual in-person mentoring with a senior psychologist promoted continuing skill development. The successful implementation of a cognitive behavioral intervention by YLs has important program implications within HIV care for adolescents and in-country capacity building.

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## TUPEB089

### "IT IMPROVES OUR SKILLS TO HELP OUR CHILDREN": INVOLVING CAREGIVERS IN THE CARE OF HIV+ YOUTH IN RWANDA

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**Background:** Caregiver and home environment are important sources of support for antiretroviral therapy adherence among adolescents with HIV. The Kigali Imbereheza Project (KIP) in Rwanda trained HIV+ youth leaders to conduct a six-session intervention for HIV+ adolescents utilizing trauma-informed cognitive behavioral strategies to improve adherence. Additionally, caregivers were invited to participate in two sessions focusing on assessing and improving child-caregiver relationships to support adherence.

**Methods:** KIP enrolled 198 14-21 year old, HIV+ youth and 187 identified caregivers in a 2-arm randomized controlled trial at two HIV treatment sites for adolescents in Kigali. Caregivers (biologic parent or guardian who lived with the youth) participated in two 2-hour sessions conducted by Rwandan study psychologists at midpoint and conclusion of the youth intervention period. Sessions were didactic and experiential with a focus on HIV knowledge and stigma, parent-child communication, and adherence problem solving strategies. Caregivers provided demographics and reported information on psychosocial variables and attitudes, including HIV knowledge and stigma. Data was collected using audio computer assisted technology at baseline, 6-, 12-, and 18-months. Using SPSS, we performed t-test analyses comparing change in scores from baseline to 6-months.

**Results:** The average age of a caregiver was 45 years, 78% were female, 60% had cared for youth their entire life, 59% were also HIV+, and 57% were single parents. Caregivers reported low income with 43% being currently employed. 89% were literate, 59% had completed primary education and 47% reported a mental health or substance abuse problem. Caregiver baseline data showed 82% had correct HIV knowledge, 76% reported supervising medication adherence 95% of the time, 94% indicated they ask youth about clinic visits, and 80% reported accompanying youth to clinic. Significant findings at six months post-intervention, showed that caregivers in the intervention group reported greater HIV knowledge (p=< .0001) and less HIV stigma (p=.0002) compared to baseline and compared to control group (p=.0084 and p=.0319 respectively).

**Conclusions:** In this study, the caregivers' intervention demonstrated improvement in HIV knowledge and reduction in HIV stigma that potentially will improve parent-child relationships, enhance antiretroviral adherence and improve health outcomes. Caregiver education is a valuable component of care for HIV+ adolescents.

## TUPEB090

### FACTORS ASSOCIATED WITH TREATMENT FAILURE AND DEVELOPMENT OF DRUG RESISTANCE AMONG HIV-1 INFECTED CHILDREN IN A SLUM-BASED TREATMENT PROGRAM IN KENYA

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**Background:** There's limited data from the developing countries on antiretroviral drug resistance among HIV-1 infected children failing antiretroviral therapy, especially in the context of extreme poverty and a high tuberculosis co-infection burden. We used treatment records to evaluate the risk factors for the development of HIV resistance-associated mutations among a cohort of slum-dwelling children.

**Methods:** We analyzed data of children that initiated antiretroviral therapy in a large slum-based clinic in Nairobi; we singled out all cases that had developed virological failure (WHO's definition: two consecutive viral loads >1000 copies/ml 3 months apart) between 2011 and 2013 and received genotypic drug resistance testing. We performed logistic regression analysis to determine frequencies of drug resistance mutations and related them to biomedical and socio-economic associations.

**Results:** We included 57 children (median age 27.8 months). At ART initiation, most had advanced clinical disease (78.3% WHO stage III or IV), high baseline HIV viral load (median 7.12 log10) and TB co-infection (73%), severe malnutrition (median weight-for-age Z-score -2.5, median height-for-age Z-score -2.9. All children were initiated on PI-based regimens. Median time-to-virological failure was 15.1 months (11.3-19.8, p< 0.03). The commonest mutations were M184V (41), V90M (13), and K103N (8). 34(59%) children had multi-class resistance mutations, in 16(47%) of whom M184V in reverse transcriptase was linked to PI resistance mutations. Factors co-related to presence of resistance mutations were: low weight-for-age and height-for-age (p=0.04; p=0.03); longer duration on PI regimens and virological failure (p=0.003; p=0.006); unsuppressed HIV viral load at 12, 24 and 36 months of ART (p=0.001); tuberculosis treatment at ART initiation (p=0.039); lack a regular primary care-giver (49% p=0.002), orphans (p=0.004), parent/guardian failing ART (p=0.002). Multivariate analysis showed significance of cumulative months on PI regimens and use of ritonavir as single PI (p=0.013; p=0.028).

**Conclusions:** Multiclass resistance mutations were the common in this cohort of HIV-1-infected children failing therapy. Duration of therapy, PI-regimen use, co-infection/TB treatment and lack of a consistent primary caregiver showed a multifactorial association to development of resistance. There's need for more interventions to address the treatment challenges of children in extreme poverty.

## TUPEB091

### BEYOND CLINICAL TRIALS: ASSOCIATIONS BETWEEN ANTIRETROVIRAL THERAPY (ART) AND REPORTING MULTIPLE MEDICATION SIDE-EFFECTS AMONG ADOLESCENTS IN SOUTH AFRICA

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**Background:** Pragmatic studies investigating ART-associated side-effects among adolescents in resource-limited settings are rare beyond clinical trial settings. This study examines cross-sectional associations between various ART regimens and reporting multiple medication side-effects, conducted with the largest community-traced sample of HIV-positive adolescents at present.

**Methods:** N=1059 ART-initiated adolescents aged 10-19 years attending 53 health facilities in Eastern Cape were interviewed and included in 2014-15. Adolescents also provided names and/or photographs of their current medication. Adolescents with unclear or missing medication/identification data (n=319, 30.1%) were excluded from analyses leaving a final sample of n=740 (69.9%).The major outcome—multiple medication side-effects (MMSEs)—was defined as experiencing 3 or more side-effects in the past 6 months by self-report. Potential confounders included age, gender, rural residence, overall health, food insecurity, lacking basic necessities, antibiotics/TB medication, pill burden, medication frequency, ART non-adherence, CD4 count < 500 cells/mm$^3$, recent treatment failure (viral load >1000 copies/mL), ART stock-outs, vertical infection and time on treatment. Multivariate logistic regression analyses followed by post-estimation computation of adjusted predicted probabilities for each ART were conducted in Stata 13.

**Results:** Prevalence of MMSEs was 61.0% (95% CI: 56.9-64.4). Prevalence of symptoms included in computing the outcome was: tiredness (44%), nausea/vomiting (42%), diarrhoea (42%), skin rash (42%), stomach problems (40%), dizziness (34%), insomnia/bad dreams (33%), ear problems (32%), weight loss (29%), and anxiety (3%). Frequent ART regimens were: Abacavir + Lamivudine + Efavirenz (ABC/3TC/EFV, n=165, 22%) and Tenofovir Disoproxil Fumarate + Emtricitabine + Efavirenz (TDF/FTC/EFV, n=116, 16%). NRTI-based regimens: ABC-containing (31%), TDF-containing (19%), Zidovudine (AZT)-containing (7%) and Stavudine (d4T)-containing (4%); NNRTI-based: EFV-containing (48%) and Nevirapine (NVP)-containing (0.4%); PI-based: Lopinavir/Ritonavir (LPV/r)-containing regimens (12%). d4T-containing regimens and the fixed dose combination containing TDF/FTC/EFV independently increased the likelihood of MMSEs (aOR: 2.83, CI: 1.14-6.99, p=0.025) and (aOR:1.66, CI: 1.05-2.62, p=0.029) respectively whereas LPV/r-based regimens were independently associated with fewer side-effects (aOR: 0.46, CI: 0.28-0.75, p< 0.005). The adjusted predicted probability of MMSEs was highest for d4T-containing regimens (82%), TDF/FTC/EFV (72%) and lowest for LPV/r-based ART (46%). However, findings from analyses linking ART to past-week non-adherence show that only TDF/FTC/EFV significantly reduced the likelihood of non-adherence among adolescents independent of clinic staff problems, clinic transport problems, food insecurity and past-year ART stock-outs (aOR: 0.51, CI: 0.32-0.82, p< 0.01).

**Conclusions:** d4T-containing and TDF/FTC/EFV-containing regimens are associated with many side-effects whereas LPV/r-containing regimens are associated with fewer side-effects among adolescents. However, adolescents on TDF/FTC/EFV were the most adherent subgroup. These findings underpin the importance of once daily cART in the management of adolescent HIV and provide the evidence needed to enable clinicians achieve a balance between the decision to prescribe low toxicity ART with the imperative to promote adherence amongst adolescents.

## TUPEB092

### FIRST-LINE ART REGIMEN DURABILITY AMONG SOUTH AFRICAN HIV-POSITIVE PEDIATRIC PATIENTS

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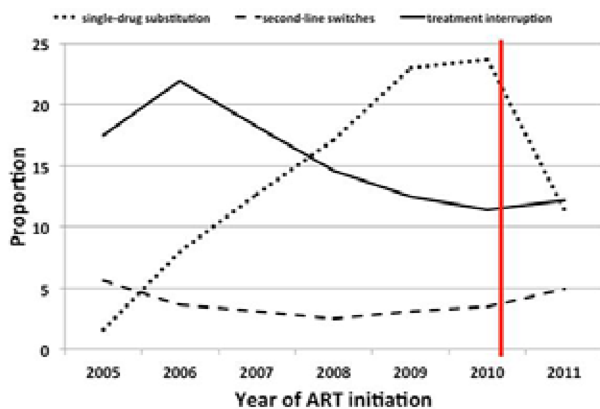
**Background:** Regimen durability is crucial for survival to adulthood. In South Africa, first-line ART for children older than five years was stavudine-based (d4T) until April 2010, when tenofovir (TDF) replaced d4T. We investigated predictors of single-drug substitutions (SDS), treatment interruptions (TI), and switches to second-line therapy (SLT).
**Methods:** Prospective study of patients 5-19.9 years initiating ART between April 2004-April 2012 at 8 public-sector HIV clinics. SDS was defined as change of nucleoside reverse transcriptase inhibitor without switching to SLT; TI was defined as ART cessation; SLT switch was defined by at least two drug changes across two classes. Adjusted Cox models were used to determine predictors of outcomes.
**Results:** 1978 children were eligible. Over 24-months follow-up, 310 (15.7%) SDSs; 67 (3.4%) SLT switches and 304 (15.4%) TI occurred. SDS frequency peaked in 2010 (24%), then declined in 2011 (11%). TI peaked in 2006 (22%) with decline in 2011 (12%), while SLT switches remained near 5%. Patients initiated on d4T (vs. TDF) had a 500% increase in the hazards of SDS (HR 6.01, 95% CI 2.2-16.41). ART initiation in 2009 and 2010 (vs. 2011) had a 100% increase in the hazards of SDS (HR 2.16, 95% CI 1.14-4.11). Initiation on d4T trended towards increased hazards of TI (HR 1.52, 95% CI 0.9-2.56). ART initiation in 2006 (vs. 2011) had 100% increase in the hazards of TI (HR 2.03, 95% CI 1.07-3.87). Neither initiation on d4T or year of initiation was associated with increase in SLT switch.
**Conclusions:** The SDS peak in 2010 likely resulted from treatment-experienced patients switching from d4T to TDF. Declines in SDS and TI may have resulted from fewer side-effects/toxicities from TDF, but TDF initiation doesn't account for decreased TI since 2006. The proportion of SLT switches hasn't changed, though regimen durability overall has improved after introduction of TDF.




*[Figure. Trends in single-drug substitution, second-line switches and treatment interruptions in children and adolescents 5 years to 19.9 years of age (n=1978)]*

## TUPEB093

### OUTCOMES IN HIV-POSITIVE CHILDREN ON LAMIVUDINE MONOTHERAPY AS A HOLDING REGIMEN IN THE IEDEA SOUTHERN AFRICAN COHORTS

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**Background:** Treatment failure in HIV-infected children on antiretroviral therapy (ART) in resource-limited settings is a growing concern given poor access to new drugs and lack of targeted strategies to improve adherence. Lamivudine monotherapy (LM) has been used as a holding regimen whilst psychosocial barriers to adherence are addressed. There are few studies of LM outcomes in children. We aimed to investigate characteristics of children placed on LM and their outcomes.
**Methods:** We included children (age < 16 years at ART start) who received LM. Kaplan-Meier estimates and Cox-proportional hazards modelling were used to determine probability and predictors of immunological failure (IF), defined as a drop in CD4 below 500, or, in those who initiated LM with CD4< 500, a drop in CD4 of > 10%. The Wald's test was used to obtain p-values for categorical variables.
**Results:** Characteristics and outcomes of patients on LM are summarized in table 1.

| Characteristics at ART start | Male (%) | 117 | 62% | Outcomes on LM | Median time in days on LM | 310 | (85-671) |
|---|---|---|---|---|---|---|---|
| | Median age in years (IQR) | 6.8 | (2.4-9.7) | | Resumed ART (n,%) | 121 | 64% |
| | Median CD4 count (IQR) (n=130) | 345.5 | (176-583) | | Remained in care on LM (n,%) | 46 | 24% |
| | Median CD4% (IQR) (n=126) | 13.0 | (7.6-18.0) | | Died on LM (n,%) | 3 | 2% |
| Characteristics at LM start | Median age in years (IQR) | 11.1 | (6.5-13.9) | | Transferred out on LM (n,%) | 11 | 6% |
| | Median CD4 count (IQR) (n=177) | 613 | (427-868) | | Lost to follow-up on LM (n,%) | 8 | 4% |
| | Median CD4% (IQR) (n=177) | 23.0 | (16.9-28.2) | | | | |
| | CD4 < 500 cells/uL (n=177) | 59 | 33% | | | | |
| | Median VL (IQR) (n=178) | 13291 | (4085-51000) | | | | |
| | On efavirenz-based regimen (%) | 102 | 54% | | | | |

*[Characteristics of children on lamivudine monotherapy (LM) from 5 IeDEA-SA cohorts (N=189)]*

Of those on LM for >90 days, 42% (55/130) experienced IF; 21% (27/130) experiences a gain in CD4 of > 10%. Among 102 patients on LM for > 6 months, the 6 month risk of IF was 22% (95% CI 15.9%-29.9%). Predictors of IF included older age, treatment interruptions prior to LM start, immunosuppression at ART start, and CD4 at LM start (Table 2). Ever having been on a PI regimen was not associated with IF.

| Characteristic at ART or LM start | | Adjusted HR (95% CI), n=130 | p | Characteristic at ART or LM start | | Adjusted HR (95% CI), n=130 | p |
|---|---|---|---|---|---|---|---|
| Age in years at ART start | <2 | 1 | - | Immune suppression at ART start | Not immune suppressed | 1 | - |
| | 2-6 | 2.05 (0.90-4.68) | 0.0213 | | Immune suppressed | 2.25 (1.18-4.3) | 0.0439 |
| | 6-9 | 2.82 (1.38-5.76) | | | Missing | 2.10 (1.06-4.17) | |
| | >9 | 3.07 (1.39-6.79) | | Ever on a PI-based regimen | | 1.08 (0.68-1.72) | 0.738 |
| Prior Treatment Interruption | | 2.27 (1.32-3.88) | 0.003 | | | | |
| CD4 at LM start | <500 | 1 | - | | | | |
| | 500-750 | 1.28 (0.77-2.15) | 0.014 | | | | |
| | 750-1000 | 0.91 (0.46-1.78) | | | | | |
| | >=1000 | 0.42 (0.20-0.89) | | | | | |

*[Mulitvariate associations with a decline in CD4 of > 10% from LM start or a drop in CD4 count <500 cells/uL in those with CD4>500, stratified by site]*

**Conclusions:** Most children on LM experienced immunologic decline. The clinical significance of this decline warrants further investigation including comparison with those who interrupt treatment or remain on triple therapy.

## TUPEB094

### ADHERENCE MEASUREMENT AND SUPPORT SERVICES FOR HIV-INFECTED CHILDREN AND ADOLESCENTS FOLLOWED IN GLOBAL SITES OF THE INTERNATIONAL EPIDEMIOLOGIC DATABASES TO EVALUATE AIDS (IEDEA)

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**Background:** Sustaining adherence to antiretroviral therapy (ART) is central to successful long-term HIV care for children and adolescents. We do not know the most effective strategies to improve adherence in resource-limited settings or have a clear picture of the services currently available. We sought to describe how global HIV care programs measure and support pediatric ART adherence.

**Methods:** Using a web-based survey (REDCap), we assessed adherence measurement, support services, and relevant pediatric care system characteristics at sites caring for pediatric patients in 6 global regions of the International Epidemiologic Databases to Evaluate AIDS (IeDEA) consortium.

**Results:** Clinical staff from 180 pediatric sites in 45 countries completed the adherence survey between June 2014-March 2015. Sites were in Asia (n=16 sites; 4,357 children), Central and South America (n=7; 1,746 children), Central Africa (n=18; 906 children), East Africa (n=33; 12,218 children), Southern Africa (n=95; 45,641 children), and West Africa (n=11; 8,932 children.) Most sites managed both adults and children (82%). Open clinician adherence assessment (used at 87% of sites) and pharmacy refills (86% of sites) were the most common adherence measurement methods used globally (Table 1). All sites used at least one measure. Structured recall items (77%) and targeted HIV viral loads (75%) were also common. Available adherence support services varied widely across sites, with counseling most common and few sites using SMS reminders (Table 2).

| Adherence Measure | Asia-Pacific (16 sites) | Latin America (7 sites) | Central Africa (18 sites) | East Africa (33 sites) | Southern Africa (95 sites) | West Africa (11 sites) |
|---|---|---|---|---|---|---|
| Clinical Assessment | 13 (81%) | 7 (100%) | 13 (72%) | 22 (67%) | 93 (98%) | 9 (82%) |
| Structured Recall (one recall item, any time period) | 7 (44%) | 3 (43%) | 14 (78%) | 20 (61%) | 87 (92%) | 8 (73%) |
| Instrument with Multiple Adherence Questions | 4 (25%) | 0(0%) | 7 (39%) | 16 (48%) | 78 (82%) | 5 (45%) |
| Pill Counts | 10 (63%) | 2 (29%) | 14 (78%) | 27 (82%) | 13 (14%) | 6 (55%) |
| Liquid Measures | 5(31%) | 2(29%) | 12(67%) | 8(24%) | 8(8%) | 5 (45%) |
| Pharmacy Refills | 7 (44%) | 4(57%) | 16 (89%) | 27(82%) | 90 (95%) | 10 (91%) |
| Electronic Dose Monitoring | 0(0%) | 0(0%) | 0(0%) | 1(3%) | 3(3%) | 0(0%) |
| Viral Load Monitoring at Routine Intervals | 10 (63%) | 5(71%) | 13(72%) | 26(79%) | 12(13%) | 8(73%) |
| Viral Loads if Suspect Non-Adherence | 9 (56%) | 3(43%) | 14(78%) | 16(48%) | 86(91%) | 7(64%) |

*[ART Adherence Measurement Methods Used for Children by Global IeDEA Sites]*

| Adherence Support Available | Asia (16 sites) | Latin America (7 sites) | Central Africa (18 sites) | East Africa (33 sites) | Southern Africa (95 sites) | West Africa (11 sites) |
|---|---|---|---|---|---|---|
| Pill Boxes | 12 (75%) | 2 (29%) | 1 (6%) | 9 (27%) | 8 (8%) | 2 (18%) |
| Counseling (Any) | 16 (100%) | 7 (100%) | 16 (89%) | 32 (97%) | 89 (94%) | 10 (91%) |
| Case Management | 13 (81%) | 5 (71%) | 13 (72%) | 28 (85%) | 89 (94%) | 10 (91%) |
| Educational Classes | 9 (56%) | 3 (43%) | 15 (83%) | 29 (88%) | 89 (94%) | 8 (73%) |
| Support Groups: For caregivers For children | 13 (81%) 9 (56%) | 6 (86%) 5 (71%) | 12 (67%) 13 (72%) | 28 (85%) 26 (79%) | 88 (93%) 92 (97%) | 8 (73%) 9 (82%) |
| Peer adherence supporters | 3 (19%) | 2 (29%) | 10 (56%) | 25 (76%) | 87 (92%) | 5 (45%) |
| Home Visits | 10 (63%) | 4 (57%) | 17 (94%) | 25 (76%) | 81 (85%) | 8 (73%) |
| SMS Adherence Reminders | 4 (25%) | 2 (29%) | 1 (6%) | 9 (27%) | 2 (2%) | 1 (9%) |
| Nutritional Support | 12 (75%) | 4 (57%) | 14 (78%) | 32 (97%) | 88 (93%) | 9 (82%) |

*[ART Adherence Support Available at Global IeDEA Sites]*

**Conclusions:** Global pediatric HIV care services routinely measure adherence, but few use objective or validated measures. General support services are available, but more targeted adherence support may not be present.

## TUPEB095

### DOES NEUROCOGNITIVE FUNCTION AND/OR ANXIETY/DEPRESSION PREDICT ADHERENCE TO ANTIVIRAL THERAPY AMONG PERINATALLY HIV-INFECTED ADOLESCENTS IN ENGLAND?

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**Background:** Perinatally HIV-infected (PHIV) young people are entering adulthood, often with complex clinical and psychosocial issues which may affect adherence to ART. This is at a time when they are increasingly expected to self-manage their HIV care.

**Methods:** 296 PHIV aged 13-21 years were recruited into the AALPHI cohort in England from 2013-15. Baseline data included (via computer-assisted self-interview) short-term adherence (any v. no missed doses in last three days), anxiety/depression (HADS), quality of life (PedsQL), drug/alcohol use, and self-perception about having HIV (composite score of level of upset, worry, sadness, loneliness, concern

about future health). A summary (NPZ-6) z-score was calculated for neurocognitive function. Logistic regression examined predictors of short-term non-adherence.
**Results:** 261(88%) of 296 PHIV were on ART (94% once-daily) at recruitment. 111(43%) were male, 220(84%) black, median age was 16 years [IQR 15,18] and for 87(35%) one/both biological parents had died. 72(28%) had CDC Stage C; 78% had viral load (VL) ≤50copies/ml. 242(93%) were in full-time education, 236(91%) lived with their parents/carers, and 50(19%) had transferred to adult care. 17% and 5% had moderate/severe anxiety and depression respectively, and mean NPZ-6 score was -0.58(SD 0.86).
Overall 70(27%) reported missing ≥1 ART dose in the last 3 days, most often due to forgetting (68%) and being away from home (37%). Of those with VL>50copies/ml, 51% reported missing doses, vs. 20% for those with VL< 50. Multivariable analysis (Table) identified those with decreased QL, negative perceptions about having HIV, and cigarette smokers, as having higher odds of non-adherence. Anxiety/depression, NPZ-6, CDC C diagnosis, alcohol/drugs, and having transferred to adult care did not predict adherence.

| Variable | | Adjusted Odds Ratio (95% CI) | P value |
|---|---|---|---|
| Quality of life (PedsQL) | Per 100 units decreased quality of life | 1.1 (1.0, 1.2) | 0.029 |
| Perception about having HIV | Per 5 units decreased (negative) score | 1.1 (1.0, 1.2) | 0.043 |
| Ever smoked cigarettes | No | Ref | |
| | Yes | 2.7 (1.3, 5.7) | 0.010 |
| *All variables adjusted a priori for gender, age at interview, born UK v. abroad, ethnicity | | | |

*[Table: Multivariable* predictors of 3 day non-adherence]*
**Conclusions:** More than one in four PHIV reported poor adherence to ART in the previous three days. Lower quality of life, poorer perception about having HIV, and cigarette smoking were the main predictors of recent non-adherence. Cognitive function and anxiety /depression may act as mediating influences for these associations rather than directly predicting adherence.

## TUPEB096

### AN ADHERENCE INTERVENTION AND DRUG RESISTANCE AMONG HIV-POSITIVE ADOLESCENTS FAILING SECOND-LINE TREATMENT AT A PUBLIC HEALTH CLINIC

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**Background:** Sustaining virologic suppression among HIV-infected adolescents is challenging due to poor adherence. From 20-50% fail 2nd line ART. Enhanced adherence support may improve treatment outcomes. This study sought to characterize self-reported adherence and drug resistance mutations among adolescents failing 2nd line treatment and evaluate a home-based adherence intervention with SMS test outreach compared to standard care.
**Methods:** HIV positive participants aged 10-18 years on boosted atazanavir-based 2nd line treatment from a public clinic in Zimbabwe with virologic failure (VL ≥1 000 copies/ml) were randomized to standard care (SC) or modified directly administered antiretroviral therapy (mDAART) for 3 months. SC included 3 monthly clinic reviews and adherence counseling. The mDAART intervention included SC, home visits and SMS outreach by research assistants. Viral load was measured and questionnaires administered at baseline and at 3 months after enrolment. Genotyping was done for participants with continued treatment failure. Primary outcome was suppression to VL < 1 000 copies/ml evaluated by Fisher's test. Data was recorded in Redcap.
**Results:**

| Variable | Outcome (n=33) |
|---|---|
| Age, mean(SD); range in years | 15.8 (1.6); 13 - 18 |
| Gender: Female Male | 67% 33% |
| Baseline self-reported adherence by visual analogue scale (VAS): ≥95% 80-94% <80% | 29% 29% 42% |
| Post self-reported adherence by VAS : ≥95% 80-94% <80% | 45% 30% 25% |
| Self-reported adherence by VAS: Decreased Increased | 20% 80% |
| Baseline viral load, median (range) copies/ml | 77 022 (1 501 - 6 279 197) |
| Post viral load , median (range) copies/ml | 23 720 (20 - 736 198) |
| Viral load change: Decreased Increased | 18 (67%) 9 (33%) |
| % with re-suppression at 3 months (VL< 1 000copies/ml) | 33.3% |

*[Participant characteristics]*

Time on 2nd line ART, mean (SD); range months was 19.4 (6.0); (8.8 - 29.8) months.

| Variable | SC (n=15) | mDAART (n=18) | p-value |
|---|---|---|---|
| Age, mean (SD) in years | 16.0 (1.5) | 15.6 (1.7) | 0.568 |
| Gender-Female | 80% | 55.6% | 0.339 |
| Time on 2nd line ART, mean (SD) in months | 18.0(5.1) | 19.8(8.3) | 0.5104 |
| Increased self-reported adherence (VAS) | 56% | 100% | 0.026 |
| Decreased viral load | 57% | 71% | 0.445 |
| % with re-suppression at 3 months (VL< 1 000copies/ml) | 13.3% | 50% | 0.0342 |

*[Association between treatment arms with outcome]*

Treatment arms were well matched. Genotyping was done in 20/22 participants with continued failure. [n(%)] of resistance mutations by ARV class were: PIs- Q58E [2(10.5%)]; V82M, L90M, A71T, L10F, M46I, A71I, I84V and I50L [1(5.3%)]. NNRTIs-Y181C [7(36.8%)]; G190A [6(31.6%)]; A98G [5(26.3%)] and K103N [3(15.8%)]. NRTIs-M184V [6(31.6%)]; D67G, T69N and M41L [5(26.3%)]; K70R, T69D, V75I and T215F [3(15.8%)]. High level atazanavir resistance was identified in 2(6.1%) continued virologic failures.
**Conclusions:** The mDAART intervention resulted in improved self-reported adherence and virologic suppression. High level atazanavir resistance was demonstrated.

## TUPEB097

### ADHERENCE TO ANTIRETROVIRAL TREATMENT (ART) AMONG ADOLESCENTS IN NAIROBI COUNTY, KENYA

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**Background:** AIDS is the leading cause of death among adolescents in Africa and the second leading cause of death among adolescents globally. Despite adherence to ART being critical in controlling viral replication, maintaining health and reducing onward viral transmission, there are limited data on ART adherence amongst Adolescents and Youth globally. We undertook a study to examining the factors associated with poor ART adherence among adolescents in Nairobi County.
**Methods:** The study utilized routinely collected patient-level data for antiretroviral treatment (ART)-naive HIV-infected patients, aged 10-24 years. The total sample of 1800 adolescents had been enrolled in care between 2006-2015 at 16 Health Facilities in Nairobi. The dependent variable was adherence to HAART. Less than 95% adherence was considered "poor". Chi square tests and logistic regression analysis was used to examine the relationship between explanatory variables (Socio- demographic and Clinical and Immunological) and adherence to ART.
**Results:** The median age at enrollment was 20.9 (IQR: 18.5,22.6). Females comprised of 81.6% of the sample. On bivariate analysis, youth on ART for more than 1 year comprised of significantly higher proportion of those with poor adherence compared to good adherence (p = 0.028). Clients with WHO staging 3 or 4 also comprised of significantly higher proportions of poor adherence compared to good adherence (p < 0.001). The logistic model found poor adherence was trending towards association with: age (OR=2.73); having a higher CD4 (1.03) having a longer duration on ART >1 year (OR= 1.73), lower WHO stage (OR=5.36); ever using a family planning method (OR=3.13); and longer duration of time between HIV testing and ART start (OR=2.02).
**Conclusions:** This study suggest the importance for health facilities and HIV youth-centered organization to address:
1) age-specific challenges of adherence;
2) longer duration on ART, and
3) sexual behavior.
The first step toward addressing the problem of non-adherence is to accurately identify patients whose risk is sufficient to undermine clinical outcomes (viral suppression). Further research from the program data will assist in obtaining a better understanding of the etiology of poor adherence and to design effective intervention to improve adherence in Kenya.

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# COMPLICATIONS OF HIV AND THEIR THERAPY IN CHILDREN AND ADOLESCENTS

## TUPEB098

### GYRIFICATION DIFFERENCES IN 7 YEAR OLD HIV-INFECTED CHILDREN STARTING ART BEFORE OR AFTER 12 WEEKS OF AGE

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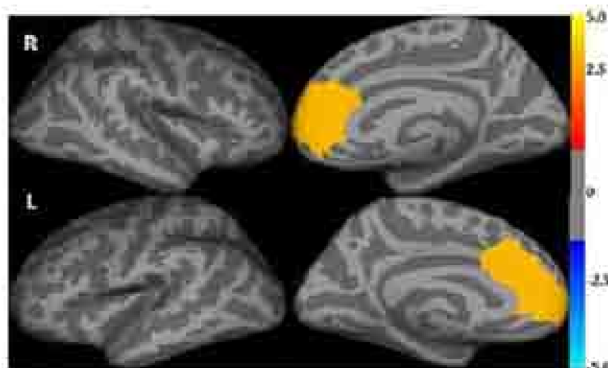
**Background:** Early antiretroviral therapy (ART) has been found to improve outcomes for HIV-infected infants, however, long-term effects on brain development require further investigation. This study used magnetic resonance imaging (MRI) to compare brain morphometry in 7-year-old vertically-infected children who started ART before or after 12 weeks of age.
**Methods:** MRI scans were done on participants from the follow-on study of the Children with HIV early Anti-retroviral (CHER) trial without sedation according to protocols approved by the Ethics Committees of Universities of Cape Town and Stellenbosch. FreeSurfer software v5.1.0 was used for automated segmentation and reconstruction. Whole-brain cortical thickness and gyrification - measure of cortical folding - and regional brain volumes were compared between children who started ART after 12 weeks and those who started before 12 weeks and to HIV-unexposed (HU) controls using a linear regression model controlling for sex and duration of ART interruption.
**Results:** Sixty-one HIV-infected isiXhosa children (28 boys, age 7.21 ± 0.12 years) and 23 HU (13 boys, age 7.24 ± 0.18 years) controls were scanned. 46 HIV-infected children started ART before (Before-12w) (28 interrupted), while 15 started after 12 weeks of age (After-12w). Cortical thickness and regional volumes did not differ between After-12w and Before-12w children. After-12w children had significantly greater gyrification than Before-12w children in a large bilateral medial frontal region ($p< 0.05$), where there was also positive association between age at ART initiation and gyrification (Figure 1). Before-12w children had less gyrification than HU controls in an overlapping right frontal region ($p< 0.05$) but there was no difference between After-12w children and HU controls in this region at the same significance level.




*[Figure 1. Yellow regions show clusters of points on the medial frontal brain surface where age at ART initiation showed a positive relationship with gyrification at a significance threshold of p<0.05]*

**Conclusions:** Gyral formation in childhood is sensitive to ART initiation timing. ART started before 12 weeks, irrespective of interruption, may impact development of cortical folding during early critical period compared to delayed ART.

## TUPEB099

### THE ROLE OF *APOL1* VARIANTS IN THE DEVELOPMENT OF FOCAL SEGMENTAL GLOMERULOSCLEROSIS IN SOUTH AFRICAN CHILDREN WITH IDIOPATHIC AND HIV-RELATED NEPHROTIC SYNDROME

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**Background:** Kidney disease is more frequent and its advancement to end-stage kidney disease occurs more rapidly among patients of African ancestry compared to other racial groups. Coding variants with the APOL1 gene are strongly associated with kidney diseases in patients of African ancestry. This study aims to determine the role of genetic variants at the *APOL1* locus in the development of focal segmental glomerulosclerosis (FSGS) in South African children with idiopathic and HIV-related nephrotic syndrome.
**Methods:** Ethical approval was obtained from the Biomedical Research Ethics Committee, University of KwaZulu-Natal. Patient recruitment was conducted at Inkosi Albert Luthuli Central Hospital and King Edward VIII Hospital, KwaZulu-Natal South Africa. The study population consisted of 163 Black South African children (ages 0-16yrs) with biopsy proven idiopathic FSGS (n=56), HIV associated nephrotic syndrome (n=14), patients without nephrotic syndrome or other renal disease (n=76) and HIV-1 infected patients without nephrotic syndrome or other renal disease (n=17). We genotyped three SNPs rs73885319, rs60910145 and rs71785313 utilizing a Taqman pre-designed genotyping assay.
**Results:** Our results demonstrated no significant association with the *APOL1* rs73885319 risk variant across the study groups. A majority of the HIV $^{+}$FSGS patients (10/14 or 71.4%) showed no presence of the APOL1 G1 and G2 risk alleles. Fifty three percent of patients with idiopathic FSGS (HIV$^{-}$) showed no presence of the APOL1 G1 and G2 risk alleles. In the HIV $^{+}$FSGS patients, G1 risk allele frequencies were 2/14 or 14% whilst G2 deletion was 2/14 or 14%. In the idiopathic FSGS group, the odds of carrying two copies of G1 and/or G2 risk alleles was 2.4 (95%CI 0.26 to 30, $p$=0.38) and Inf (0.03, inf, $p$=0.45) for the HIV with FSGS in a recessive model.
**Conclusions:** This novel study demonstrates no association between the *APOL1* risk variants and biopsy proven HIV associated FSGS and idiopathic FSGS in paediatric Black South African population within the KwaZulu-Natal region of South Africa.

## TUPEB100

### LONG-TERM MAINTENANCE OF UNDETECTABLE VIRAL IS ASSOCIATED WITH BETTER RESPONSE TO IMMUNIZATION WITH *NEISSERIA MENINGITIDIS* C CONJUGATED VACCINE AMONG HIV VERTICALLY-INFECTED CHILDREN, IN RIO DE JANEIRO, BRAZIL

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**Background:** Immunization guidelines use CD4 cells count and/or percent as the main condition to immunize HIV infected children. The impact of undetectable viral load in children with high CD4 cells at immunization was not evaluated. The aim of this is study is to compare the immune response after two doses (12-18 months interval between doses) of *Neisseria meningitidis* C conjugated vaccine (C Polysaccharide/$CRM_{197}$) at dose (10 µg/0.5 ml) between individuals who were able to maintain undetectable viral load (UVL) through study follow up (at least 12 months) or not (non-UVL).
**Methods:** HIV vertically-infected patients, aged 2-18 years old, with CD4+ cell > 15% or 350 cell/mm$^3$, without active infection were immunized. One month after the second dose, post-immunization protective antibody titer, defined as a serum bactericidal assay(SBA) ≥ 1:4 (with human complement), was evaluated. Children were classified as responders SBA≥1:4 or otherwise non-responders. The Bivariate analysis was performed, and variables with p-value < 0.15 were independently evaluated through logistic regression analysis.
**Results:** 124 children using cART before the study initiation were enrolled: 62 (50%) were able to maintain UVL through the follow up. The median of study follow up was 13.1 and 13.3 months for UVL and non-UVL group respectively, p=0.11. At the study entry, the median of cART duration was 6.2 years for UVL and 6.4 for non-UVL, p=0.71. 57 (92%) and 41 (66%) were able to present immune response

to the vaccine (responders) in the UVL and the non-UVL groups, respectively p< 0.01. The median age was 12.5 years for the non-responders group and 12 for the responders, p=0.14. 53 (57%) were female in the responders group and 13 (50%) in non-responders, p=0.52. Among the non-responders the median of the CD4 cells percent was 26% in the non-responders group and 29% in the responders, p< 0.01. Factors associated with protective antibody concentration were: maintenance of UVL through study (OR=5.1, 95%CI=1.7-14.9) and higher CD4 cells percent at the study entry (OR=1.1, 95%CI=1.0-1.2).
**Conclusions:** Although the CD4 cell percent is an important variable associated with immunization response, long-term maintenance of undetectable viral load must also be considered when planning immunization of HIV infected children.

## TUPEB101

### CHANGE IN LEVEL OF ACTIVITY AND PARTICIPATION IN CHILDREN WITH HIV ENCEPHALOPATHY AND BILATERAL LOWER LIMB SPASTICITY COMPARED TO CHILDREN WITH CEREBRAL PALSY: A ONE YEAR FOLLOW-UP STUDY

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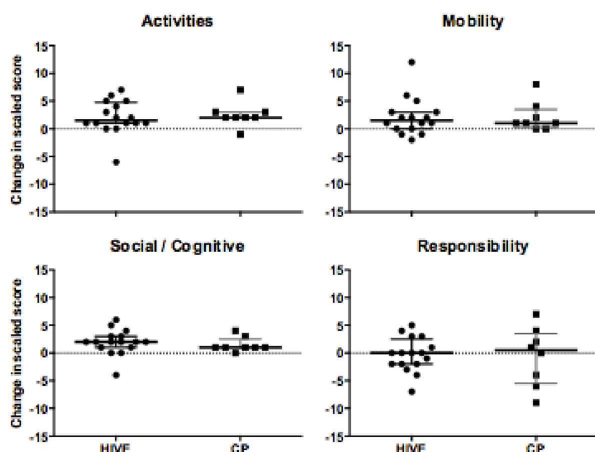
**Background:** Level of daily activity and participation in children with HIV encephalopathy (HIVE) and bilateral lower limb (BLL) spasticity is unclear, creating uncertainty in the management of secondary abnormalities. Should these children receive the same surgical interventions as children with BLL spasticity due to Cerebral Palsy (CP)? The first aim of the study was to investigate change in level of activity and participation over one year in children with BLL spasticity due to HIVE and due to CP. A secondary aim was to compare the magnitude of the change between children with HIVE and with CP.
**Methods:** This one year follow-up study (1.1 ± 0.2 years) was based on 16 children with BLL spasticity due to HIVE (8.8 ± 2.2 years, 10 girls) and 8 children with BLL spasticity due to CP (8.7 ± 2.0 years, 3 girls), who were recruited in state hospitals in Cape Town, South Africa. The Computer-Adapted Pediatric Evaluation of Disabilities Inventory (PEDI-CAT) was used to determine the level of activity (Activity, Mobility and Social/Cognitive domains) and participation (Responsibility domain). A Wilcoxon test was used to address aim 1, and a Mann-Whitney test for aim 2.
**Results:** HIVE and CP groups both showed a significant increase in score for the Activities, Mobility and Social/Cognitive domains (p≤0.01) with no significant change in Responsibility domain score (p=0.84). In addition, there was no significant difference in the median change in score over 1 year between the HIVE and CP groups for any of the PEDI-CAT domains (p>0.05) (Figure 1).




*[Figure 1. Change in PEDI-CAT scores between baseline and one year follow-up study for Activity, Mobility, Social/Cognitive and Responsibility domains]*

**Conclusions:** These findings suggest little change in participation over time, while level of daily activity in the HIVE and CP group improved with similar magnitude. Although the changes are statistically significant, the clinical significance is unclear. More research is needed to provide evidence-based guidelines for surgical interventions in this HIVE population.

# COMORBIDITIES IN CHILDREN AND ADOLESCENTS (INCLUDING NON-COMMUNICABLE DISEASES)

## TUPEB102

### A HOSPITAL BASED CROSS-SECTIONAL OBSERVATIONAL STUDY OF COGNITIVE, ADAPTIVE AND BEHAVIOUR PROFILES OF 2-9 YEAR OLD HIV-INFECTED AND HIV-AFFECTED CHILDREN

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**Background:** This study aimed to compare cognitive, adaptive and behavior profiles of HIV infected and HIV affected children aged 2- 9 years and to evaluate the influence of clinical and environmental factors on their profile. The profiles of HIV infected and affected children in the preschool age (2- 5 years) and school age( 5 - 9 years) were also compared.
**Methods:** Fifty HIV infected, 25 HIV affected and 25 presumably unaffected 2-9 year old children were enrolled excluding children with known neurodevelopmental disorders. Parents were administered Developmental Profile (DP3), Vineland Adaptive Behavior Scale (VABS 2) and Child Behavior Checklist (CBCL) for assessing cognitive function, adaptive function and behavioral profile respectively. Primary outcomes included the number of children with significant cognitive or adaptive impairment or maladaptive behavior. Inter-group mean scores were compared with unpaired t test and correlation using regression analyses. Strength of the association between primary outcome variables and combinations of clinical and environmental variables was derived by Multiple Correlation Coefficient (R).
**Results:** Significant cognitive impairment was observed in 76% HIV infected, 64% HIV affected and 24% controls. Significant adaptive impairment was observed only in 24% HIV infected and 8% HIV affected children.Mean General Developmental Scores (GDS) and Mean Adaptive Composite scores (ABC) was significantly lower for HIV infected than HIV affected and controls. Maladaptive behavior was not found in any group.

| Primary Outcome Variable | HIV infected (n=50) (1) | HIV affected (n=25) (2) | controls (n=25) (3) | p value (1 vs 2) | p value (1 vs 3) | p value (2 vs 3) |
|---|---|---|---|---|---|---|
| GDS (MEAN±SD) | 59.2±16.9 | 70.1±13.4 | 77.3±13.4 | **0.007** | **0.0001** | **0.043** |
| ABC (MEAN±SD) | 75.2±8.9 | 82.4±9.1 | 85.3±7.3 | **0.005** | **0.0001** | 0.224 |
| T SCORES (MEAN)±SD) | 29.2±6.0 | 25.9±1.7 | 26.6±1.7 | **0.011** | **0.040** | 0.203 |

*[Table 1]*

Advanced stages of HIV infection (clinical stage T 3 and 4) were predictive of poor outcomes in adaptive function in HIV infected children.Higher socioeconomical class (class 2) was predictive of better outcomes in cognitive and adaptive function in HIV infected children. Strong associations were found between combined clinical and environmental covariates with cognitive and adaptive impairment in HIV infected children (R 0.81, 0.84 respectively).
**Conclusions:** A large proportion of HIV infected and HIV affected Indian pre-school and school aged children have significant cognitive and adaptive impairment. Global impairment among various domains of cognitive and adaptive was observed in HIV infected children.

## TUPEB103

### PREVALENCE OF HIV AND PRE-CERVICAL CANCER CO-MORBIDITY IN WOMEN UNDER 25 YEARS OF AGE COMPARED TO WOMEN OVER 25 YEARS OF AGE: LESSONS FROM ZAMBIA

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**Background:** Zambia has one of the highest HIV prevalence rates in Sub-Saharan Africa at 13%. The prevalence rate among women is 15% compared to men at 11%. Zambia also has the world's fourth highest cervical cancer incidence rate at 58.0 per 100,000. National cervical cancer guidelines recommend screening for women 25 to 59 years old. However in countries with generalized HIV epidemics like Zambia, the World Health Organization recommends screening HIV positive and sexually active young women and girls below age 25.

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**Description:** Between March 2015 and November 2015, PCI implemented an integrated mobile HIV testing/ cervical cancer screening program in 19 ZDF sites (9 rural, 10 urban). Women 25 to 59 years old were primarily targeted while young women and girls below 25 years were incidentally enrolled. HIV Testing and Counseling (HTC) was offered by trained lay counselors; and women accessing HTC services were offered opt-out cervical cancer screening services. Trained nurse midwives screened women for cervical cancer using visual inspection with acetic acid (VIA). VIA positive women with small precancerous lesions were treated on-site using cryotherapy. Women with large lesions were referred to district hospitals for further management.
**Lessons learned:** Of 3,793 total women screened, 843 (22.2%) were below 25 years old (15 - 23 years, median age 18). For women under 25 years, 59 (6.9%) were HIV positive; 35 (4.1%) were VIA positive; and 8 (0.9%) were VIA and HIV positive. A total of 2,950 (77.8%) women were the primary target (25 years and above, median age 35). For women 25 to 59 years, 580 (19.7%) were HIV positive; 133 (4.5%) were VIA positive; and 43 (1.5%) were VIA positive and HIV positive.
**Conclusions/Next steps:** The high prevalence of lesions in young women mirrors prevalence in older women, indicating that sexually active women, regardless of age, should be targeted for cervical cancer screening and treatment. Although the HIV prevalence rate in older women was almost three times higher than in younger women, HIV/pre- cervical cancer co-morbidity rates indicate increased risk among the younger population in generalized epidemics, requiring further study for impact mitigation.

## OPPORTUNISTIC INFECTIONS IN INFANTS, CHILDREN, AND ADOLESCENTS

### TUPEB104

#### MORTALITY AND ASSOCIATED FACTORS IN ART-NAÏVE HIV-INFECTED CHILDREN WITH A SUSPICION OF TUBERCULOSIS

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**Background:** Tuberculosis is a major opportunistic infection with specific diagnostic and treatment challenges in HIV-infected children. We studied mortality and its determinants in antiretroviral treatment (ART)-naïve HIV-infected children presenting a suspicion of tuberculosis.
**Methods:** From April 2011 to May 2014, HIV-infected children aged ≤13 years with a suspicion of tuberculosis were enrolled in pediatric HIV clinics in Burkina Faso, Cambodia, Cameroon, and Vietnam, and followed for 6 months in the ANRS 12229 PAANTHER cohort. After tuberculosis diagnostic procedures, ART and tuberculosis treatments were initiated following national recommendations. We assessed mortality rates and identified associated factors using Cox proportional hazard models.
**Results:** We enrolled 267 ART-naïve children in the cohort (138 (51.2%) male) with the following baseline characteristics [all median (IQR)]: age 6.2 (2.3 - 9.1) years, weight-for-age Z score -2.5
(-3.6 to -1.9), CD4% 9.0 (2.0 - 18.0), aspartate aminotransferase (AST) 48 (36 - 83) UI/L. During the study, 152 (56.9%) children started tuberculosis treatment after a median time of 7 (IQR: 5 - 11) days, and 216 (80.9%) initiated ART after a median time of 24.5 (14 - 41) days. Overall, 52 (19.5%) children died; 28 before and 24 after ART initiation. Mortality rates were 92.6 (95%CI 62.8 - 131.8) and 29.6 (95%CI 19.4 - 43.3) deaths per 100 Person-Years before and after ART initiation, respectively. In multivariate analysis, factors significantly associated with overall mortality were, as expected, an age
< 2 years [Hazard Ratio (HR) 3.30; 95%CI 1.21 - 8.98], CD4 < 10% (HR 2.39; 95%CI 1.13 - 5.04), culture-confirmed tuberculosis (HR 2.77; 95%CI 1.27 to 6.06), miliary radiographic patterns (HR 4.25; 95%CI 1.66 - 10.87), and more surprisingly, elevated baseline AST above 2.5 and 5xULN [(HR 3.68; 95%CI 1.49 - 9.11) and 3.78 (95%CI 1.23 - 11.60), respectively]. Young age, low CD4%, culture-confirmed tuberculosis, and miliary were associated with early mortality before ART; elevated AST was the only factor independently associated with mortality on ART.
**Conclusions:** Mortality remains high in the first 6 months following suspicion of tuberculosis in ART-naïve children, especially before ART introduction. Suspicion of tuberculosis should not postpone initiation of ART in children with very low CD4 count.

### TUPEB105

#### A CASE REPORT: IRIS-LIKE PRESENTATION OF BACILLIARY ANGIOMATOSIS IN A HIV-INFECTED CHILD IN THE SOUTHERN HIGHLANDS ZONE OF TANZANIA

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**Background:** Bacillary angiomatosis (BA) is an opportunistic gram-negative infection occuring primarily in immunocompromised individuals, though rarely seen in children, and often confused with Kaposi sarcoma (KS). Worsening of BA during immune reconstitution inflammatory syndrome (IRIS) after initiation of ART is not well described in children. We report a case of likely BA IRIS in a HIV-infected child.
**Methods:** Retrospective chart review. Full consent was obtained from patient and family.
**Results:** A 12 year old HIV-infected boy with severe malnutrition was referred to the Mbeya COE for treatment of widespread sores and fungating lesions. Seven months prior, he was diagnosed with HIV and started on ART, baseline CD4 of 76. His lesions began one month after ART initiation and progressively worsened. He had multiple admissions and courses of antibiotics without improvement prior to referral, and was referred for concern of possible KS.
The patient was admitted and skin biopsy done. A clinical diagnosis of BA was favored, and empiric treatment with doxycycline 100mg BD was started. Chemotherapy for KS was withheld. Imaging, sputa for geneXpert and smear, and chemistries all were normal. Viral load was undetectable. CBC showed severe anemia (Hb of 4.0) requiring blood transfusion. Biopsy results showed histology consistent with BA and bacilli seen with Warthin-Starry staining. Following doxycycline and malnutrition care, the patient made remarkable improvement of his lesions and overall condition.

*[Initial presentation and response to treatment of bacillary angiomatosis in HIV-infected child]*

**Conclusions:** We describe a case that supports the diagnosis of BA IRIS in a HIV-infected child that was successfully treated with doxycycline. While a systemic disease, BA frequently presents as lesions in cutaneous or subcutaneous tissues that can mimick KS - as in our patient - and clinicians must keep a high index of suspicion for BA in immunocompromised patients with unusual skin lesions not responding to standard treatments, particularly in the context of immune restoration.

## HIV-EXPOSED UNINFECTED CHILDREN (INCLUDING EFFECTS OF ART EXPOSURE DURING PREGNANCY)

### TUPEB106

### MULTIMODAL NEUROIMAGING DIFFERENCES RELATED TO HIV/ART EXPOSURE IN 7-YEAR-OLD SOUTH AFRICAN CHILDREN

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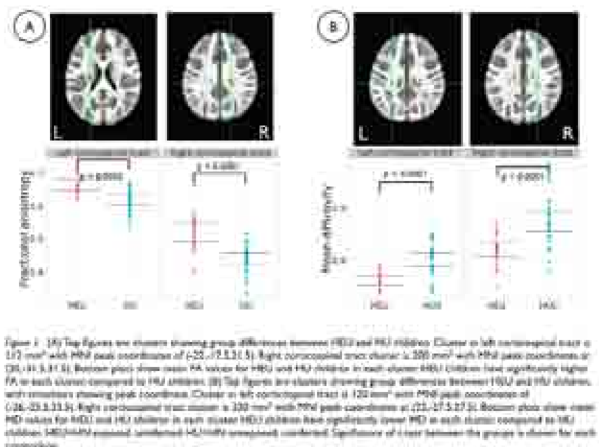
**Background:** A result of the high success of PMTCT programs in South Africa is a burgeoning population of HIV-exposed, uninfected (HEU) children. The long-term effects of exposure to ART/HIV in utero (and during breast feeding) are still relatively unknown, and multimodal magnetic resonance imaging (MRI) can help quantify the possible long-term effects of ART/HIV exposure on neurodevelopment.

We present significant group differences between measures of brain structure, function and metabolism in a cohort of HEU and HIV-unexposed, uninfected (HU) children at age 7.

**Methods:** Fifty-one 7-year-old children were scanned (23 Female; mean age ± sd: 7.2 ± 0.1; 9 Cape Coloured/42 Xhosa; 23 HEU/28 HU) in an on-going longitudinal study on a 3T Allegra Scanner (Siemens, Erlangen, Germany) in Cape Town, South Africa. HEU children were exposed to treatment for PMTCT.

The protocol included structural MRI, single voxel $^1$H magnetic resonance spectroscopy (MRS), diffusion tensor imaging (DTI), and resting state functional MRI (RS-FMRI). Specific exclusion criteria were applied to each modality to ensure quality data. Group comparisons between HEU and HU children were performed. Statistical analyses included gender and ethnicity confounds.




*[Comparison of DTI measures between HEU and HUU children at age 7 years]*

**Results:** Compared to HU children, we found that HEU children had significantly:

**(1)** Higher local gyrification indices (LGIs) ($p < 0.05$) in the left precuneus region,

**(2)** Higher mean choline levels ($p = 0.02$) and lower mean NAA/Creatine ratios ($p$=0.05) in the midfrontal gray matter (MFGM),

**(3)** Higher mean connectivity ($p < 0.05$) from seeds within the default mode, executive control, motor, salience networks, and

**(4)** Higher FA ($p < 0.0005$) and lower MD ($p < 0.0001$) in bilateral corticospinal tract clusters (figure 1).

**Conclusions:** Significant differences between HEU and HU children across all neuroimaging modalities suggest differences in maturation throughout the brain related to HIV/ART exposure - involving cortical folding, localized metabolism, numerous functional networks and white matter microstructure properties.

### TUPEB107

### INCREASED RISK OF MORBIDITY/MORTALITY AMONG FORMULA FED HIV-EXPOSED UNINFECTED INFANTS IN SOCIOECONOMICALLY CHALLENGED HOUSEHOLDS IN BOTSWANA: FINDINGS FROM THE MPEPU STUDY

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**Background:** A South African observational study, conducted when policy promoted HIV-infected maternal infant feeding choice based upon formula feeding acceptability, feasibility, affordability, sustainability, and safety, identified > 3-fold increased mortality risk among HIV-exposed formula fed infants in households without piped water, electricity, or gas for fuel, compared with breastfed infants. We sought to determine the applicability of these findings in Botswana, where the prevention of mother-to-child HIV transmission program promotes exclusive formula feeding for all HIV-exposed uninfected (HEU) infants.

**Methods:** Demographic and health outcomes data from the Mpepu study, a Botswana-based randomized double-blinded clinical trial investigating prophylactic cotrimoxazole as a means of reducing mortality among HEU infants, were used to quantify differences in the combined end point of hospitalizations and mortality between breastfed and formula fed HEU infants residing in households without piped water, electricity, or gas for a fuel source. Per Botswana guidelines, infant feeding was according to maternal choice, with free formula provided by the Botswana government for mothers choosing to formula feed.

**Results:** A total of 680 (21%) of 3,164 Mpepu enrolled infants resided in households without piped water, electricity or gas for fuel source, 552 (81%) formula fed and 128 (19%) breastfed. Formula fed infants experienced a higher prevalence of hospitalization or death in the first six months of life (10.0% versus 3.9%; p = 0.04). In multivariate analysis including infant feeding practice and randomized treatment, formula feeding was associated with increased odds of hospitalization or death in the first six months of life (aOR 2.73; 95% CI 1.07-6.96; p=0.04), but there was no benefit of Cotrimoxazole prophyalxis (aOR 0.97; 95% CI 0.57-1.65; p=0.91).

**Conclusions:** Formula fed HEU infants residing in socioeconomically challenged households in Botswana experienced significantly higher hospitalizations or mortality through 6 months, supporting the South African study's generalizability. Infants in our population were confirmed HIV-uninfected, and morbidity and mortality rates were low in the cohort as a whole, highlighting the excess risk associated with formula feeding even in regions of Africa where formula feeding may currently be considered a safe option.

### TUPEB108

### GROWTH PATTERNS OF AFRICAN BREASTFED CHILDREN EXPOSED TO MATERNAL COMBINATION ANTIRETROVIRALS (CART) PRE AND POSTNATALLY

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**Background:** Prevention of mother-to child transmission of HIV infection and normal growth in HIV-exposed infants is a multidimensional challenge in Sub-Saharan Africa. The DREAM programme provides cART under Option B Plus since 2012. Breastfeeding to 12 months is supported through health education and food sup-

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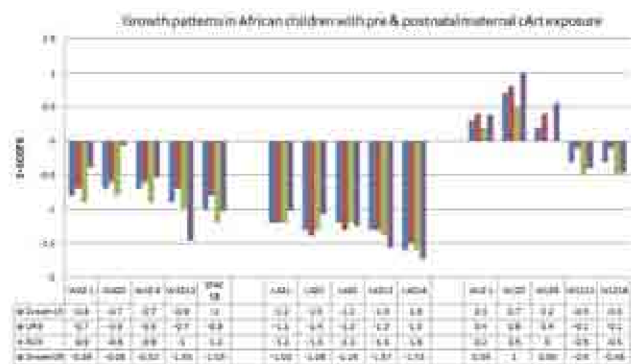
plementation with growth and health monitoring until 18 months. Data on growth parameters of children exposed to maternal pre/postnatal cART to 12 months are presented and compared to a cohort breastfed for 6 months.

**Methods:** Over a two year period, HIV-exposed infants were followed prospectively with weight and length measured and weight-for-age, height-for-age, and weight-for-height Z-scores (WAZ, LAZ; WLZ) calculated at various time points through the WHO Anthro software. Retention in the program was reinforced by peer to peer and health worker counselling. Statistical analysis was performed using IBM SPSS software.

**Results:** Growth assessment data was collected from 3907 children enrolled in Mozambique (n=2305) and Malawi (n=1602) from 01/2012 to 12/2013. The figure shows Z-scores for pediatric populations from 2015 and 2009 (breastfed for 12 and 6 months respectively) and 2015 data dichotomized according to rural (RUR) or urban (URB) environments from 1 to 18 months. The 2015 cohort had the best growth parameters especially at 12 and 18 months. Growth failure observed in the 2009 cohort at 6-12 months was greatly reduced in the 2015 cohort. Growth retardation in the 2015 rural cohort was significantly higher in comparison to the 2015 urban population. Binary logistic regression identified 3 independent predictors of malnutrition: WLZ < 3 z scores at 18 months: HIV+ status (HR: 5.5 p< 0.0001), rural environment (HR:2.3 p < 0.0001) and number of clinical events (HR:1.6 p< 0.003).




*[Z-scores over time]*

**Conclusions:** Provision of maternal cART pre and postnatally with 12 months of breastfeeding plus careful weaning practices and food supplementation favorably impact infant growth and development.

## ARV management strategies: children and adolescents cohort studies

### TUPEB109

#### Trends in global pediatric HIV programmatic capacity among sites of the International epidemiologic Databases to Evaluate AIDS (IeDEA) Consortium

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**Background:** Global pediatric HIV care sites push to expand access to care and implement recommended guidelines. We sought to describe trends in site capacity and comprehensiveness of services among global pediatric HIV care programs between 2009 and 2014.

**Methods:** In 2009, we assessed available services at sites caring for pediatric patients in 6 global regions of the International Epidemiologic Database to Evaluate AIDS (IeDEA) consortium. Between September 2014 and January 2015, we repeated this assessment, using a web-based survey across IeDEA regions. The surveys asked about facility characteristics and capacity to deliver WHO-recommended pediatric HIV prevention, care, and treatment services. We created a measure of comprehensiveness of available pediatric care services based on the WHO's current 9 categories of essential services. In the subset of sites with data from both 2009 and 2014, we evaluated trends in service delivery capacity.

**Results:** Clinical staff from 172 pediatric sites in 45 countries completed the 2014-2015 site survey. The available services in 2014 varied across regions and sites overall; only 40% of sites provided HIV counseling and testing, whereas 99% offered adherence counseling (Table 1). Overall, 35% of sites (n=61) offered comprehensive services (8-9 essential services out of 9), while 55% (n=94) offered 5-7 essential services and 10% (n=17) offered only 3-5. In the 2014 survey, the median comprehensiveness score across all of the sites was 7.0 (IQR 6.0-8.0), a significant increase from the median of 6.0 (IQR 4.2-6.0) in 2009 ($p$< 0.001), and the magnitude of change varied by region ($p$< 0.001). The two WHO essential services with most varied provision across global regions were 1) HIV counseling and testing and 2) both CD4 and HIV viral load testing (Table 1).

| Essential Services | % Offered, 2009 (N=38*) | % Offered, 2014 (N=38*) | % Offered, 2014 (N=172) | Asia Pacific (N=16), 2014 | CCASAnet (N=7), 2014 | Central Africa (N=7), 2014 | East Africa (N=34), 2014 | Southern Africa (N=86), 2014 | West Africa (N=12), 2014 |
|---|---|---|---|---|---|---|---|---|---|
| ART Adherence | 76% | 100% | 99% | 16 (100%) | 6 (86%) | 17 (100%) | 34 (100%) | 86 (100%) | 12 (100%) |
| Nutrition | 11% | 68% | 56% | 12 (75%) | 4 (57%) | 4 (24%) | 25 (74%) | 45 (52%) | 7 (58%) |
| PMTCT | 87% | 97% | 96% | 13 (81%) | 7 (100%) | 17 (100%) | 34 (100%) | 85 (99%) | 9 (75%) |
| CD4 and HIV Viral Load Testing | 3% | 53% | 51% | 11 (69%) | 4(57%) | 12 (71%) | 17 (50%) | 34 (40%) | 9 (75%) |
| TB Screening | 82% | 84% | 87% | 16 (100%) | 7 (100%) | 12 (71%) | 32 (94%) | 76 (88%) | 7 (58%) |
| HIV Counseling and Testing | 18% | 42% | 40% | 11 (69%) | 6 (86%) | 4 (24%) | 16 (47%) | 25 (29%) | 6 (50%) |
| Co-trimoxazole | 76% | 92% | 97% | 16 | 7 (100%) | 17 | 31 | 83 (97%) | 12 |
| Immunizations | 68% | 58% | 73% | 13 (81%) | 7 (100%) | 12 (71%) | 24 (71%) | 64 (74%) | 5 (42%) |
| Outreach | 68% | 95% | 95% | 14 (88%) | 4 (57%) | 15 (88%) | 34 (100%) | 86 (100%) | 11 (92%) |

*[Distribution of WHO Essential Services for Pediatric HIV Care and Treatment in 2009 and 2014, and by Global IeDEA Region]*

**Conclusions:** This global survey demonstrates significant gains in the comprehensiveness of services available for HIV-infected children worldwide, while identifying gaps to target resources.

### TUPEB110

#### Poor immune response despite virologically suppressive antiretroviral therapy (ART) in children in the European Pregnancy and Paediatric HIV Cohort Collaboration (EPPICC) in EuroCoord

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**Background:** There are scarce data on poor immune response (PIR) despite viral suppression (VS) on ART in children. We assessed PIR prevalence, associated factors and clinical outcomes in EPPICC.

**Methods:** Children aged< 18-years at ART start, with ≥1 year follow-up, ≥1 viral load (VL) and CD4 measurements were eligible. VS was defined as VL≤400 copies/mL within 12-months of ART initiation
(< 18-months for infants) and sustained VL≤400 c/mL for ≥1 year (allowing unconfirmed rebound < 10,000 c/mL). PIR was defined as WHO 'advanced' or 'severe' immunological stage (CD4%< 30 for age< 12-months, CD4%< 25 for 12-35 months, CD4%< 20 for 35-59 months; CD4%< 15 or CD4< 350 cells/mm$^3$ for ≥5-years). Follow-up was censored at confirmed VL>400c/mL, unconfirmed VL≥10,000c/mL or VL measurements gap of ≥15-months. Factors associated with PIR were explored using logistic regression. Rates of clinical events (death/CDC C) during VS were calculated by time-updated WHO immunological stage.

**Results:** Of 3,510 children starting ART, 2210(63%) had VS for ≥1 year: 47% male, 92% perinatally-infected. At ART initiation, median[IQR] age was 6.3yrs[2.1,10.4], CD4% 16% [8,24], 15% and 55% were WHO advanced and severe immunologi-

cal stage, respectively. PIR was observed in 13%(248/1863), 7%(102/1437) and 4%(50/1155) of patients at 1-, 2- and 3-years of sustained VS. PIR was strongly associated with older age and worse immunological stage at ART start (Table). Among patients with VS for ≥1-year, there were 4 deaths and 50 CDC C events (2 and 15 among PIRs, respectively). The rate of clinical events was 1.94(95%CI 1.20, 3.12) per 100 person-years among PIRs versus 0.39(0.27,0.56) among responders (WHO immunogical stage "none"), p< 0.0001.
**Conclusions:** PIR despite VS was relatively rare in children but was associated with significantly increased risk of AIDS/death as compared to immune-responders. Predictors of PIR include older age and lower CD4 at ART start, supporting recommendations for immediate ART in all children.

| Risk Factors | | aOR (95% CI) | p |
|---|---|---|---|
| Mode of HIV infection | Perinatal | 1.0 | 0.016 |
| | Other | 1.9 (1.1-3.1) | |
| Age at ART initiation, (years) | <5 | 1.0 | <0.001 |
| | 5-<10 | 1.6 (1.1-2.3) | |
| | 10-<15 | 2.1 (1.4-3.1) | |
| | ≥15 | 6.3 (3.4-11.4) | |
| WHO immune stage at ART initiation | None | 1.0 | <0.001 |
| | Mild | 1.6 (0.4-6.3) | |
| | Advanced | 6.1 (2.1-18.1) | |
| | Severe | 11.7 (4.2-32.1) | |
| Hepatitis B co-infection | No | 1.0 | 0.004 |
| | Yes | 2.3 (1.3-4.2) | |
| Cohort region | UK / Ireland | 1.0 | <0.001 |
| | Russia / Ukraine | 0.8 (0.4-1.8) | |
| | Rest of Europe | 1.0 (0.7-1.5) | |
| | Thailand | 2.1 (1.5-3.0) | |

*[Table. Factors associated with poor immune response in children with viral suppression >=1 year]*

## TUPEB111

### THE TREATMENT CASCADE OF CHILDREN WITH UNSUPPRESSED VIRAL LOAD: A REALITY CHECK IN RURAL LESOTHO, SOUTHERN AFRICA

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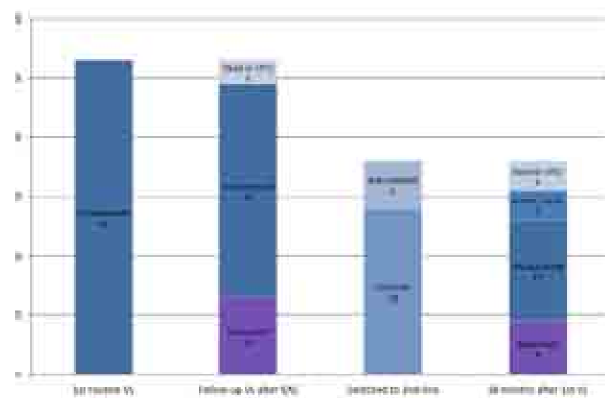
**Background:** Viral load (VL) monitoring for children on anti-retroviral therapy (ART) allows early recognition and management of treatment failure. However, there is currently few data on outcomes of children failing first-line ART in resource-limited settings. This registered prospective observational study (CART-1 study; clinical trials-ID: NCT02126696) assessed clinical and virological outcomes of children with unsuppressed VL in 10 rural, nurse-led clinics in Lesotho, Southern Africa.
**Methods:** Children < 16 years, on first-line ART≥6 months with unsuppressed VL (≥100copies/mL) at first measurement in May/June 2014 were included. As per guidelines children with unsuppressed VL received enhanced adherence counselling (EAC) and a follow-up VL after three months. Those with sustained unsuppressed VL were considered eligible for switch to second-line. In November/December 2015 (18 months later) their outcomes were assessed.
**Results:** Of 191 children receiving a first-time VL, 53 (28%) had unsuppressed viremia. The care-cascade for these 53 children is displayed in the figure. 49 (92%) received a follow-up VL 3 months after EAC. At this follow-up VL, 36 (73%) remained unsuppressed, 28 (78%) of these 36 were switched to second-line. Reasons for not switching were: Loss to follow-up or procedural errors at health facilities. Of the 36 children eligible for second-line, 9 (25%) were switched, retained, and virally suppressed at 18 months of follow-up. Socio-economic characteristics (age, sex, orphanhood, household-wealth, self-reported drug-adherence) were not associated with outcomes after the first measurement of unsuppressed VL.



*[Cascade of care for children with a first unsuppressed viral load (≥100copies/mL). LTFU: Lost to follow-up]*

**Conclusions:** Among 36 children with sustained virologic failure on first-line ART only 9 (25%) had achieved viral suppression through switch to second-line 18 months after the first measurement of an unsuppressed VL. These figures reflect the real-life outcomes of children with unsuppressed viremia under first-line ART in rural resource-limited settings. Interventions targeted to children and their caregivers are needed for improving effectiveness of roll out programs for VL-monitoring in resource-limited settings.

## TUPEB112

### CAN CHILDREN WITH HIV REACH THE 90-90-90 GOALS? VIRAL SUPPRESSION IN A PEDIATRIC PATIENT POPULATION IN WESTERN KENYA

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**Background:** BackgroundRoutine viral load monitoring is critical in measuring treatment efficacy and achieving the UNAIDS 90-90-90 goals. In this study, we investigated potential risk factors associated with failure to reach virologic suppression in a pediatric patient population in western Kenya.
**Methods:** MethodsIn November 2013, viral load (VL) testing 6 months after initiation of antiretroviral therapy (ART) and yearly thereafter was rolled out in clinics throughout western Kenya. This nested case-control study was conducted among HIV-infected children < 15 years old who underwent routine VL testing June 2014-May 2015. A random sample of 299 children with approximately 1 case [VL ≥1000 copies (cp) per milliliter (ml)] per every 2 controls (VL < 1000 cp/ml) was chosen from five Family AIDS Care & Education Services (FACES)-supported facilities. Chart abstraction was performed to determine demographic and clinical factors associated with failure to suppress. Logistic regression analysis was used to assess factors associated with failure to suppress VL.
**Results:** ResultsAmong all children undergoing routine VL testing, 63% (748/1190) were virologically suppressed. Of the 98 unsuppressed cases and 201 controls, the majority (72%) were between ages 3 and 10 years old at time of VL testing. Baseline WHO stage and CD4, and time since ART initiation were not associated with failure to suppress. In multivariable analysis, unsuppressed children were more likely to be male (adjusted Odds Ratio (aOR)=2.1, 95% Confidence Interval (CI): 1.2-3.5) and be on lopinavir as a second line regimen (aOR=5.3, 95% CI: 2.4-11.8) (Table 1). Additionally, children with a history of tuberculosis (TB) were more likely to suppress than those without TB (aOR=0.4, 95% CI: 0.2-0.9).
**Conclusions:** ConclusionsApproximately a third of children undergoing routine VL testing failed to suppress. Traditional risk factors for pediatric treatment failure including baseline CD4 and clinical stage were not shown to have a significant effect on VL, highlighting the importance of routine VL testing to evaluate treatment efficacy. Reasons for gender differences in suppression and surprisingly higher rates of VL suppression amongst children with history of TB require further exploration. Additional effort will be required in order to reach the final "90" among children in Kenya.

| Measure | VL ≥1000 cp/ml (case) n (%) or median (IQR) | VL <1000 cp/ml (control) n (%) or median (IQR | p-value | | OR (95% CI) | p-value | aOR (95% CI)1 | p-value |
|---|---|---|---|---|---|---|---|---|
| Age 0-2yrs 3-10yrs >10yrs | 4(40.0) 71(32.9) 23(31.5) | 6(60.0) 145(67.1) 50(68.5) | 0.859 | | Ref 0.7 (0.2-2.7) 0.7 (0.2-2.7) | 0.641 0.592 | | |
| Gender Female Male | 33(24.1) 65(40.1) | 104(75.9) 97(59.9) | 0.003 | | Ref 2.1 (1.3-3.5) | 0.004 | Ref 2.1 (1.2-3.5) | 0.009 |
| WHO Stage (enrollment) I II III IV | 39(33.3) 29(31.9) 20(29.9) 5(62.5) | 78(66.7) 62(68.1) 47(70.1) 3(37.5) | 0.342 | | 0.823 0.626 Ref 0.9 (0.5-1.7) 0.9 (0.4-1.6) 3.3 (0.8-14.7) | 0.111 | Ref 0.9 (0.5-1.8) 1.0 (0.5-2.1) 3.1 (0.6-15.3) | 0.813 0.988 0.164 |
| Time since initiation ART < 1yr 1-2 yrs > 2 yrs | 6(23.1) 20(33.9) 72(33.6) | 20(76.9) 39(66.1) 142(66.4) | 0.544 | | Ref 1.7 (0.6-4.9) 1.7 (0.7-4.4) | 0.321 0.282 | | |
| Number of Regimen Changes None At Least Once | 60(28.2) 38(44.2) | 153(71.8) 48(55.8) | 0.008 | | Ref 2.0 (1.2-3.4) | 0.008 | | |
| Current ART Regimen NNRTI LVP/r _1stLine LVP/r _2ndLine | 66(28.2) 9(30.0) 23(65.7) | 168(71.8) 21(70.0) 12(34.3) | 0.004 <0.001 | | Ref 1.1 (0.5-2.5) 4.9 (2.3-10.4) | 0.837 <0.001 | Ref 1.0 (0.4-2.5) 5.3 (2.4-11.8) | 0.980 <0.001 |
| History of TB No Yes | 86(34.5) 12(24.0) | 163(65.5) 38(76.0) | 0.147 | | Ref 0.6 (0.3-1.2) | 0.150 | Ref 0.4 (0.2-0.9) | 0.028 |

*[Table 1. Odds ratios for being virologically unsuppressed versus suppressed based on bivariable and multivariable logistic regression models]*

## BEHAVIOURAL HEALTH OUTCOMES IN CHILDREN AND ADOLESCENTS (INCLUDING SEXUAL RISKS, SUBSTANCE USE)

### TUPEB113

### TABLET-BASED RESOURCES FOR DISCLOSURE COUNSELING FOR HIV-INFECTED ADOLESCENTS AND THEIR FAMILIES IN KENYA: A PILOT STUDY OF PERSPECTIVES FROM PROVIDERS

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**Background:** Overwhelmed, under-trained medical staff working in resource-limited settings need efficient resources to help support families during the process of HIV disclosure to children. This study evaluated providers' perceptions of using tablet computers for disclosure-related counseling with HIV-infected children and their caregivers in western Kenya.

**Methods:** This study used a mixed-methods design at three large, rural HIV clinics in western Kenya (Bumala, Busia, and Port Victoria) within Academic Model Providing Access to Healthcare (AMPATH). Healthcare providers involved with pediatric disclosure were recruited. Initial interviews focused on understanding current disclosure practices and barriers. Tablets containing disclosure-related resources were distributed. Resources included short narrative videos created in this context to highlight issues relevant to child HIV disclosure. Self-reported use was tracked with five monthly surveys, followed by repeat interviews. Interviews were transcribed and coded using a grounded theory approach to identify key themes. Survey data were analyzed using Wilcoxon signed ranks test and paired t-tests.

**Results:** 21 healthcare providers participated (8 clinical officers, 5 nurses, 8 social support staff). Most believed caregivers should disclose their children's status to them, with healthcare providers offering encouragement and answering children's questions. Major perceived barriers for caregivers to disclose were lack of parental HIV knowledge and stigma. Surveys indicated tablets were used during 75% or more of clinic encounters by 67% (14/21) of providers one month after tablet distribution, and 85% (18/21) at the end of the study. Provider comfort with disclosure increased significantly during the study (8.29 vs 9.33, 95%CI: -2.018 to -0.077). At follow-up, all (n=21) providers reported tablets improved clinic disclosure process. Many (n=16) reported child participation and adherence improved and children increasingly attended clinic specifically to watch tablet disclosure videos. Providers reported caregivers and children began initiating dialogue about critical issues such as medication adherence after watching the disclosure videos. Additionally, all (n=21) reported reviewing materials during their free time, in particular outside of work, to increase their own knowledge and comfort with disclosure. No technical issues were reported.

**Conclusions:** Tablet computers with resources for disclosure are an acceptable and potentially effective resource to help providers support families through the disclosure process.

### TUPEB114

### ACHIEVING FIRST 90 (90:90:90) GOAL IN ADOLESCENT/YOUNG ADULTS! ADOLESCENT PEER-LED COMMUNITY OUTREACH AND KNOWLEDGE DISSEMINATION: THE WAY TO GO

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**Background:** The University of Nairobi/Manitoba STI/HIV research center started in 1986, enrolling and following up mothers and their newborn babies from Pumwani Maternity Hospital. HIV testing, care and treatment was one of the services offered. In 2006 the Pumwani Clinic opened up to the general population and offers HIV prevention, care and treatment to all eligible. Recently a gap of not reaching many adolescents was identified and measures were put in place to collect baseline data on HIV prevention knowledge, attitude and practice among the adolescents from the community.

**Methods:** A crossectional KAP study that utilized mixed methods of data collection was carried out for three months on adolescents/ young adults aged between 15-24 years. Ten peer adolescents were trained and sent into the community to refer their peers to the clinic. HIV testing was offered and data collected on HIV prevention knowledge, attitude and practice.

**Results:** 1107 adolescents/young adults were reached 43.9 %( 486) were male and 56.1 %( 621) female. 13.0% (144) were married. Only 49.7% (550) had tested for HIV before while 100% reported being sexually active. HIV prevalence in this group was 5.9 %( 65) which is higher than the Kenyan national average. 25% (277) had their sex debut between ages 12-14 years, 60.7 %( 672) at age 15-17 years while 14.3 %( 158) at age 18-19 years. 46.5 %( 515) reported condom use of which consistent condom use was 54.3 %( 280). Correct condom use demonstration was achieved by 3.4% (38). Only 19.1% (199) of the HIV negative had knowledge on PrEP, while 68.2 %( 755) were willing to use PrEP after being taught on PrEP. 11.7% (122) had knowledge on PEP while 98% (1084) were willing to use PEP after sensitization.

**Conclusions:** Despite a high level of early onset of sexual activity in this adolescent population, the HIV testing rate, PEP and PrEP knowledge is quite low, with an alarmingly low level of basic knowledge about condom use. Use of peer led initiative in reaching out to them may reduce the HIV testing gap and enhance HIV prevention knowledge hence, achieving the first 90 goal.

### TUPEB115

### SIMILAR LEVELS OF SEXUAL RISK BEHAVIOUR AMONG PERINATALLY HIV-INFECTED AND HIV-AFFECTED ADOLESCENTS, AND THE GENERAL POPULATION, IN ENGLAND

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**Background:** Perinatally HIV-infected (PHIV+) adolescents are surviving into adulthood, and gaining insight into sexual behaviour and the prevalence and predictors of HIV transmission is important. Previous studies report PHIV+ adolescents having less sex than their HIV-negative (HIV-) peers. Here we report findings for PHIV+ and HIV- youth in England.

**Methods:** 296 PHIV+ aged 13-21 years and 96 HIV- affected (45 siblings of PHIV+) adolescents aged 13-23 years were recruited to the AALPHI cohort in 2013-15. Computer-assisted self-interview questionnaires collected data on sexual activity (including type of sex, number of partners in last year and condom use), alcohol and recreational drug use. NPZ-6 scores were calculated for neurocognitive function, and IDACI scores measured household deprivation. T-tests compared means, and $\chi^2$ proportions; logistic regression examined predictors of ever having sex.

**Results:** 120(41%) PHIV+ and 31(32%) HIV- were male, 254(86%) and 70(73%) were black, median age 16[IQR 15,18] and 16[14,18] years respectively. 77(26%) PHIV+ had a previous CDC C diagnosis. 237(80%) PHIV+ and 68(71%) HIV- were in full-time

education, for 101(36%) and 21(23%) one/both parents had died, 122(42%) and 43(46%) had ever drunk alcohol and 43(15%) and 26(29%) had ever taken recreational drugs.
90(30%) PHIV+ and 37(38%) HIV- had ever had sex; median number of partners in the last year was 3[1,6] and 4[1,6] respectively. 61(68%) PHIV+ and 14(38%) HIV- reported always using condoms (p=0.005). Multivariable analysis (Table) identified older age, male sex, ever had alcohol and/or drugs and higher deprivation score, with ever having sex, but not HIV status.

| Variable | | Adjusted Odds Ratio (95% Confidence Interval) | P value |
|---|---|---|---|
| HIV status (ref: HIV-) | PHIV+ no CDC C | 1.05 (0.48, 2.28) | |
| | PHIV+ with CDC C | 1.09 (0.43, 2.75) | 0.994 |
| Age at interview | Per year increase | 1.46 (1.27, 1.68) | <0.001 |
| Sex (ref: Male) | Female | 0.50 (0.27, 0.92) | 0.027 |
| Ever had alcohol (ref: No) | Yes | 2.68 (1.36, 5.28) | 0.004 |
| Ever taken drugs (ref: No) | Yes | 3.54 (1.63, 7.69) | 0.001 |
| Household deprivation | Per 10 point increase | 1.18 (1.00, 1.41) | 0.053 |

*[Table: Multivariable predictors of ever having sex]*

**Conclusions:** Levels of sexual activity were similar among PHIV+ and HIV- and comparable to national normative data (Natsal-3). Levels of reported condom use were significantly higher in PHIV+ than HIV-, contrary to previous research suggesting higher risky sexual behaviour in PHIV+; findings underline the need for increased sexual health education for all adolescents.

## MENTAL HEALTH AND NEURO-COGNITION IN CHILDREN AND ADOLESCENTS

### TUPEB116

### A DIFFUSION TENSOR IMAGING AND NEUROCOGNITIVE STUDY OF ART-NAÏVE AND ART-TREATED CHILDREN IN CAPE TOWN

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**Background:** There are still no diagnostic criteria for a spectrum of neurocognitive disorders (ND) secondary to HIV infection for children.
**Methods:** A cross-sectional clinical cohort study was initiated in Cape Town, in which 120 participants, including a HIV negative healthy control group for comparison, completed clinical and neurocognitive assessments. HIV infected children were either stable on antiretroviral treatment (ART) for a minimum of 6 months or ART naïve. Neuroimaging was completed on 105 children in the cohort study. We compared 75 children vertically infected with HIV aged 6 to 16 years, including both children on antiretroviral therapy (ART) and ART-naïve, with 30 matched controls using diffusion tensor imaging (DTI) measures. We then used the detailed neurocognitive battery; an assessment of adaptive functioning and the HIV associated neurocognitive disorders (HAND) for diagnosing ND to establish whether this system designed for adults could detect a spectrum of ND in HIV infected children.
**Results:** When comparing HIV-ve children to HIV+ve children DTI found damaged neuronal microstructure in the HIV+ve children. Significant associations were found between failing first line ART regimen, socio-demographic factors, nutritional-hematological status, HIV-relevant clinical variables, cognitive functioning and white matter integrity in children stable on ART. Children with a clinical diagnosis of encephalopathy (HIVE) had greater white matter damage when compared ART treated children without encephalopathy. DTI also found significant myelin loss in ART naïve children when compared with ART treated children. Using the criteria for HAND we found that 45.35% of the HIV infected children had a ND. ART naïve slow progressors, who receive limited attention from heath care services, as they are thought to be 'well', were found to have neurocognitive impairment and white matter microstructural damage. HIV infected children were also more likely to have impaired competence in various domains of functioning.
**Conclusions:** Our findings suggest that children on ART remain at risk for developing CNS disease, and that this risk extends to physically well ARV naïve slow progressors. The HAND criteria were able to identify children with functional cognitive impairments who don't fit criteria for HIVE and would therefore not have been identified otherwise.

### TUPEB117

### NEUROPSYCHOLOGICAL PERFORMANCE OF HIV-INFECTED AND UNINFECTED AFRICAN CHILDREN

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**Background:** HIV-infected (HIV) children are at neuropsychological risk, but few studies have evaluated this at multiple sites in resource-poor settings. We compared neuropsychological outcomes at enrollment (> 5 yrs age) among HIV, HIV-uninfected perinatally-exposed (HEU), and HIV unexposed (HU) children at 6 sub-Saharan sites with language and cultural differences.
**Methods:** IMPAACT P1060 compared Nevirapine (NVP) versus Lopinavir/Ritonavir (LPVr)-initiated ART in HIV-infected children 6 to 35 months of age. P1104s enrolled these children at 5-11 years of age and evaluates their neuropsychological performance at 3 time points over 2 years, compared to age-matched HEU and HU controls.
Evaluation tools include the KABC-II cognitive ability, TOVA attention/impulsivity, BOT-2 motor proficiency tests, and parental BRIEF executive function questionnaires. Cohorts were compared using GEE least-squares means adjusted for site, child age and gender, and personal and social characteristics for child and caregiver. Exploratory HIV treatment-arm comparisons were made using Wilcoxon rank-sum tests.
**Results:** 611 (246 HIV, 183 HEeU, 182 HU) of the 615 enrolled at 6 sites (South Africa [3], Zimbabwe, Malawi, Uganda) were eligible for analysis. Mean age was 7.2 years, 48% male, 69% in school. 94% of caregivers were biological mothers, 32% had completed high school, 22% received social grants, 38% lived in urban areas, 29% judged family income as sufficient.
Unadjusted and adjusted comparisons were consistent. The HIV cohort performed significantly worse than HEU and HU cohorts on KABC-II, TOVA, BOT-2 overall performance ($P$< 0.05), but not on the BRIEF. HU and HEU cohorts were comparable.
Associations between test scores and caregiver socio-economic indicators as well as child school status, development and disability scores were observed. BRIEF scores were worse for children whose caregivers scored higher on depression and anxiety.
In the HIV cohort, the NVP cohort had lower median KABC-II Nonverbal Index scores (by 3 points, $P$=0.05) and BOT-2 standardized scores (by 1.5 points, $P$=0.03) than the LPVr cohort (unadjusted intent-to-treat).
**Conclusions:** Significant cognitive deficits were documented for the HIV cohort across sites. Earlier HIV treatment, neuropsychological monitoring and rehabilitative interventions are needed. Testing for 2 more years will help evaluate whether ongoing effects of HIV infection and exposure will affect the developmental trajectory.

### TUPEB118

### NEUROCOGNITIVE DIFFERENCES BY HIV-1 SUBTYPE A IN PRE-SCHOOL CHILDREN LIVING WITH HIV IN TORORO, UGANDA

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**Background:** In Uganda HIV-1 subtype A is the predominant clade, followed by subtype D. The effects of HIV-1 subtype on children's neurocognitive development are still unclear. We aimed to evaluate neurodevelopmental and neurocognitive differences by HIV-1 subtype among preschool-age Ugandan children.

**Methods:** One hundred and ten HIV infected Ugandan children ages 1.8 -4.9 years old (mean=3.2 yrs) were assessed for neurocognitive development using the Mullen Scales of Early Learning (MSEL), the Color Object Association Test (COAT) and the Early Childhood Vigilance Test (ECVT). Using a previously published PCR-based multi-region assay sequencing 390 bp of p24 GAG gene and 324 bp of gp41 ENV gene, subtype was defined by phylogenetic analyses with subtype references. General linear models were used to relate MSEL, COAT, and ECVT to socio-demographic characteristics, weight-for age z-score (WAZ), socio-economic status, quality of home environment, antiretroviral treatment (ARV) status, and HIV-1 subtype.
**Results:** HIV-1 subtype was determined in 110 children. Sixty eight (61.8%) were subtype A or unconfirmed subtype A (AU) (A|AU) and 42 (38.2%) were classified as non-A|AU. Children with HIV-1 subtype A|AU were comparable to non-A|AU in demographics, CD $4^+$ and CD $8^+$ cell count %, and viral load. After adjusting for covariates, children infected with subtype A|AU performed consistently better when compared to non-A|AU in three MSEL scales; Composite Score (Least Squares Mean (LSM) A|AU=76.60 vs. LSM non-A|AU=69.18, p=0.03), Fine Motor score (LSM A|AU=36.50 vs. LSM non-A|AU=31.37, p=0.04), and Receptive Language score (LSM A|AU=40.0 vs. LSM non-A|AU=35.77, p=0.03). In addition, being on ARV treatment was associated with worse scores in five of the six scales of the MSEL and in the Total Recall score of the COAT. Negative association of these outcomes with ARV treatment was also present among A|AU children.
**Conclusions:** Contrary to earlier findings with older ARV-naïve children, A|AU preschool children better in standardized neurodevelopmental tests (SNT) compared to those infected by other HIV-1 subtypes. Our findings suggest that HIV subtype may be an important consideration in pediatric HIV treatment strategies with ARVs.

## TUPEB119

### MENTAL HEALTH AND VIRAL SUPPRESSION IN A COHORT OF ADOLESCENTS LIVING WITH HIV IN JOHANNESBURG, SOUTH AFRICA

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**Background:** A growing number of adolescents living with HIV are engaged in clinical care, especially in Africa. Little is known about their mental health and its association with viral suppression.
**Methods:** We conducted a baseline analysis from a prospective cohort of adolescents (ages 9-19) living with HIV and receiving care at a primary care clinic (Witkoppen Health and Welfare Center) in Johannesburg, South Africa. Mental health screens for depression were performed using the Children's Depression Inventory-Short (CDI-S10), anxiety using the Revised Manifest Anxiety Scale (RCMAS), and post-traumatic stress using the Child PTSD checklist. Clinical charts were reviewed to collect relevant demographic, clinical, and laboratory data. Multivariate logistic regression was used to identify factors associated with viral suppression (defined as < 50 copies/mL) in adolescents on anti-retroviral therapy (ART) for >90 days.
**Results:** Between June 2013 and November 2015, 258 adolescents were enrolled. Median age was 11 (range 9-19), 52% were female, and 72% had a deceased parent. Less than half (45%) were fully aware of their HIV status. Almost one-third (29%) reported an event causing post-traumatic stress. Few (7%) met the criteria for depression (CDI-S10 score ≥7), and 6% screened positive for anxiety (RCMAS score ≥10). Adolescents reporting post-traumatic stress had higher rates of anxiety (13% vs. 4%, p=0.011) and depression (14% vs. 4%, p=0.004). Among 191 adolescents on ART with viral load data, 46% were virally suppressed. In multivariate analysis, adolescents were less likely to achieve viral suppression if they reported post-traumatic stress (adjusted OR 0.43, 95% CI 0.18-1.01, p=0.053) or had full disclosure of their HIV status (OR 0.48, 95% CI 0.20-1.15, p=0.101).
**Conclusions:** This baseline analysis showed that post-traumatic stress occurs frequently in adolescents living with HIV and is associated with poor viral suppression. Furthermore, though the majority of adolescents screened did not meet the criteria for anxiety or depression, rates of both were higher among adolescents who reported post-traumatic stress. Findings suggest that attention to post-traumatic stress is warranted in adolescents living with HIV.

## TUPEB120

### CROSS-CULTURAL ASSESSMENT OF HIV-ASSOCIATED NEUROCOGNITIVE IMPAIRMENT USING THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN: A SYSTEMATIC REVIEW

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**Background:** Despite improved efficacy of, and access to, combination antiretroviral therapy (cART), HIV-associated neurocognitive impairments (HANI) remain prevalent. Neuropsychological tests that detect HANI in children can help clinicians formulate treatment plans. The Kaufman Assessment Battery for Children (KABC), although developed and standardized in the United States, is used frequently in many different cultures and countries to assess pediatric performance within specific cognitive domains. The purpose was to investigate the cross-cultural utility of the original KABC, and its 2nd edition (KABC-II), in identifying HANI in children.
**Methods:** Relevant keywords and MeSH terms were entered into the PubMed, PsycInfo, EBSCOHost, ProQuest, and Scopus databases, with search limits set from 1983-2015. Two independent reviewers evaluated the retrieved abstracts and manuscripts. Studies eligible for inclusion in the review were those that
(a) used the KABC/KABC-II to assess cognitive function in children aged 2-18 years,
(b) featured a definition of HANI (e.g., >2SD below the mean),
(c) compared the performance of HIV+ and HIV- groups, and
(d) used a sample excluded from US census on which the instruments were normed.
The reviewers evaluated the methodological quality of selected studies independently.
**Results:** Eight studies comprised the sample of the systematic review. All except one (a UK-based study) were conducted in Africa. Study samples included cART-naïve or clinically stable cART-treated children. All studies reported some form of cognitive impairment in HIV-infected children. Five reported significant between-group differences on KABC/KABC-II subtests tapping the cognitive domain of simultaneous processing (e.g., the Triangles, Rover, and Block Counting subtests);
4 reported the same for sequential processing; 3 did so for learning; and 3 did so for a mental processing index. Two studies highlighted HIV-associated impairments in nonverbal abilities and in planning. Regarding methodological quality, shortcomings included reporting and selection biases.
**Conclusions:** This systematic review provides evidence for the cross-cultural utility of the KABC/KABC-II (particularly the simultaneous processing subtests) in detecting HANI in HIV-infected children, even those who are clinically stable. Although the current results suggest there is justification for using the KABC/KABC-II in Africa, further investigation is required to explore the instrument's utility in other regions where HIV is also prevalent.

## TUPEB121

### SUCCESS RATE WITH MRI NEUROIMAGING RESEARCH IN UN-SEDATED YOUNG HIV-INFECTED CHILDREN USING SIMULATION SCAN PREPARATION

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**Background:** Magnetic resonance neuroimaging (MRI) studies involving children are difficult because participants must remain motionless for extended periods without sedation. We describe the success rate for un-sedated 5- and 7-year-old children on a 3T Allegra MRI (Siemens, Erlangen).
**Methods:** Children from a neuroimaging sub-study of the Children with HIV Early Antiretroviral Therapy (CHER) trial were scanned at 5 and 7 years. The sample comprised HIV infected (HIV+) and HIV negative (HIV-) including exposed- and unexposed uninfected participants. Children who tolerated a simulation scanner re-

turned for neuroimaging during which the child watched a movie of his/her choice. The hour-long protocol included structural, diffusion tensor, and spectroscopic imaging, with the addition of resting state functional MRI at 7 years. We collected information on image acquisition (those who arrived and provided at least one scan sequence), scanner tolerance (arrived and calm in scanner the entire session), and neuroimaging data usability assessed using Freesurfer, LCModel, FSL and AFNI software. The effect of HIV exposure and gender on success rates was explored.
**Results:** At 5 years, 115 (male 57, HIV+ 73) participated with 139 (male 71, HIV+ 80) at 7 years. The mean±SD usable images was 5±1.3 and 6±1.2 at 5 and 7 years respectively. Image usability was influenced by HIV status at 5 years (HIV+ 5±1.3; HIV- 3±1, p=0.0067), and gender at 7 years (girls 6±1; boys 5±1.2, p=0.004). Success rates improved significantly in the 102 participants (79%) already participating at 5 years (male 50, HIV+ 73): image acquisition (75% to 94%; p< 0.001), scanner tolerance (20% to 60%; p< 0.001), and full scan data perfectly usable if appointment kept (7% to 21%; p=0.0015).
**Conclusions:** Success rates of neuroimaging in un-sedated young children improved with age. Image usability was higher in HIV+ children, who are potentially more comfortable with medical procedures and thus more tolerant. Although completely successful image acquisition and usability as per protocol is unlikely, a similar average number of useable images are collected at both time points when using the simulation scan preparation. Sample size calculations should consider the challenges of patient withdrawal and distress in young children.

## TUPEB122

### HIV-INFECTED CHILDREN WHO INITIATED ART DURING INFANCY (EARLY ART) HAVE IMPROVED NEUROCOGNITIVE OUTCOMES COMPARED WITH LATE-TREATED CHILDREN

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**Background:** HIV-infected children have high risk of learning and behavior difficulties at school-age. The long-term benefit of early antiretroviral treatment (infancy) for reducing these risks is unknown.
**Methods:** Antiretroviral treatment (ART) was initiated with Kenyan HIV-infected infants at age < 12 months (early-treated; 2007-2009) or at age 18-60 months (late-treated; (2004-2008). Neurocognitive assessments were completed at school-age and adolescence. Assessments included the Kaufman Assessment Battery for Children 2nd edition (cognitive ability, short-term memory, visual-spatial processing, planning, learning, and non-verbal), Test of Variables of Attention (attention), and Bruininck's-Oseretsky Test of Motor Proficiency-2 (motor). Age-matched (to the early-treated group) HIV-exposed-uninfected (HEU) and HIV-unexposed-uninfected (HUU) children were also assessed. Scores were standardized using US norm data to allow cohort comparisons. Standardized scores were compared using multivariable linear regression analyses adjusted for caregiver years of education, to account for socioeconomic differences.
**Results:** At neurocognitive assessment, median ages were 6.7 years (HUU; N=63), 7.4 years (HEU; N=34), 6.9 years (HIV+ early-treated; N=54) and 13.4 years (HIV+ late-treated; N=25). Early and late-treated children initiated ART at a median 0.4 and 3.3 years of age, respectively. Mean scores in HUU children were 75.0 (cognitive), 83.3 (short-term memory), 73.4 (visual-spatial processing), 86.2 (learning), 71.3 (planning), 72.8 (non-verbal), 83.1 (attention), and 44.6 (motor). In multivariable analyses, compared with HUU children, HIV+ early-treated children had lower scores for short-term memory (adjusted mean difference, -5.15; P=0.015). Compared with HUU children, HIV+ late-treated children had significantly lower scores (adjusted mean differences, cognitive ability, -8.80; P=0.002; short-term memory -11.77; P< 0.001; visual-spatial processing, -7.97; P=0.02; non-verbal, -9.36; P=0.004; motor, -9.48; P< 0.0001). Compared with early-treated children, late-treated children also had significantly lower scores (adjusted mean differences, short-term memory, -6.38; P=0.03; learning, -7.14; P=0.04, non-verbal, -6.76, P=0.02, and motor -7.13, P=0.001).
**Conclusions:** Children who had received ART by age one year had subtle short-term memory deficits compared with HUU. Children who initiated ART later had deficits in multiple domains including cognition, short-term memory, visual-spatial processing, learning and motor skills, compared with HUU or HIV+ early-treated children or both. Earlier ART appears to prevent broader neurodevelopmental compromise due to pediatric HIV infection.

## TUPEB123

### MENTAL HEALTH AND ASSOCIATED VIROLOGIC OUTCOMES AMONG HIV-INFECTED ADOLESCENTS IN TANZANIA

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**Background:** Sub-Saharan Africa is home to more than 80% of the estimated 2.1 million HIV-infected adolescents. Despite this HIV burden, few studies have evaluated mental health difficulties (MHD) and associated HIV outcomes. This study aimed to describe MHD and associated HIV outcomes in HIV-positive adolescents in Tanzania.
**Methods:** This prospective, cross-sectional study enrolled HIV-infected adolescents between 11 to 24 years of age who attend adolescent clinic at KCMC (referral center) or Mawenzi (government hospital) in Moshi, Tanzania. Assessments included: Patient Health Questionnaire (PHQ-9)—depression (cut off ≥10; range (0-27); Strengths and Difficulties Questionnaire (SDQ)—behavioral and emotional symptoms (cut off ≥17; range 0-40); modified UCLA PTSD Reaction Index (PTSD-RI)—post traumatic stress symptoms (cut off ≥18; range (0-51). MHD were defined as meeting the threshold criteria on any one of the three mental health measures. Self-reported adherence and a modified Berger Stigma Scale—(10 questions, cutoff ≥24; range (10-40) were also assessed. HIV-RNA was obtained after questionnaire was completed.
**Results:** Adolescents from KCMC (n=182) or Mawenzi (n=98) were enrolled. Comparative data of key variables are reported (Table I). Youth at Mawenzi had significantly more MHD, stigma, and incomplete adherence as compared to KCMC. Univariable regression analysis of the combined cohorts demonstrated a 13% increased odds of MHD per one unit increase in stigma (CI 1.07 - 1.19) and 86% increased odds of MHD for adolescents who self-reported incomplete adherence (CI 1.09 - 3.17). MHD were not statistically associated with virologic failure (≥ 400 copies/mL) for adolescents receiving ART.

| Demographic - n (%) unless otherwise specified | KCMC (n=182) | Mawenzi (n=98) | p value |
|---|---|---|---|
| Age (years)- mean (SD) | 17.2 (2.9) | 15.9 (2.3) | 0.45 |
| Female | 99 (54.4%) | 56 (57.1%) | 0.67 |
| Mental Health Difficulties | 46 (25.3%) | 44 (44.9%) | <0.01 |
| Depressive symptoms (PHQ > 10) | 22 (12.1%) | 35 (35.7%) | 0.01 |
| Emotional/behavioral symptoms (SDQ > 17) | 25 (13.7%) | 23 (23.5%) | 0.04 |
| Post-traumatic symptoms (PTSD-RI > 18) | 19 (10.4%) | 19 (19.4%) | 0.03 |
| Significant Stigma > 24 | 42 (23.1%) | 35 (35.7%) | 0.02 |
| Self-Reported Incomplete Adherence | 43 (23.6%) | 45 (45.9%) | <0.01 |
| HIV-1 RNA >400 copies/mL and receiving ART | 71 (45.8%) *n=155 | 35 (38.5%) *n=91 | 0.46 |

*[Comparison of HIV-Infected Adolescent Cohorts from Two Adolescent Clinics in Tanzania]*

**Conclusions:** Self-reported MHD were considerable among HIV-infected adolescents and were significantly associated with stigma and incomplete adherence. Virologic failure was also prevalent, though did not meet statistical significance. MHD were more prevalent among youth attending the lower income clinic, Mawenzi. Research on innovative mental health interventions to address the needs of this growing HIV-infected adolescent population is urgently needed.

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# RETENTION IN CARE OF ADOLESCENTS

## TUPEB124

### HIGH RETENTION AND VIRAL SUPPRESSION RATES IN A DEDICATED ADOLESCENT-FRIENDLY HIV CLINIC IN SOUTH AFRICA

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**Background:** South Africa has the highest burden of HIV-infected youth globally. Adolescents with chronic illness commonly struggle with poor adherence. Studies from resource-rich countries have documented high rates of mortality, loss to follow-up, and virologic failure among HIV-infected adolescents. To overcome these challenges, many HIV clinics have initiated adolescent-friendly services; however, outcomes in these clinics have not been described.

**Methods:** We performed a retrospective cohort analysis using medical records from 254 perinatally HIV-infected adolescents receiving antiretroviral therapy (ART) at a single clinic in KwaZulu-Natal, South Africa from April 2007 to November 2015. Adolescents could attend either: 1) Saturday teen clinic with dedicated peer support and structured social activities after six months on ART pending availability or remain in 2) standard weekday pediatric clinic. We analyzed records from all perinatally HIV-infected adolescents/young adults aged 13 - 24 attending teen clinic or standard pediatric clinic. We performed a cross-sectional analysis comparing retention in care and viral suppression among adolescents attending each clinic. We calculated descriptive statistics and conducted univariable and multivariable logistic regression models.

**Results:** Overall, viral suppression among adolescents was 85% (196/231) and retention was 89% (226/254) with retention outcomes in 97%. We found significantly higher retention among adolescents attending teen clinic (97%) versus standard clinic (85%; p=0.005). Multivariable logistic regression adjusting for age at ART initiation, gender, pre-ART CD4, months on ART and tuberculosis history indicated higher retention in adolescents attending teen clinic compared to standard clinic (OR =10.1; p=0.003). We also found higher viral suppression among adolescents attending teen clinic (91%) versus standard clinic
(81%; p=0.048). A similar multivariable logistic regression model indicated higher viral suppression in adolescents attending teen clinic compared to standard clinic (OR = 4.13; p=0.004).

| | Prevalence | | | Multivariable Analysis | |
|---|---|---|---|---|---|
| | Teen Clinic (n=88) | Standard Clinic (n=166) | P-value | Retention OR (P-value) | Viral Suppression OR (P-value) |
| **Median age at ART initiation (IQR)** | 11.0 (9.4 - 12.7) | 9.6 (7.6 - 12.2) | **0.014** | **0.90 (0.044)** | 0.91 (0.081) |
| **Female (%)** | 50 (57%) | 82 (49%) | 0.260 | **0.27 (0.021)** | 0.98 (0.967) |
| **Median pre-ART CD4 (IQR)** | 94 (35 - 220) | 205 (98 - 345) | **<0.001** | 1.00 (0.394) | 1.00 (0.161) |
| **Median Months on ART (IQR)** | 72 (52 - 92) | 58 (27 - 83) | **<0.001** | 1.00 (0.469) | 0.99 (0.223) |
| **Tuberculosis History** | 42 (49%) | 92 (55%) | 0.243 | 0.91 (0.849) | 1.66 (0.453) |
| **Teen Clinic Attendance** | ___ | ___ | ___ | **10.12 (0.003)** | **4.13 (0.004)** |

*[Table 1: Outcomes of Adolescents Attending Teen Clinic and Standard Clinic]*

**Conclusions:** Despite lower pre-ART CD4 and older age at initiation, adolescents attending a teen clinic had higher retention in care and viral suppression compared to adolescents attending standard pediatric clinic.

## TUPEB125

### IMPACT OF A YOUTH-TARGETED HIV CLINIC INTEGRATED WITHIN A LARGE URBAN ADULT CLINIC

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**Background:** In the US, adolescents/young adults make up the largest proportion of new HIV infections and the majority who engage in care do so at adult clinical sites. Youth Living with HIV (YLHIV) have worse retention and suppression outcomes than adults. Given these challenges, new models are needed to improve outcomes for YLHIV. We evaluated the impact on retention in care of comprehensive youth-targeted care within an adult clinic.

**Methods:** The Access Care Early (ACE) program for YLHIV is integrated within a large adult HIV clinic. Patients 18-30 years qualify for ACE for the following: transfer from pediatric care; newly diagnosed high risk (e.g. mental illness, substance abuse); lack of success in standard adult care. ACE providers have combined internal medicine-pediatrics training and comprehensive care is provided through ACE's team of social work, nursing, mental health, and youth outreach worker. We performed a retrospective analysis of patients 18-30 years who newly presented to care after June 2012 and compared 1-year retention of those cared for in ACE versus those receiving standard care in the adult clinic. Measures of engagement were ≥6 month gap in care and minimum of 2 visits ≥ 90 days apart.

**Results:** Of the 132 YLHIV meeting inclusion criteria, 54 (41%) received care in ACE (24/54 transitioned from pediatric HIV care; 16/24 were perinatally acquired) and 78 (59%) received standard adult care. Demographics were similar, except ACE patients were younger. YLHIV in ACE were less likely to have a 6 month gap in care (44% vs. 59%, p 0.10) and more likely to have two appointments ≥ 90 days apart compared to those receiving standard adult care (83% vs. 69%, p 0.066).

| Variable | Youth Targeted Care N= 54 (41%) | Standard Adult Care N=78 (59%) | Total N=132 (100%) | p-value ($\chi^2$) |
|---|---|---|---|---|
| Age, median (range) | 24 (18-29) | 26 (20-30) | 25 (18-30) | 0.001 (t-test) |
| Male | 37 (69%) | 63 (81%) | 100 (76%) | 0.106 |
| Race:Black/White/ Hispanic | 46(85%)/ 5(9%)/1(2%) | 55(71%)/ 13(17%)/5(6%) | 101(77%)/ 18(14%)/6(5%) | 0.28 |
| 6 month gap | 24 (44%) | 46 (59%) | 70 (53%) | 0.100 |
| 2 visits >90 days apart | 45 (83%) | 54 (69%) | 99 (75%) | 0.066 |

*[Characteristics and retention for YLHIV followed in Youth Targeted (ACE) vs. Standard Adult Care]*

**Conclusions:** Despite targeting YLHIV with significant challenges to retention, YLHIV enrolled in the ACE program had a trend toward better retention in care. Further studies of ACE and similar programs may inform development of future interventions to improve the continuum of care in this high-risk population within adult clinics.

## TUPEB126

### PROJECT REACH: A FACILITY-BASED PEER SUPPORT MODEL ACROSS 20 FACILITIES IN FIVE SUB-SAHARAN AFRICAN COUNTRIES

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**Background:** AIDS is now the leading cause of death among adolescents (age 10-19 years) in Africa. Emerging evidence suggests that peer-led service delivery models may improve outcomes and health service engagement for adolescents and young people living with HIV (AYPLHIV). However, greater evidence is needed for these models to emerge as policy and be implemented at scale with established standards and principles.

**Description:** Project Re-Engage Adolescents and Children with HIV (REACH) aims to investigate a health facility-based peer support model to improve HIV treatment and care services for and treatment outcomes in children and AYPLHIV. The program engages 59 AYPLHIV age 18-24 years as peer supporters in 20 health facilities across five sub-Saharan African countries (Ethiopia, Uganda, Malawi, DRC and Cameroon). Peer supporters receive monthly stipends, relevant nationally-accredited training and a practical toolkit to prepare them to deliver peer-led psychosocial services, educate and engage communities and provide operational support.

**Lessons learned:** Project REACH facilities span urban, peri-urban and rural (59%; 24%; 17%) and primary, secondary and tertiary level (35%; 24%; 41%) settings, providing evidence and examples across contexts. Together, these facilities provide HIV treatment and care for 21,523 children and AYPLHIV. Since the program's launch in April 2015, the adolescent patient base at participating facilities has increased by 10%. Facilities have initiated new AYPLHIV-supportive services and activities, including home visits (82%); outcomes monitoring (88%); standardised disclosure (71%) and dedicated AYPLHIV-friendly visit times (71%). Peer supporters primarily deliver psychosocial support, such as support groups and counseling (80%); conduct home visits and treatment literacy sessions (90%); and perform facility-based task-sharing like basic patient monitoring (50%). 83% of facilities provide peer supporters with employment contracts, 90% conduct performance appraisals and 90% include them in case meetings.

**Conclusions/Next steps:** Health facilities have a central responsibility to provide sustainable services that are responsive to the needs of AYPLHIV within an enabling environment. Project REACH demonstrates the critical role that facility-based peer supporters may play in expanding adolescent treatment access and addressing gaps in AYPLHIV-friendly services. Results show that peer supporters can be assimilated into health facility teams, but true integration will require policy shifts and health systems strengthening.

## TRANSITION INTO ADULT CARE

### TUPEB127

### TRANSITIONING HIV-INFECTED CHILDREN INTO ADULT CARE: VOICES OF JAMAICAN ADOLESCENTS AND THEIR HEALTHCARE PROVIDERS

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**Background:** Successful public access to antiretroviral therapy in resource-limited settings (RLS) has resulted in survival of HIV perinatally-infected children into adulthood. However, there are few studies or guidelines on transition of care in RLS, where 90% of HIV-infected children reside. We aimed to characterize the current landscape of the transfer process of HIV-infected adolescents from the perspectives of both the adolescents and providers in one such RLS, Jamaica.
**Methods:** We conducted in-depth semi-structured interviews of 18 HIV-infected adolescents in paediatric care at the University Hospital of the West Indies and 21 health care providers from various clinics across Jamaica. We audiotaped, transcribed verbatim, then organized and coded transcripts using the software ATLASti. We analysed the data using the grounded theory approach.
**Results:** Five themes emerged:
1. Adolescent patients articulated psychosocial benefits associated with pediatric care. Pediatric clinics were like families who provided care-taking and developmental support in addition to HIV care.
2. Both adolescent patients and pediatric providers felt the quality of care adolescents received in the pediatric clinic was better than it would be in the adult setting.
3. Given the social significance of pediatrics clinics in participants' lives, alongside the concerns regarding adult care, there was rootedness in the pediatric clinic and apprehension about transfer to the adult clinic.
4. In the face of the national policy of transfer to adult care at 13, no formalized national structures or services for adolescents, and the challenges HIV-infected adolescents experience, some physicians sought to bridge the gap between childhood and adulthood by providing adolescent-centered services for their HIV-infected clients.
5. Narratives speak to the transfer as a critical juncture in adolescents' care and a transition as a holistic and gradual process, an element of which is the transfer.
**Conclusions:** A formal, culturally, and developmentally appropriate process of transition is necessary to manage the fear and apprehension both providers and adolescent patients experience when confronted with the transfer from pediatric to adult care.

## TRENDS IN MORBIDITY AND MORTALITY

### TUPEC128

### EVOLUTION OF RISK FACTORS FOR CHRONIC KIDNEY DISEASE IN THE FRENCH ANRS CO3 AQUITAINE COHORT, 2004-2014

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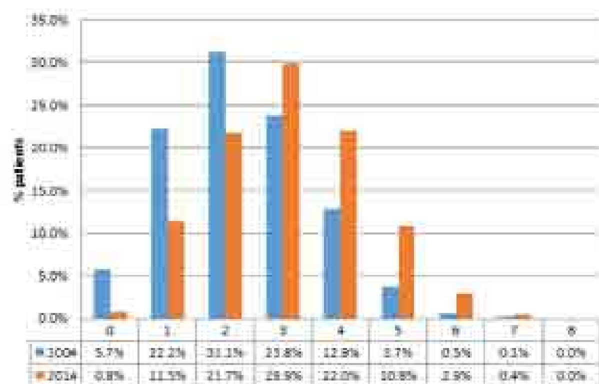
**Background:** Long-term management of an aging HIV positive population could be impacted by comorbidities as chronic kidney disease (CKD). Thus, monitoring their risk factors are important to target prevention. The objectives were to compare patients' profile of ANRS CO3 Aquitaine cohort between 2004 and 2014 regarding epidemiological characteristics and comorbidities, including CKD risk factors as proposed in the 2013 French guidelines and literature (Mocroft PLoS Med. 2015; 12(3):e1001809).
**Methods:** Two repeated cross-sectional analyses were performed using Aquitaine Cohort data. In this prospective open cohort, epidemiological, clinical, therapeutic and biological, data are systematically collected in a standardized way on all patients in care, with informed consent, in public hospitals in south Western, France. Eligible patients had ≥1 clinic visit in 2004 and 2014.
**Results:** The patients' CKD risk factors in 2004 and 2014 are displayed in table. In ten years, the age category ≥50 years was multiplied by 2.5 and the African origin increased by 60%; all biological risk factors (except hepatitis co-infection) increased over time. In 2004, 41% of patients had ≥3 CKD risk factors which increased to 66% in 2014 (figure). In 2004, 33.4% of the cohort had low (< 0) risk score for CKD, 35% medium (0-4) score and 31.6% high-risk score (≥5) vs 21.8%, 32.7% and 45.5% of patients in 2014, respectively.

| CKD risk factors (2013 French Guidelines) | 2004 (n=3,290) | 2014 (n=3,880) |
|---|---|---|
| Age ≥ 50 years (%) | 20.9 | 52.3 |
| Female (%) | 27.5 | 28.2 |
| African origin (%) | 7.1 | 11.4 |
| HBV/HCV co-infection (%) | 38.1 | 28.5 |
| Prevalence of hypertension (%) | 4.3 | 17.8 |
| Prevalence of diabetes (%) | 9.4 | 14.2 |
| Prevalence of dyslipidaemia (%) | 14.3 | 46.1 |
| CD4 count <200/mm3 mid-year (%) | 12.4 | 4.1 |
| Exposure to indinavir, atazanavir and TDF (%) | 29.5 | 72.9 |

*[Table]*




*[Figure. Proportion of patients by number of renal risk factors in 2004/2014 (Morlat 2013 Criteria)]*

**Conclusions:** Over time, with ageing, the prevalence of CKD risk factors has increased and infectious comorbidities decreased. Follow-up procedures should emphasize the prevention / correction of risk factors amenable to prevention.

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## TUPEC129

### EVOLUTION OF COMORBIDITIES IN HIV PATIENTS IN ITALIAN ICONA COHORT: CROSS-SECTIONAL ANALYSIS IN 2004 AND 2014

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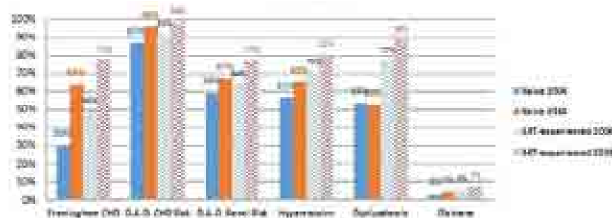
**Background:** Because life expectancy of people with HIV, although extended by cART, largely depends on their stage of HIV disease progression and co-morbidities when first seen for care, estimates of the prevalence of AIDS and non-AIDS morbidity are crucial to plan their long-term management.
**Objectives:** Describe demographics, HIV markers and comorbidities in ART-naïve patients in ICONA cohort and compare their characteristics with ART-experienced population according to current calendar year (2004 and 2014).
**Methods:** A cross-sectional analysis was performed after population stratification in 4 mutually exclusive groups who were under active follow-up in 2004 or 2014 according to previous treatment history (ART-naïve vs. -experienced). People were included if they were seen for care at least once in the year. ART-naïve patients were defined as those who, by December 31st of the year, had not started ART.
**Results:** Table summarises patients' demographics and HIV disease characteristics. Figure shows the prevalence of non-AIDS comorbidities. In 2014, ART-naïve people were older, showed higher CD4 count and less frequently AIDS. ART-naïve patients in 2014 presented increased risk for renal, CHD and hypertension and similar prevalence of diabetes and dyslipidaemia. Overall>50% showed moderate or high risk of comorbidities. These were, on average, higher in ART-experienced, regardless of calendar year.

| | ART-naive | | | ART-experienced | | | |
|---|---|---|---|---|---|---|---|
| Characteristics | 2004 (N= 471) | 2014 (N= 95) | p-value | 2004 (N= 1680) | 2014 (N= 1826) | p-value | Global p-value |
| **Age, Median (IQR)** | 40 (34, 44) | 50 (45, 53) | 0.206 | 41 (37, 46) | 50 (46, 55) | 0.381 | 0.044 |
| **Gender, Female n(%)** | 149 (31.6%) | 26 (27.4%) | 0.835 | 523 (31.1%) | 584 (32.0%) | 0.346 | 0.537 |
| **CD4 count >500 cells/mm3 n(%)** | 236 (52.7%) | 60 (69.0%) | 0.015 | 763 (46.2%) | 1366 (75.1%) | 0.198 | 0.013 |
| **HIV RNA, copies/mL n(%)** | | | <.001 | | | <.001 | <.001 |
| **0-80** | 8 (2.0%) | 3 (4.5%) | | 847 (51.3%) | 1651 (90.8%) | | |
| **81-100,000** | 366 (90.1%) | 58 (87.9%) | | 709 (42.9%) | 157 (8.6%) | | |
| **>100,000** | 32 (7.9%) | 5 (7.6%) | | 95 (5.8%) | 10 (0.6%) | | |
| **AIDS diagnosis, n(%)** | 17 (3.6%) | 0 (0.0%) | <.001 | 346 (20.6%) | 294 (16.1%) | <.001 | <.001 |

*[Table 1]*



*[Figure 1. Proportion of patients with moderate/high risk of coronary heart disease and chronic kidney disease, and prevalence of hypertension, dyslipedemia and diabetes]*

**Conclusions:** The prevalence of comorbidities and risk factors in ART-naïve patients is lower than that in the experienced population. However, because it is considerably high and higher than that of ART-naïve patients a decade ago it is likely to influence the type of care of these patients.

## TUPEC130

### PRE-ART MORTALITY FOR ADULTS HIV PATIENTS ENROLLED INTO PUBLIC-DRIVEN HIV CARE PROGRAM IN MWANZA REGION TANZANIA (2011-2014), A COMPETING RISK ANALYSIS

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**Background:** In many African HIV programmes, patients initiate antiretroviral therapy (ART) based on clinical or immunological criteria. Mortality rates following ART initiation are high because patients present with advanced stage of the disease. However, prior to ART initiation, high mortality rates are also seen among HIV infected patients in resource limited settings, although little has been done to understand the pre-ART mortality rates. We analysed routinely collected patient-level data from the government driven HIV programme to determine these rates.
**Methods:** Survival analysis was used to estimate mortality rates before ART initiation. Follow-up time was from date of clinic enrolment to death - defined if patient records had a date of death and no ART start date. Censoring was defined as the date for Lost-to-follow-up (LTFU), ART start date, or at last clinic visit, global censoring at 31st December 2014. In the analysis, LTFU was considered a competing event, as this can be due to death (ie non-independence from the outcome). Age specific mortality rates per 100 follow-up years were calculated. Competing-risk regression models were used to compare the hazards experienced by sub-groups when enrolling into clinics and before ART start.
**Results:** Of 32,205 HIV positive adults who enrolled in clinics between 2011 and 2014, there were 21,501 (64.8%) females. During follow up, 752 adults died prior to ART initiation with overall pre-ART mortality of 2.64 (2.45-2.83) per 100 person years and 5,942 were lost to follow-up. Mortality rates increased with age at enrolment (from 1.48 in 15-19 age-group to 4.50 in those 60+ age-group). Mortality rates decreased with increasing CD4 counts at enrolment (from 2.72 at <200 cells/ml to 1.03 at 500+ cells/ml) but increased with higher WHO stage at enrolment (1.38 at Stage 1 to 7.94 at Stage 4). Competing risk analysis showed increasing hazard ratios with older age.
**Conclusions:** The crude per-ART mortality rate of 2.64 per 100 person-years is about eight times higher than the background adult mortality rate in most African countries. The competing risk analysis highlighted the underreporting of deaths among older age groups who were LTFU.

## TUPEC131

### REGIONAL DIFFERENCES IN AIDS MORTALITY IN MEXICO: A CHALLENGE TO SOLVE

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**Background:** Mexico has provided free access to HAART since 2003. However, AIDS mortality rates have not decreased as expected, reducing only from 4.4 deaths per 100,000 inhabitants in 2003 to 4.2 in 2013. Regional differences are huge and the early diagnosis of HIV, quality of care, and socioeconomic status have been reported as determinants of health of people living with AIDS.
**Methods:** We estimate AIDS mortality rates from data for State level (2003-2013), and the average annual mortality rate in the 2437 Municipalities in Mexico (2009-2013). We identified the States and 25 Municipalities (20,000+ inhabitants) with the highest mortality rates. Data were correlated with the early diagnosis of HIV, quality of care and poverty.
**Results:** Tabasco (10.58 per 100 000 inhabitants), Quintana Roo (9.02), and Veracruz (8.65) were the Mexican states with the highest AIDS mortality rates; Zacatecas (1.03), Guanajuato (1.43) and Hidalgo (1.92) recorded the lowest rates. From 2003 to 2013, in 50% of Mexican states (16/32), the AIDS rates increased, rather than decreased. The difference between the states with the highest and lowest rate (Tabasco and Zacatecas) was more than seven times.
The 25 Municipios with the highest mortality rates are located only in five states, all of them in the Southeast and among the poorest in the country: Veracruz, Chiapas, Tabasco, Campeche and Oaxaca. The Municipio of Carlos A. Carrillo, Veracruz, ranked number one with a rate of 39.6 deaths per 100,000 inhabitants (nine times higher than the national rate), and Poza Rica, Veracruz, being number 25 with a rate of 13.4.

[25 municipios with highest AIDS mortality rates in Mexico (2009-2013)]

**Conclusions:** The data highlight the need for enhanced HIV detection and treatment for 25 Municipios with the highest AIDS mortality rates, as well as the States most affected. Findings can help to identify the sites where resources should be targeted to reduce AIDS mortality in Mexico.

## TUPEC132

### THE RAPIDLY SHRINKING BURDEN OF HIV ON ADULT MORTALITY IN KWAZULU-NATAL, SOUTH AFRICA

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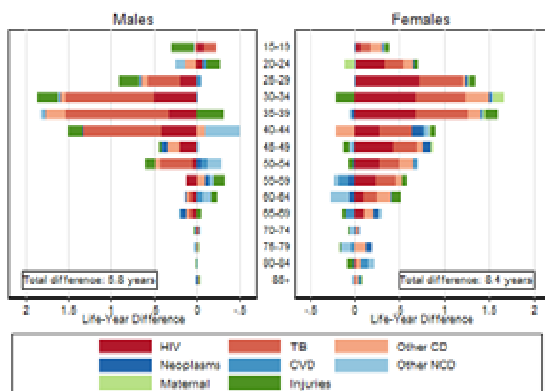
**Background:** Adult mortality declined considerably since the expansion of antiretroviral therapy (ART) programs, but the residual burden of HIV on adult mortality in generalized epidemics remains poorly understood.
**Methods:** We use demographic and HIV surveillance data from 2001 to 2014 covering a rural South African population of around 45,000 individuals aged 15 to 100. We use non-parametric survival analysis for estimating (i) population-wide adult LE gains since the introduction of ART in 2004, and (ii) the shortfall of the adult LE compared to that of the HIV negative population (i.e., the LE deficit). LE gains and deficits for groups of calendar years are decomposed by age and cause of death with data generated by a new verbal autopsy interpretation tool (InSilicoVA). All estimates are disaggregated by sex.
**Results:** Since the roll-out of ART, population-level adult LE has increased by 15.2 years for men (95%-CI: 12.4-17.8), and 17.2 years for women (95%-CI: 14.5-20.2). Reductions in TB and HIV related mortality account for 80% of the LE gains among men, and over 90% among women. For men, 10% is the result of a decline in external injuries. As a result of the mortality reductions, the LE deficit in 2014 had contracted to 1.2 years for men (95%-CI: -2.0-5.0) and to 5.3 years for women (95%-CI: 2.8-7.8). TB and HIV are responsible for over 90% of the LE deficit among men in 2011-'14, and for over 84% among women. The remainder is largely attributed to other communicable diseases (Figure 1).
**Conclusions:** The burden of HIV on adult mortality in this population is rapidly shrinking, but remains sizable for women, despite their better engagement with HIV care services. The gains in adult life-years to date as well as the current LE deficit are almost exclusively due to differences in HIV and TB related mortality.




[Figure 1: Age-cause group contributions to the LE difference between the HIV neg. population and the population as a whole, by sex (2011-'14)]

## TUPEC133

### ANTIRETROVIRAL THERAPY (ART) AND HEAVY ALCOHOL USE IN HIV+ ADULTS IN THE MIAMI ADULT STUDIES IN HIV (MASH) COHORT IS ASSOCIATED WITH OXIDATIVE STRESS AND LIVER DAMAGE

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**Background:** Increased oxidative stress is implicated in the development of liver disease, a major cause of morbidity and mortality in HIV infection. While chronic alcohol and ART have been shown to increase oxidative stress and cytotoxicity in vitro, sufficient evidence is lacking in human populations.
Since the prevalence of alcohol use in people living with HIV (PLWH) is high, and the majority of HIV+ patients are on antiretroviral therapy (ART), it is important to study the interactions between alcohol consumption and ART and their effect on liver disease in PLWH.
**Methods:** PLWH from the MASH cohort (n=320) were consented. Questionnaires on demographics, ART use, and the Alcohol Use Disorders Identification Test (AUDIT) were completed ( ≥ 3 alcoholic drinks/day was defined as heavy alcohol drinking, < 3 alcoholic drinks/day was defined as moderate alcohol drinking/abstaining). Blood was drawn for measures of oxidative stress (mitochondrial-DNA-specific 8-oxo-dG [mt-8-oxo-dG]) and markers of liver function (AST, conjugated bilirubin, platelets). CD4 cell count and HIV viral load was obtained from medical charts. Descriptive and inferential statistics were used for analyses, adjusted for age, gender, BMI, CD4 cell count and HIV-viral load.
**Results:** Mean age was 44.9 ± 8.0 years, 65% were males and 69% were Black; 23% were heavy alcohol drinkers and 43% were not receiving ART. ART experienced participants had higher levels of oxidative stress and higher markers of liver disease than ART-naïve participants (higher mt-8-oxo-dG (ΔCt±SD) [β= 0.09 SE= 0.05; *P*=0.041]), higher AST (β=6.22, SE=3.06; *P*=0.044) and higher platelets (β=22.81, SE=11.57; *P*=0.05). Among the ART experienced, heavy alcohol drinkers compared to moderate drinkers/abstainers had higher mt-8-oxo-dG (β=0.09 SE= 0.05; *P*=0.041) and platelets (β=23.9, SE=11.7; *P*=0.044). These differences were not evident among the ART-naïve participants; however, heavy drinkers had higher AST (β=9.56 SE=4.8; *P*=0.050) and higher conjugated bilirubin (β=0.042, SE= 0.02; *P*=0.046).
**Conclusions:** These findings show that ART and alcohol are associated with oxidative stress and may exacerbate liver injury. These data provide the basis for future therapeutic approaches to protect the liver in HIV disease.

## TUPEC134

### TREND IN HIV/AIDS DEATHS IN SOUTH AFRICA: ARE WE WINNING THE BATTLE AGAINST HIV/AIDS?

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**Background:** South Africa is one of the countries most affected by the HIV/AIDS epidemic. Mortality estimates are a good indicator of the impact of prevention and treatment interventions. This paper compares mortality estimates for HIV/AIDS from the 2nd National Burden of Disease study for South Africa (NBD SA) and the Global Burden of Disease study for the country (GBD SA).
**Methods:** Vital registration cause-of-death data from Statistics South Africa were adjusted for under-reporting of deaths using demographic methods. Source causes with miss-attributed HIV/AIDS deaths were identified. A regression was performed to model the increase of age specific mortality for 1997 - 2003 against lagged HIV antenatal clinic prevalence to estimate mortality level without HIV/AIDS for these causes. These estimates were compared with HIV/AIDS estimates generated by the GBD study for the country.
**Results:** The NBD SA study estimates more HIV/AIDS deaths prior to 2005 (pre - treatment period) than GBD SA (Figure). HIV/AIDS deaths peaked in 2005/2006 in NBD SA and 2010/2011 in the GBD SA study. GBD SA underestimates deaths from HIV/AIDS for children < 5 years of age.
**Conclusions:** The GBD SA study overestimates HIV/AIDS deaths for South Africa post 2005 i.e. the antiretroviral treatment era and underestimates child deaths; an artefact of using a standardised model for all countries and UNAIDS Spectrum as a basis for their HIV/AIDS disease model. The downward turn in the number of HIV/AIDs deaths since 2005 in the NBD SA study align with the increase in access and coverage of antiretroviral treatment in the country and points to the success of HIV interventions.

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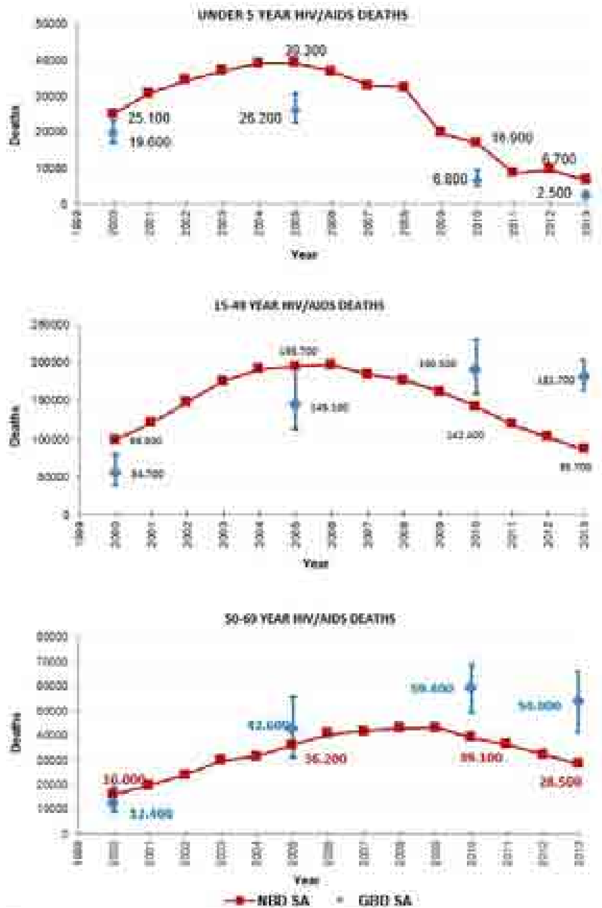


[Figure: Number of deaths for persons <5 years, 15-49 years and 50-69 years of age, South Africa 2000-2013]

## MEASUREMENT AND MODELLING OF THE HIV EPIDEMICS

### TUPEC135

### INTRODUCING A FOUR-POINT CONTINUUM FOR MONITORING THE EFFECTIVENESS OF THE HIV RESPONSE IN EUROPE AND CENTRAL ASIA

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**Background:** As part of monitoring the HIV response in Europe and Central Asia, the European Centre for Disease Prevention and Control (ECDC) undertook a scoping exercise to assess data availability to monitor the HIV continuum of care. Six elements of the continuum were investigated: number of people living with HIV (PLHIV), number diagnosed, linkage to care, retention in care, antiretroviral therapy (ART), and viral suppression.

**Methods:** In December 2013, ECDC forwarded questionnaires to nominated country representatives from 55 countries to study how they were monitoring the HIV care continuum. Representatives from 48 countries responded.

**Results:** Thirteen countries could provide data for all six elements of the continuum, while 32 could provide data for at least four. The study identified a lack of agreement as to what elements should be included in the continuum and how they should be defined. The elements least reported on, and with the least agreement on how to define, were 'linkage to' and 'retention in' care. Definitions of linkage to care varied from having attended HIV related care in a general or HIV specific health facility, having "registered" for care, or having had a CD4 count or viral load test. The time period within which these linkage to care markers were measured also differed. Definitions of retention in care included having at least one clinical visit per year, or having been in care over a defined period of time.

**Conclusions:** Attempts to compare HIV continuums across Europe and Central Asia are hampered by different data collection approaches and a lack of standard definitions. Based on feasibility to define common indicators and links to the UNAIDS 90:90:90 targets, ECDC is introducing a standardised four-point continuum (PLHIV; diagnosed; on ART; viral suppression) (figure 1). Separate measures will be used to monitor the remaining two quality of care elements as secondary outcomes.

[Figure 1: Monitoring a four-point continuum in Europe and Central Asia]

### TUPEC136

### THE USE OF A MATHEMATICAL MODEL AND RISK RATIO TO ESTIMATE THE IMPACT OF HIV/AIDS INTERVENTION PROGRAMS ON FEMALE SEX WORKERS (FSW) AND THEIR COMMUNITIES: THE NIGERIAN EXPERIENCE

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**Background:** The objective of the MMTWG is to develop a mathematical model to estimate how many indirect HIV infections will be inverted among FSWs, their clients and the general population, attributable to prevention programs targeting female sex works in Nigeria.

**Methods:** A mathematical model (as shown in the appendix) was developed, using python programming language. The variables include initial prevalence of HIV among FSW, their clients; proportion of sex acts that are protected; Initial population of the target group; duration of the intervention; number of sexual contacts per FSW and average number of sexual acts. A specific risk equation was developed for the FSW, incorporating the current values. Three Scenarios of the model was estimated over a period of five years. Putting all infected FSWs on treatment, irrespective of their CD4 or WHO staging and keeping other variables constant; Putting only eligible FSWs on treatment and increasing condom distribution; and universal access to treatment for all FSWs and their clients.

**Results:** It was observed that if the status quo (37% of eligible positive FSW on treatment) is maintained, the new infection rate will gradually increase to 3.6 in five years' time. Putting 80% of eligible positive FSWs on treatment will avert 2789 new infections in the same duration and reduce the current rate of new infections to 0.7. A slight decrease of 0.3% would be experienced in the general female population. Putting all FSWs on treatment returns a 89.7% reduction on the number of new infections among clients of FSW.

**Conclusions:** The mathematical model reveals the efficiency of treatment in reducing the rate of new infections among FSWs, their clients and general female. The models reveals the importance of the investing in the FSW intervention programs now, rather in the future. The model outputs can be used to calculate the Quality Adjusted Life Years (QALY) to be gained during the intervention. A slight contribution of the total number of condom distributed to a reduction in new infection rate was also noticed. Further modelling scenarios are required to effectively infer on the efficiency of the intervention programs.

### TUPEC137

### UNDIAGNOSED HIV INFECTION IN GERMANY: WHO DO WE NEED TO TARGET?

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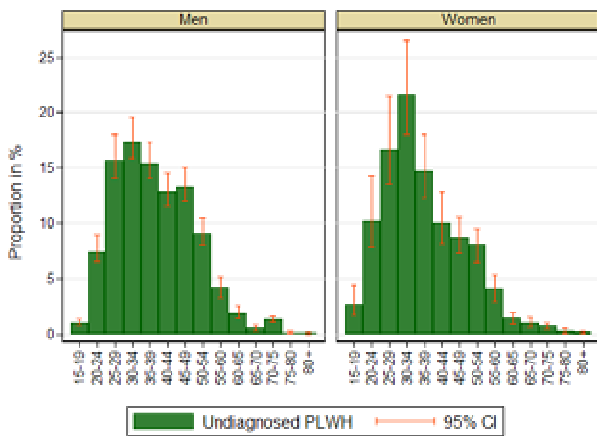
**Background:** People with undiagnosed HIV infection contribute to ongoing HIV transmission. We estimated the number of people with undiagnosed HIV infection in Germany by gender, transmission group and age in order to guide targeted intervention.

**Methods:** We corrected voluntary AIDS case reports (1982-1995) and statutory HIV notification (1993 onwards) for underreporting and used a monotone multiple imputation model to complete missing values. We used a combined non-parametric back projection model of AIDS cases and HIV diagnoses by gender and transmission group with age-group and CD4 cell count group as covariates. The number of undiagnosed infections in non-Germans acquired abroad could not be estimated, because migration disturbed the association between the number of infections and diagnoses.
**Results:** At the end of 2014, around 83,000 (77,000-91,200) people were living with HIV in Germany. Of these, around 13,200 (12,100-14,700; 15.9%) were undiagnosed. Most undiagnosed infections were among men (10,900; 10,100 - 12,100). Men who have sex with men (MSM) would be the largest group of undiagnosed (9,600; 8,900 - 10,600), followed by persons with heterosexual contacts (HET; 2700; 2300 - 3200) and drug users (IDU; 860; 650 - 1300). Conversely, the proportion of undiagnosed infections was the highest in HET (25.5%), followed by MSM (17.9%) and IDU (10.8%). Most affected age-groups of undiagnosed infections were 25-49 years in men and 25-39 years in women (Figure 1).




*[Age and sex distribution of undiagnosed people living with HIV (PLWH) in Germany 2014]*

**Conclusions:** A substantial proportion of people living with HIV are still undiagnosed in Germany. Since the model could not take into account infections in non-Germans acquired abroad, the actual number of undiagnosed infections may be larger. To decrease this proportion, barriers to testing should be reduced, i.e. by reducing stigma, testing campaigns targeting MSM and HET or selling home testing/home collection tests. These interventions should not only be targeted at young adults, as many undiagnosed infections are estimated among middle-aged men.

## TUPEC138

### CAN UNAIDS' SPECTRUM (AIM) MODEL PROVIDE RELIABLE LOCAL ESTIMATES FOR CHILDREN AFFECTED BY HIV IN EAST ZIMBABWE?

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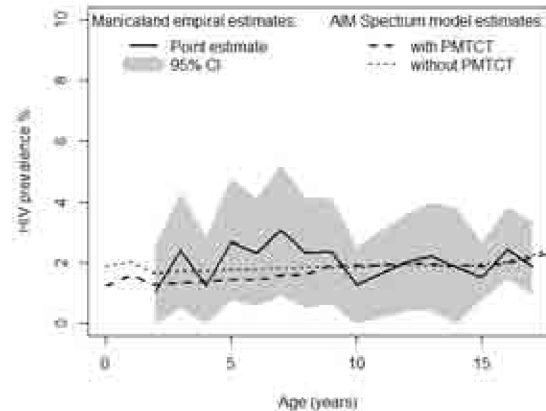
**Background:** Reliable estimates of HIV and its effects in children are needed to establish the coverage and effectiveness of prevention and ART programmes amongst children. The AIDS Impact Model (AIM) in Spectrum is used by countries, with UNAIDS support, to produce HIV estimates but should be evaluated with empirical data. Using a region-specific model, we compare AIM estimates of HIV prevalence and orphanhood with general population data from Manicaland, east Zimbabwe.
**Methods:** Antenatal surveillance (ANC) data (N≈1200 per round) and population survey data (N≈10,000) for adults aged 15-49 years, from 12 sites in 3 districts in Manicaland, east Zimbabwe, collected in 5 rounds between 1998 and 2011, were input into AIM 2016 (version 5.40, February 2016, available at http://www.avenirhealth.org) to create a region-specific simulation on a consistent basis with national estimates. The simulation was fitted to local ANC surveillance and general-population data on HIV prevalence in adults. The model outputs were compared with empirical survey estimates of HIV and orphan prevalence in children aged 2-14 years, and 2010 Manicaland provincial DHS data on orphanhood. The impact of PMTCT services until 2010 (mainly single dose nevirapine) was assessed by comparing these model estimates with those from a model assuming no PMTCT coverage.




*[Figure 1. HIV prevalence among children in 2010]*

**Results:** The AIM model predicted a prevalence of 1.7% among children aged 2-14 in 2010, compared to the observed prevalence 2.2% (95% CI: 1.7-2.6%) in the Manicaland survey. The estimated impact of PMTCT services on HIV prevalence in children was modest but significant amongst newborns, with a 33% relative reduction (Figure 1).
Paternal orphanhood was lower than both survey and DHS estimates, whereas maternal orphanhood was higher than the two estimates until 2005, then slightly lower.
**Conclusions:** The most recent AIM model, parameterised using local population data, provided reasonable estimates of HIV prevalence in children but some differences were found in orphanhood prevalence.

# RISK FACTORS FOR ACQUISITION OF HIV

## TUPEC139

### DO ADULTS MODIFY FREQUENCY OF CONDOM USE IF THEY SUSPECT THEIR PARTNER IS HIV-POSITIVE? FINDINGS FROM A NATIONAL HOUSEHOLD SURVEY IN SWAZILAND

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**Background:** Inconsistent condom use could contribute to high HIV incidence in generalised epidemics. HIV prevalence among adults 18-49 years in Swaziland is estimated at 32%. We assessed whether adults modified consistency of condom use if they suspected their partner was HIV positive.
**Methods:** A secondary analysis of the 2011 Swaziland HIV incidence Measurement Survey (SHIMS) was conducted. SHIMS was a nationally representative cross-sectional household survey of 18,172 adults 18-49 years. Participants reporting sexual activity in the previous 6 months were asked if they thought any of their 3 most recent partners was HIV positive or negative, and if they used condoms with these partners always, or inconsistently (sometimes or never). We used multivariable logistic regression to determine correlates of inconsistent condom use with a suspected HIV positive partner.
**Results:** Of 13,971 adults reporting sexual activity (57% female, 43% male), 2,265 (16%) reported sex with a partner they thought was HIV positive, 1,344 (9.6%) of whom reported inconsistent condom use. The majority, 8,251 (59%) reported sex with a partner they thought was HIV negative, of whom 5,911 (42%) reported inconsistent condom use. Higher odds of inconsistent condom use with a suspected HIV positive partner were observed among females, adjusted odds ratio, AOR (95% Confidence Interval): 1.2 (1.1, 1.4). Regionally, the practice was more common in Manzini AOR 1.2 (1.1, 1.4) and less common in Lubombo AOR 0.7 (0.6, 0.8), reference: Hhohho. Higher odds were observed among those with primary education, AOR 1.3 (1.1, 1.5), reference: tertiary education; among single adults AOR 1.3, (1.1, 1.5), reference: adults married and living with partner; and among adults with sexual debut at 14 -16 years of age AOR 1.4 (1.1, 1.7), reference: sexual debut at ≥22 years. Residing in an urban area was associated with lower odds AOR 0.8 (0.7, 0.9), reference: rural area.

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**Conclusions:** Condoms were inconsistently used even when adults suspected their partner was HIV positive. Reasons for this warrant exploration with qualitative studies. Suspicion of partner HIV exposure seemed low in this high prevalence setting, definitive determination of partner HIV status through partner testing and disclosure should be encouraged.

## TUPEC140

### AGE-MIXING PATTERNS AND HIV TRANSMISSION IN THE LIKOMA NETWORK STUDY

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**Background:** It has been suggested that the age-mixing pattern (AMP) in a population may partially explain the magnitude of HIV epidemics observed in Sub-Saharan Africa. Currently, there is conflicting evidence about whether a woman's choice of older sex partners puts her at increased risk of HIV infection. We aim to describe the AMP in the Malawian context and its relationship to participants' HIV status.
**Methods:** We conducted an analysis from the 2007/2008 implementation of the Likoma Network Study, a sociocentric network study of sexual behaviour and HIV on Likoma Island, Malawi. The AMP was visualised using scatterplots of participant age versus partner age. We used generalized linear mixed effects models to quantify the AMP in more detail, and to find associations between relationship characteristics and age-difference (AD). Logistic regression models were used to estimate the relationship between maximum AD and HIV status, adjusting for age and number of partners.
**Results:** The women (n= 1068) and men (n= 854) in our study reported 1648 and 1688 relationships, respectively. Among both genders there is a positive linear relationship between age of participant and partner's ages. The slope of the regression line in the male model is 0.72, while in the female model it is 1.1, indicating a slightly sharper increase in average partner age as women get older. For men and women, having a relationship with a non-spousal partner and using condoms in their relationship was predictive of smaller ADs. Men who said their female partners had a concurrent relationship, had on average a one-year increased AD compared to those who did not (95% CI: 0.15-1.89). Among women, those who had a partner at least 10-14 years older than them, were nearly 2 times more likely to be HIV positive than those whose maximum AD was 0-4 years (95% CI: 1.04-3.56).
**Conclusions:** This study shows that as women get older, they choose increasingly older partners. It also provides some evidence that large ADs between a woman and her partner may convey a higher risk for acquiring HIV. This may be the result of women and men using condoms less often in relationships where ADs are greater.

## TUPEC141

### FACTORS ASSOCIATED WITH ACQUISITION OF HIV DURING 2005-2014 AMONG MEN AND WOMEN IN 7 COHORTS THAT PARTICIPATE IN THE NETWORK FOR ANALYSING LONGITUDINAL POPULATION-BASED HIV/AIDS DATA ON AFRICA (ALPHA)

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**Background:** Correlates of incident HIV infection may change as epidemics mature, treatment becomes widespread and behaviour changes. In seven rural study sites from Kenya, Malawi, South Africa, Tanzania, Uganda and Zimbabwe, ART has been available for at least 8 years. We examine factors associated with incidence among men and women aged 15 to 49 in these populations.
**Methods:** We analysed longitudinal data from seven population-based cohorts with regular HIV testing to ascertain factors associated with incident infection subsequent to ART rollout (2005-2014).
Analysis time begins at the first negative HIV test and ends at seroconversion or is right censored by death, out migration or the end of data collection. We estimated HIV incidence rates (IR) and fitted piecewise exponential models to survival time to estimate hazard ratios (HR) for HIV incidence.
**Results:**

| Explanatory variables | Men: Crude HIV incidence/100 person years | Women: Crude HIV incidence/100 person years | Men: Adjusted HR (N 22,154) | Women: Adjusted HR (N 31,028) |
|---|---|---|---|---|
| **Study name** | | | | |
| Karonga | | | 0.54 | 0.45* |
| Kisesa | | | 1 | 1 |
| Manicaland | | | 1.43* | 1.52*** |
| Masaka | | | 0.75 | 0.65*** |
| Rakai | | | 1.13 | 0.96 |
| uMkhanyakude | | | 5.45*** | 4.80*** |
| Kisumu | | | 1.73** | 1.65*** |
| **Age group** | | | | |
| 15-19 | 0.37 (0.30-0.45) | 2.24 (2.06-2.43) | 0.24*** | 0.54*** |
| 20-24 | 1.59 (1.42-1.78) | 3.62 (3.39-3.87) | 1 | 1 |
| 25-29 | 1.84 (1.63-2.09) | 2.09 (1.91-2.28) | 1.97*** | 1.06 |
| 30-34 | 1.31 (1.12-1.53) | 1.45 (1.30-1.63) | 1.62** | 0.85 |
| 35-39 | 1.15 (0.96-1.38) | 1.04 (0.89-1.20) | 1.45* | 0.49*** |
| 40-44 | 1.03 (0.84-1.27) | 1.08 (0.93-1.26) | 1.14 | 0.43*** |
| 45-49 | 0.92 (0.72-1.18) | 0.89 (0.75-1.06) | 0.95 | 0.29*** |
| **Age and marital status interaction** | | | | |
| *25 and above:* | | | | |
| Single | 3.29 (2.92-3.71) | 4.16 (3.78-4.59) | 0.83 | 0.75** |
| Married | 0.98 (0.86-1.11) | 0.96 (0.87-1.06) | 0.82 | 0.52*** |
| Ex-married | 1.63 (1.27-2.11) | 1.95 (1.71-2.21) | - | - |
| *Under 25* | | | | |
| Single | 1.05 (0.94-1.17) | 4.66 (4.41-4.93) | 1 | 1 |
| Married | 0.91 (0.67-1.23) | 1.07 (0.87-1.31) | 1.81** | 0.52*** |
| Ex-married | 0.97 (0.55-1.71) | 3.30 (2.67-4.08) | 1.1 | 1.18 |
| **Residential mobility** | | | | |
| Not mobile | 1.09 (1.02-1.16) | 1.83 (1.76-1.91) | 1 | 1 |
| Mobile | 1.51 (1.22-1.86) | 3.44 (3.07-3.85) | 1.12 | 1.33*** |
| **Calendar period** | | | | |
| 2005-2009 | 1.19 (1.11-1.29) | 2.15 (2.05-2.25) | 1 | 1 |
| 2010-2014 | 1.00 (0.90-1.10) | 1.65 (1.55-1.76) | 0.89 | 0.91* |
| Number of people | | | 22154 | 31028 |

*[Table 1. HIV IR by selected factors and results from exponential regression models for men and women. *** p<0.001 ** p<0.01 *p<0.05]*

Peak age-specific IRs were at ages 20-24 (women) and 25-29 (men). Adjusted for site, marital status, mobility and calendar year, the hazard of infection remained stable until age 35 for both sexes.
Crude IRs were lower for person-time spent married compared to unmarried. Adjusted HRs showed a protective effect of marriage for women of all ages but, for men under 25, marriage increased the hazard of HIV infection compared to single men (Table 1). In the regression model, older men's marital status was not associated with incidence.
The six months either side of a change of residence were associated with higher hazard of infection for women but not men (Table 1).
Date on circumcision and sexual behaviour await analysis.
**Conclusions:** Factors associated with incidence in these populations differ between men and women. Marriage is a risk for young men and protective for young women. For women, a change in residence, which presents a risk, may coincide with getting married, and thus reduce the observed benefit of marriage. For men aged over 25, marriage does not lower the hazard of infection, perhaps due to extra-marital sex.

## TUPEC142

### EXECUTIVE FUNCTIONING ASSOCIATED WITH HIV RISK BEHAVIORS IN YOUNG SOUTH AFRICAN WOMEN

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**Background:** Heightened sexual risk-taking in adolescence may be partially explained by the ongoing cognitive development that occurs during this period. However, the association between cognitive functioning and adolescent HIV risk is understudied, particularly in developing country contexts.
**Methods:** We evaluated executive functioning in a cohort of 853 young women age 18-25 in rural Mpumalanga province, South Africa who were enrolled in the HIV Prevention Trial 068 in a follow-up visit after trial exit. We administered two tests designed to be used in non-Western settings with minimal language reliance: a task switching test (Test 1) and a rule finding and switching test (Test 2). Using log-binomial regression models, we estimated the association between scoring in the lowest quintile of each executive function test and several behavioral (unprotected sex acts, concurrent partnerships, transactional sex) and biological (prevalent HSV-2 infection) indicators of HIV risk.
**Results:** In general, young women who tested in the lowest quintile of executive functioning reported higher levels of HIV risk behaviors and had higher HSV-2 prevalence, though associations tended to be small with wide confidence intervals. In particular, testing in the lowest quintile of Test 1 was associated with more concurrent relationships and more transactional sex [aPR (95% CI): 1.54 (1.02, 2.32) and 1.65 (1.22, 2.23), respectively]. Testing in the lowest quintile of Test 2 was associated with more reports of unprotected sex acts [aPR (95% CI): 1.35 (1.03, 1.77)].
**Conclusions:** These results demonstrate an association between low executive functioning and adolescent HIV risk. Future work should seek to better understand the relationship between cognitive functioning and adolescent HIV risk, with attention to disentangling the directionality of the relationships, and to exploring associations across different cognitive domains. If confirmed, these findings suggest that targeted interventions to increase cognitive function could provide a new tool for HIV risk reduction.

*[Figure 1. The association between testing in the bottom quintile of two executive functioning tests and four behavioral indicators of HIV risk, among 853 young women in rural South Africa]*

## TUPEC143

### TIME-VARYING BEHAVIORAL RISK FACTORS ASSOCIATED WITH HIV ACQUISITION IN MEN WHO HAVE SEX WITH MEN (MSM) AND TRANSGENDER WOMEN (TGW) IN LIMA, PERU. DATA FROM THE *¿SABES?* COHORT STUDY

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**Background:** Identification of modifiable risk factors for HIV acquisition can help guide prevention strategies that are urgently needed for MSM and TGW in Lima, Peru, among whom HIV prevalence is >20%. Using data from a cohort study of incident HIV infection, this study seeks to examine both baseline and time-varying predictors of HIV acquisition.
**Methods:** Between July 2013 and October 2015, 3,191 MSM and TGW who were unaware of their HIV status were screened for participation in a 24-month cohort study. HIV prevalence among those screened was 20.5%. HIV-uninfected volunteers (N=2,078) were tested monthly for incident HIV with point-of-care 3rd generation HIV EIA; seronegative specimens were then tested for HIV RNA (HIV incidence=8.6% per year). Monthly questionnaires measured risk behavior in the past 30 days, covering the period of HIV acquisition for incident cases. Risk factors included sexual activity, drug/alcohol use, social venue attendance (e.g. bars, saunas), and sexual encounters with a partner met at a venue. Predictors of HIV acquisition were assessed using multivariate survival analysis with time-constant and time-varying covariates.
**Results:** The strongest predictor of HIV acquisition was sexual role: receptive and versatile partners were more likely to acquire HIV compared to insertive partners (HR=2.69, p=0.001; HR=3.21, p<0.001, respectively). Commercial sex within 30 days of diagnosis was also associated with HIV acquisition (HR=1.33, p=0.065), yet sex worker status assessed at baseline was not a risk factor. Non-sex workers and those who exchanged sex for food, shelter, drugs, etc. were more likely to acquire HIV than those who self-identified as sex workers at study enrollment (HR=2.40, p=0.006; HR=1.79, p=0.107, respectively). After adjustment for drug and alcohol use, time-varying measures associated with incident HIV were sexual encounters with partners met at a venue (HR: 1.47, p< 0.001), and marijuana use before or during sex (HR=1.49; p=0.075).
**Conclusions:** Sexual encounters with partners met at social venues, a time-varying measure of risk, was strongly associated with HIV acquisition, demonstrating the need for increased HIV prevention activities at high-risk venues in Lima. Furthermore, this study indicates that analyses which incorporate time-varying exposures may more accurately identify risk factors for HIV.

## TUPEC144

### GENITAL HSV-2 SHEDDING IN PREGNANCY AND POST-DELIVERY: IMPLICATIONS FOR HIV ACQUISITION IN WOMEN AND MOTHER TO CHILD TRANSMISSION OF HIV

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**Background:** A recently published meta-analysis representing 22 803 person years, and two studies in South Africa concluded that women continue to be at risk for HIV infection in pregnancy and postdelivery and the risk of mother-to-child transmission (MTCT) was higher among pregnant women with incident infections. A recent South African HSV-2 serosurvey irevealed that more than 80% of HIV+ pregnant women in South Africa are seropositive for HSV-2. The study aims were to investigate genital HSV-2 shedding in a cohort of women during pregnancy and postpartum and identify determinants for HSV-2 shedding..
**Methods:** Between 2008-2010 antenatal attendees who participated in a behavioural study, were tested for HIV and other STIs (*N. gonorrhoeae*, *C. trachomatis* and *T. vaginalis*) at the first antenatal visit and 14 weeks postpartum. Investigations included collection of a vulvo-vaginal specimen (swab). Crude extracts of DNA remaining after PCR testing for *N. gonorrhoeae, C. trachomatis* and *T. vaginalis* were stored at -70 degrees celcius. These DNA extracts were recently tested for HSV1/2 DNA using the Light Cycler HSV1/2 Detection Kit Light Mix Kit Roche Diagnostics , USA .
**Results:** The HIV seroprevalence in this cohort of pregnant women was 36.6% and 342 HIV- women were retested for HIV prior to or post delivery. There were 5 incident cases of HIV over a cumulative period of 157.37 years. HIV incidence in pregnancy being 3.18/100wy (95% CI 1.03-7.41).
Genital HSV-2 shedding was prevalent in 51/615 women in pregnancy (8.29%; 95%CI 6.29-10.83) and 15/511 women postpartum (2.94%; 95%CI 1.71-4.91). HIV+

women were 2.3 times more likely to test positive for HSV-2 shedding than HIV- women (11.56% vs 6.25% in pregnancy and 3.95%vs1.51% postpartum, p=0.022). Age, gravidity, socio-economic status, or any of the other sexually transmitted diseases were not associated with genital HSV-2 shedding. Only one of the 5 (20%) incident cases of HIV was positive for genital HSV-2 shedding postpartum..
**Conclusions:** We confirm a strong association between HIV and HSV-2 in pregnant women. A larger study is needed to determine if HSV-2 shedding increases the risk for MTCT in HIV+ pregnant women and risk of HIV acquisition in HIV- pregnant and postpartum women.

## RISK FACTORS FOR INFECTIVITY, PROGRESSION AND TRANSMISSION OF HIV

## TUPEC145

### PREDICTORS OF PROGRESSION FROM HIV-INFECTION TO AIDS AND AIDS-RELATED MORTALITY: A 11-YEAR PROSPECTIVE COHORT STUDY IN TIANJIN, CHINA

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**Background:** The objective of this study was to identify specific factors associated with progression of acquired immunodeficiency syndrome (AIDS) and mortality in patients with human immunodeficiency virus (HIV)/AIDS. This prospective cohort study study was conducted in Tianjin, China from from January 2004 to December 2014.
**Methods:** Disease progression data from the diagnosis of HIV infection or acquiring immunodeficiency syndrome (AIDS) were collected from the national surveillance system databases and the national treatment database in Tianjin, China. Kaplan-Meier method, and Cox proportional hazards model were applied to identify the related factors of progression to AIDS or death following HIV diagnosis.
**Results:** We enrolled 3177 HIV-infected individuals or AIDS patients in Tianjin Centers for Disease Control and Prevention. The outcomes of interest were the estimation of time:
(1) from HIV diagnosis to AIDS progression and
(2) from AIDS to AIDS-related death.
The 1st-year, 5th-year, and 9th-year probability for disease progression from HIV diagnosis to AIDS was 6.9%, 8.9% and 2.4%, and that for AIDS-related death was 13.9%, 10.4%, and 5.0%, respectively. Multivariate Cox regression analysis indicated that AIDS progression was significantly associated with age (*P* = 0.013), HARRT or not (*P* = 0.000), and baseline CD4 count (*P* = 0.000). HIV-infectors aged between 31-50 years old were more likely to progress to AIDS and a low CD4 count was correlated with an increased risk progression to AIDS. Furthermore, the AIDS-related mortality was significantly associated with age (*P* = 0.000), transmission category (*P* = 0.007), HARRT or not (*P* = 0.000), and baseline CD4 count (*P* = 0.000). The transmission of HC (HR, 1.854 (95%CI: 1.296, 2.626)) and blood (HR, 2.610 (95%CI: 1.127, 6.045)) were predictors of higher mortality of AIDS-related death.
**Conclusions:** The results of this study indicated that progression to AIDS and AIDS-related death is affected by several modifiable and non-modifiable predictors. Initiation of HAART with higher CD4+ T-cell count may reduce rate of AIDS progression. Based on our results, we conclude that efficient strategies for HIV screening, as well as early diagnosis and treatment are necessary to reduce the progression of HIV to AIDS.

## TUPEC146

### GEOGRAPHIC HIV EPIDEMIC MAPPING: A STRATEGY FOR IDENTIFYING POPULATIONS AT HIGH-RISK OF HIV INFECTION IN ZIMBABWE

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**Background:** Zimbabwe is one of the countries in sub-Saharan Africa most affected by HIV, with a prevalence rate of 15.2% according to ZDHS (2011). Geographical structure of the epidemic is influenced by some driving factors and it has implications on the susceptibility of infection amongst some populations. PSI Zimbabwe embraced the universal 90-90-90 concept and it endeavours to reduce HIV transmission by targeting populations with high positivity in Zimbabwe. PSI Zimbabwe employs targeted mechanism during outreach HIV Testing Services (HTS) to increase chances of reaching HIV positive clients.
This study was aimed at identifying geographic clusters of HIV based on positivity threshold of 10% countrywide.
**Methods:** Routine data from the outreach HTS programme administered by PSI Zimbabwe's New Start Centre network and collected between October and December 2015 was used for this analysis. A database with a total of 68,577 clients was used for this study. Geographic coordinates for places were outreach activities took place were used for analysis. Sixty-five (65) districts where the outreach HIV testing and counselling services were provided were considered as the geographic epidemic clusters for the analysis, by classifying them according to HIV positivity based on the 10% threshold.
**Results:** The average HIV positivity was 9.1% nationally. Fifteen out of 65 (23%) districts were identified as having areas with HIV positivity equal or greater than 10%. Thirty three percent of clients were first time testers. Four districts (6%) had areas with HIV positivity greater 15%. Results suggest geographic variation in the transmission of HIV in Zimbabwe.
**Conclusions:** This study provides evidence of HIV geographic clustering. The findings identify priority geographic areas for HIV programming and support the need for targeted interventions amongst populations at high risk in order to achieve the desired 90-90-90 targets by 2020.

## EPIDEMIOLOGY OF HIV IN THE GENERAL POPULATION

## TUPEC147

### ASSOCIATION OF HIV AND OPPORTUNISTIC INFECTIONS WITH INCIDENT STROKE: A NATIONWIDE POPULATION-BASED COHORT STUDY

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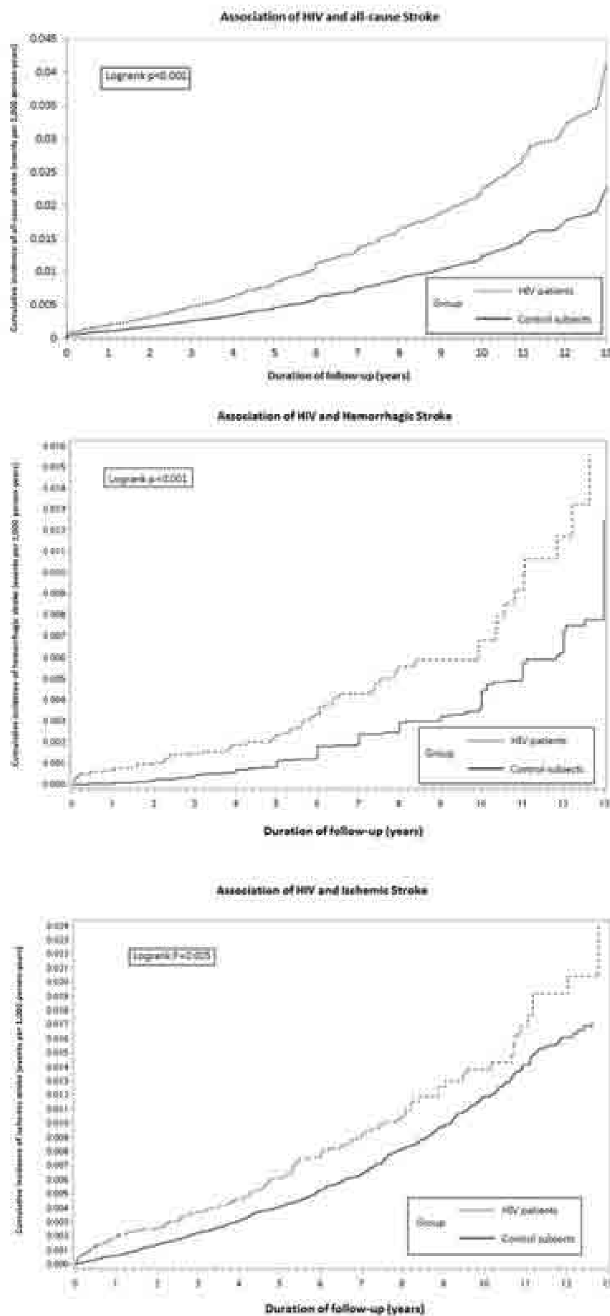
**Background:** HIV virion may cause endothelial dysfunction and atherosclerosis. Also, a series of case reports showed that opportunistic infections (OIs) [e.g., cryptococcal meningitis, cytomegalovirus, or *Candida albicans* infection] in HIV patients may lead to stroke development. However, few longitudinal studies have examined the association of HIV and OIs with subsequent development of stroke. This nationwide cohort study aimed to evaluate the association of HIV and OIs with incident stroke.
**Methods:** From Jan. 1, 2000, we identified 21,375 adult HIV patients (ICD-9-CM code 042-044, 7958, or V08) from the Taiwan National Health Insurance Research Database. 85,500 controls without HIV infection, matched for age and sex, was selected for comparison. All patients were followed until a diagnosis of stroke, death, or December 31, 2012. The outcome new stroke was defined as ICD-9-CM codes 430-437. The time-dependent analysis was used to determine the association of HIV and OIs with incident stroke.
**Results:** Of the 106,875 patients, stroke occurred in 927 patients (0.87%) during the 581,580 person-years of follow-up. After adjusting for age, sex, and comorbidities, HIV infection was an independent risk factor for incident all-cause stroke [ad-

justed hazard ratio (AHR) 1.83; 95% confidence interval (CI) 1.58-2.13]. When type of stroke was considered, HIV infection increased the risks of ischemic (AHR 1.33; 95% CI 1.09-1.63) and hemorrhagic stroke (AHR 2.01; 95% CI 1.51-2.69). The risk of incident stroke was significantly higher in HIV patients with cryptococcal meningitis (AHR 4.40; 95% CI 1.38-14.02), cytomegalovirus disease (AHR 2.79; 95% CI 1.37-5.67), and Penicillium marneffei infection (AHR 2.90; 95% CI 1.16-7.28).




*[Kaplan-Meier Curves for Time to Diagnosis of Incident Stroke in Patients with and without HIV Infection]*

**Conclusions:** This suggested that HIV infection was an independent predictor of ischemic and hemorrhagic stroke. To reduce the risk of stroke, comprehensive care should be provided to HIV patients, particularly those with cryptococcal meningitis, cytomegalovirus, or *P. marneffei* infection.

## TUPEC148

### META-ANALYSIS SHOWS BIASED ESTIMATES OF DEATH IN HIV-POSITIVE ADULTS ON ART IN LMIC

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**Background:** Loss to follow-up is a common problem in epidemiological studies. HIV-positive patients in low-to-middle income countries (LMICs) are at highest risk of poor retention in care, death and loss, in the first 3-months on antiretroviral therapy(ART).
We systematically reviewed studies of mortality in the first 3-months post-ART initiation in LMIC and classified studies based on the potential for bias.
**Methods:** Studies of mortality within 3-months post-ART initiation from January 2003-October 2014 in PubMed, Web of Science, EMBASE and IAS and AIDS abstracts were searched. Articles were included if they were conducted in a LMIC; a non-trial setting; participants were ≥15 and reported 3-month mortality. Using random effects models we assessed 3-month mortality overall and stratified by study bias. Low bias was assigned if a study specified active and passive tracing of patients lost, moderate bias if specified passive tracing and high bias if no mention of either.
**Results:** 54 studies were included; 43 (78%) from SSA, 10 (19%) from Asia, 1 (2%) from the Americas. Overall 3-month mortality was 5.9% (95% CI: 5.1-6.8%). When stratified by level of study bias, mortality estimates were higher for studies reporting active and passive tracing (low bias:7.4%; 95%CI: 6.1-8.8%) vs. those only mentioning passive tracing (moderate bias:5.4%; 95%CI: 3.9-7.2%) or those mentioning neither active or passive tracing (high bias:3.7%; 95%CI: 3.5-4.0%)
**Conclusions:** Our results show that estimates of early mortality in LMIC countries are underestimated by 30-50% due to potentially undercounting deaths and loss to follow-up bias, supporting previous studies.
Linking to vital registration systems, whenever possible, and active tracing of patients lost could result in more valid estimates of early mortality and help those loss return to care and decrease their risk of death. As smaller decentralized ART facilities increase in number, rates of retention in the early stages of HIV care and treatment should improve.

## TUPEC149

### COMBINED ANTIRETROVIRAL THERAPY AND ARTERIAL STIFFNESS IN HIV-INFECTED PATIENTS FROM A BRAZILIAN COHORT

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**Background:** Evidence suggests that combined antiretroviral therapy (cART) is associated with increased arterial stiffness measured by carotid-femoral pulse wave velocity (cf-PWV) in HIV-infected population. We aimed to assess if cART use and specific regimens are associated with arterial stiffness compared to cART-naive patients.
**Methods:** Cf-PWV was determined in 536 HIV infected patients followed in the Instituto de Pesquisa Clínica Evandro Chagas (IPEC) using a validated automated device (Complior SR, France). Arterial stiffness (AS) was considered when the cf-PWV was greater than 75th percentile. Linear regression analyses with logarithmic transformation of cf-PWV were performed to adjust differences between cART use, including specific regimens and factors associated to arterial stiffness.
**Results:** Overall, 58.46% of participants were male, median age was 43.58 (interquartile range (IQR) 36.57-50.18 years). AS was present in 33.3% of participants, 89.16% of them using cART for a median of 4.15 (IQR: 0.7-10.17) years and 71% with undetectable viral load. Patients with AS were older and more likely to have traditional cardiovascular risk factors, lipid profile and time on cART when compared to those without AS.

| Arterial Stiffness | Yes | No | Total | p-value |
|---|---|---|---|---|
| Total | 402 | 134 | 536 | |
| Male | 235 (58.46) | 70 (52.24) | 305 (56.9) | 0.24 |
| Age Median (IQR) | 41.46 (35.06-46.83) | 50.85 (45.76-57.45) | 43.58 (36.57-50.18) | <0.001 |
| Smoking 10+ packs-year | 98 (24.44) | 47 (35.07) | 145 (27.1) | 0.02 |
| Hypertension | 89 (22.14) | 74 (55.22) | 163 (30.41) | <0.001 |
| Diabetes | 78 (19.4) | 48 (35.82) | 126 (23.51) | <0.001 |
| Dyslipidemia | 137 (34.77) | 66 (49.25) | 203 (38.45) | 0.004 |
| Baseline CD4 counts (cells/mL) | 531 (337.5,709.5) | 593.5 (413.25,813.75) | 540 (362.5,738.5) | 0.004 |
| cART use | 352 (87.56) | 125 (93.98) | 477 (89.16) | 0.05 |

*[Descriptive statistics and comparisons between HIV-infected patients according to arterial stiffness]*

After adjusting for age, DBP, BMI, hypertension, medication for hypertension and smoking, cART was not associated with AS compared to cART-naive participants but there was a significant difference in AS among patients after 12 and 15 years of cART and Protease Inhibitor (PI) use respectively (p< 0.05).

| Time on cART (years) | Crude log10 β (SE) | Adjusted log10 β (SE) | p-value |
|---|---|---|---|
| (3,6] | 0.030(0.007) | 0.012(0.0060) | 0.03 |
| (6,9] | 0.041(0.010) | 0.011(0.0086) | 0.18 |
| (9,12] | 0.030(0.008) | -0.0009 (0.007) | 0.88 |
| (12-15] | 0.051(0.008) | 0.0163 (0.007) | 0.02 |
| (15-18] | 0.11(0.027) | 0.063 (0.021) | 0.002 |

*[Crude and adjusted coefficients in the final linear model for the association between Arterial Stiffness and duration of cART]*

**Conclusions:** In HIV-infected participants cART did not increase AS when compared to those who were cART-naive, however long-term cART was independently associated with an increase in AS, particularly regimens containing PI.

## TUPEC150

### MARRIAGE OFFERS GREATER PROTECTION FROM HIV FOR MEN THEN IT DOES FOR WOMEN IN RURAL KWAZULU-NATAL

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**Background:** Marriage may be protective against HIV acquisition, yet marriage in rural KwaZulu-Natal is often delayed due to the need to save for *lobola* (traditional bride price). A critical question is whether other long-term (often pre-marital) relationships may be equally protective. We assessed the association between marital status and HIV acquisition for men and women in an area of KwaZulu-Natal, South Africa, where non-marital long-term relationships are prevalent.
**Methods:** Using longitudinal data from the Africa Centre for Population Health (2001-2013) collected via demographic surveillance and repeat HIV biomarker collection, we assessed the relationship between relationship form (marital relationship and non-marital conjugal relationship) and HIV incidence, measured as a change in HIV serostatus across survey rounds. We assessed this association in interval censored Weibull proportional hazards models, controlling for age, education, having children, and having migrated.
**Results:** Men and women who were married had lower HIV incidence compared to those in unmarried conjugal relationships, controlling for other factors: adjusted hazard ratios were 0.536 (0.366-0.784) for men and 0.844 (0.738-0.964) for women. The protective association between marriage and HIV risk was significantly stronger for men than for women (p = 0.02). HIV risk was also positively associated with previously established predictors of HIV risk: migration, and additional concurrent conjugal relationships.
**Conclusions:** Marriage was associated with lower incidence of HIV acquisition in persons in long-term conjugal relationships. This association was significantly stronger for men as compared to women.

## TUPEC151

### NEED FOR ADEQUATE INVESTMENT AND REDESIGNING OF STRATEGIES FOR EFFECTIVE PREVENTION, TREATMENT, CARE AND SUPPORT SERVICES FOR HIV AND AIDS INTERVENTIONS IN A "MIXED" HIV EPIDEMIC NATION

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**Background:** Nigeria with population of 170 million has a generalized epidemic and HIV prevalence of 3.0%. Over 3.4 million persons are estimated to be living with HIV virus. Since 2001, the Prevalence has continued to decline from 5.8% in (2001), 4.6% (2008) to 3.0% in 2014. One major challenge that threatens to reverse the current achievement is the increasing prevalence of the key populations (KP) :- MSM, FSW and PWID etc, far above the national prevalence.
**Methods:** A meta-analysis of the results of the 2014 ANC and Syphilis sentinel survey conducted among 36,431 pregnant women aged 15 - 49 attending ANC for booking of index pregnancy in the 160 sentinel sites and the result of the 2014 Integrated Behavioural and Biological Surveillance Survey conducted among 22,841 High risk groups (MSM, Brothel Based Female Who Sell Sex (BBFWSS), Non Hotel Based Female Who Sell Sex (NBBFWSS), People who inject drugs (PWID), Transport workers, Police and the military). Respondent Driven Sampling was used for MSM & PWID while Time Location Sampling was used for the FWSS.
**Results:** The result showed that MSM had the highest prevalence of 22.9% (95% CI: 21.4-24.4) followed by BBFWSS 19.4% (95% CI: 18.1 - 20.6). The prevalence among the NBBFWSS is 8.6% (95% CI: 7.7 - 9.6) while the PWID is 3.4%.
The prevalence values among the KPs were higher compared with the results of the 2014 ANC sentinel survey and the 2012 population based survey which are 3.0% and 3.4% respectively.
While the BBFWSS, NBBFWSS and IDU has maintained a steady decline in prevalence as shown in the figure I, the MSM has consistently increased from 13.5% in 2007, 17.2% in 2010 to 22.9% in 2014.
**Conclusions:** Though, prevalence is declining, but with the current prevalence among the KP especially MSM, which is over 7 times higher than the general population prevalence, there is an urgent need for reprogramming and strengthening the current interventions in Nigeria. It is also important to factor the key populations in estimation and modeling. This is to ensure that the gains and successes so far in HIV control and prevention is not reversed.

## TUPEC152

### TARGETED AND EVIDENCE-BASED PRIORITIZATION IS NEEDED FOR CONTINUED HIV EFFORTS IN INDIA: HIV SENTINEL SURVEILLANCE (HSS) AMONG ANTENATAL CLINIC (ANC) ATTENDEES

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**Background:** Surveillance is a vital component of any disease control program and has been implemented in India for HIV since 1985 and expanded in 2003 to include pregnant women attending ANC clinics throughout the country. This is a major undertaking in a country the size of India and information gained is necessary for strategic and evidence-based management of the National AIDS Control Programme.
**Methods:** Over a three month period, 294,732 pregnant women aged 15-49 attending ANC clinics - a proxy for the general population - during the current round of surveillance were consecutively sampled from 741 sentinel surveillance sites for the 2012-13 round of the HSS. Serum was collected anonymously through venous blood specimen and tested twice if the first test was HIV positive. Additionally, information on age, education, occupation, spouse's occupation, residence, and spouse's migration status was collected, and trends over time were analyzed using three-year moving averages.
**Results:** HIV prevalence among the ANC attendees of India was 0.35%. However, the spread of HIV in India is heterogeneous, with prevalence ranging from 0.00% in the states of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, and Puducherry, to 0.88% in Nagaland, and even greater variation at district level, with 37 districts over 1.00%, and 12 sites as high as 2.00-3.00%. Across India, HIV prevalence was highest among women who were 15-24 years old, illiterate, rural residents, worked as hotel staff, and had spouses that were truckers or migrants. General

population HIV prevalence decreased overall in India from 2003-2013. However, in some regions, HIV prevalence remains high or is increasing.
**Conclusions:** India has made progress toward reducing HIV prevalence in formerly high prevalence states. Efforts and resources need to continue and intensify in emerging pockets of HIV and where HIV has consistently been high over the years. Targeted interventions should be focused on key affected sub-groups, such as young women, illiterate groups, hotel workers, truck drivers, and migrant workers. HIV testing and treatment needs to continue to expand to reach all people living with HIV.

## EPIDEMIOLOGY OF HIV IN CHILDREN

### TUPEC153

#### MORTALITY IN HIV-EXPOSED UNINFECTED AND UNEXPOSED UNINFECTED INFANTS: A META-ANALYSIS

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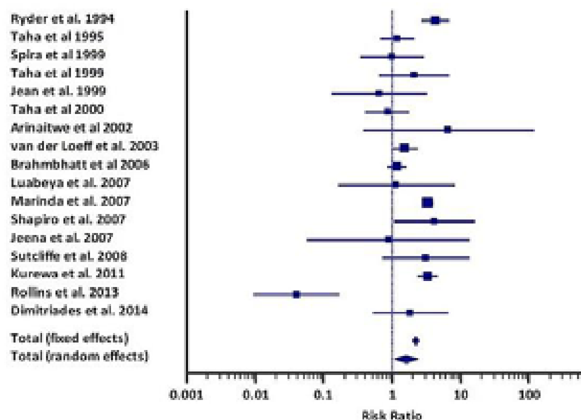
**Background:** Successful implementation of programs to prevent mother-to-child-transmission of HIV (PMTCT) via maternal antiretroviral (ARV) provision has reduced the risk of perinatal transmission of HIV. Prior studies have demonstrated that HIV-exposed but uninfected (HEU) children experience infection and death at rates exceeding that for their HIV-unexposed and uninfected (HUU) counterparts. We conducted a meta-analysis to summarize the difference in mortality comparing HEU to HUU.
**Methods:** We searched studies published in English in PubMed, Web of Science, EMBASE, ProQuest and IAS and AIDS conference abstracts. Studies were included if they compared HEU to HUU infants and children and mortality, in any time period and in any setting. Due to heterogeneity between studies we used random effects models to calculate pooled risk ratios overall and then stratified by follow-up time (< 6 and ≥6 months) and year in relation to implementation of PMTCT in public sector (< 2002 vs. ≥2002). We also displayed results in a survival curve over 60 months of follow-up. For survival curves we interpolated mortality estimates for studies that had missing estimates at certain time periods.
**Results:** Of 199 studies receiving full text review,16 from sub-Saharan Africa and 1 from Haiti were included. HEU children had over a 60% increase in mortality compared to their HUU counterparts (RR:1.61; 95%CI: 1.08-2.39)(Figure).



*[Figure. Forest plot of risk ratios for morality comparing HIV exposed uninfected children to HIV unexposed uninfected children for all 17 studies]*

HEU vs. HUU children may be at greater risk of death in the first 6 months of life (RR:2.57; 95%CI: 0.69-9.62) than ≥6 months (RR:1.61; 95%CI: 1.06-2.44). Also, risk of mortality was also higher amongst HEU vs. HUU prior to the implementation of PMTCT (RR(<2002):1.78;95%CI: 1.20-2.64) compared to after (RR(≥2002):1.31;95%CI: 0.24-7.04).
**Conclusions:** For the first time, using meta-analytic techniques, we show an increased risk of mortality for HEU compared to HUU children. Further longitudinal research is needed with established cohorts to help elucidate underlying mechanisms for this difference in mortality between groups.

### TUPEC154

#### THE IMPACT OF HIV/AIDS ON THE CHILDREN'S RIGHT TO EDUCATION IN MYANMAR

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**Background:** National data on situation of children from HIV affected families is needed for better planning of mitigation program for these affected children. Therefore, a nationwide survey was conducted in 30 townships from 13 States/Regions of Myanmar in 2013-2014.
**Methods:** It was a cross-sectional comparative study which aimed to identify and compare the education and basic material need conditions of children affected by HIV and AIDS (CABA) with children from neighborhood. CABA were children under 18 years whose parent(s) are living with HIV or lost one/both parents due to AIDS regardless of child's HIV status.
Age group matched children were recruited from neighborhood. Parents/guardians of 1,511 CABA and 1,511 controls were interviewed by using a pre-tested, structured questionnaire. In-depth interviews were conducted with providers and parents/guardians.
**Results:** Mean age of the children was 8.7±4.1 years and 46.8% of CABA were orphans. Over 24% of CABA were HIV infective and 75% have initiated ART. Among 5 to 17 years old children, 16.3% of CABA are not currently attending school which is significantly higher than their counterparts (9.1%) (P=0.001). Similarly, amongst 10 to 14 years old children, 14.7% of CABA compared to 5.7% of controls were out of school (P=0.001). School performance of 12.1% of CABA and 5.7% of controls were indicated by the guardians as below average (P=0.001). Considerably higher proportions of guardians of CABA expressed that they were unable to cover costs of school stationery (46.8% vs. 23.6%), school uniforms (42.1% vs. 18.5%), and other school expenses (43% vs. 22.3%) (P=0.0001). CABA school attendance ratio was 0.9 which shows relative disadvantage in school attendance between CABA and control children. During discussions, family economy, health condition of HIV infected children, stigma and discrimination at school were indicated as the reasons for discontinuing school.
**Conclusions:** The needs of out of school and HIV positive adolescents should be partially addressed through livelihood development initiatives and job placement. Stigma and discrimination at school environment and communities also need to be addressed. In conclusion, long term strategic plans should be drawn up for addressing the overall development of CABA especially focusing on their rights to education.

### TUPEC155

#### IMPACT OF HIV INFECTION AND ANTIRETROVIRAL THERAPY (ART) DURATION ON NEURODEVELOPMENT OUTCOMES AMONG CHILDREN AGED 7 TO 14 YEARS, IN RAKAI, UGANDA

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**Background:** Despite the fact that over 90% of the over 3 million children estimated to be living with HIV/AIDS were in sub-Saharan Africa by the end of 2015, there is a paucity of data on the impact of HIV/AIDS on the neurodevelopment of children in resource-poor settings. The objective was to assess the impact of HIV infection and long term-ART on neurodevelopment outcomes among children aged 7 to 14 years. Our hypothesis was that long-term ART use would ameliorate neurodevelopmental sequelae of HIV infection.
**Methods:** HIV positive and negative mother-child pairs were recruited from the Rakai Community Cohort Study (RCCS) and ART clinics in Rakai and followed prospectively for over 4 years. The Kaufman Assessment Battery for Children (KABC II) was used to assess sequential and simultaneous processing, learning, planning, knowledge, and Fluid Crystalized Index (FCI) for overall functioning. Multivariable generalized linear models were used to estimate adjusted Prevalence Rate Ratios (adjPRR).
**Results:** Of the 370 mother-child pairs, 55% were HIV negative controls (MHIV-/CHIV-), 7% were HIV exposed but uninfected (MHIV+/CHIV-) and 37.9% were HIV positive mothers and children (MHIV+/CHIV+). Longer duration of ART (Table 1) was associated with a significant improvement of sequential processing skills, and each additional year of schooling was associated with a significant 30-40% decrease in

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impairment for all neurodevelopment measures assessed. Healthier children (higher age standardized height and weight), had improved sequential and simultaneous processing and overall FCI.

| | Sequential adjPRR* (95%CI) | Simultaneous adjPRR* (95%CI) | Learning adjPRR* (95%CI) | Planning adjPRR* (95%CI) | Knowledge adjPRR* (95%CI) | FCI adjPRR* (95%CI) |
|---|---|---|---|---|---|---|
| Duration of ART | | | | | | |
| 0-24 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 35-36 | 0.55 [0.34-0.9] | 1.01 [0.6-1.6] | 1.08 [0.7-1.76] | 0.86 [0.5-1.53] | 0.7 [0.44-1.11] | 0.92 [0.5-1.56] |
| 37-48 | 0.39 [0.2-0.76] | 0.65 [0.3-1.41] | 0.84 [0.4-1.73] | 0.59 [0.2-1.54] | 0.68 [0.35-1.3] | 0.57 [0.2-1.44] |
| 49+ | 0.23 [0.1-0.54] | 0.37 [0.1-1.4] | 0.62 [0.2-1.72] | 0.29 [0.06-1.4 | 0.63 [0.2-1.76] | 0.3 [0.08-1.1] |
| Male (ref female) | 0.83 [0.5-1.47] | 0.61 [0.4-1.01] | 1.12 [0.8-1.67] | 1.06 [0.5-2.07] | 0.55 [0.3-0.95] | 0.87 [0.5-1.43] |
| Years of Schooling | 0.69 [0.6-0.82] | 0.65 [0.5-0.78] | 0.65 [0.6-0.74] | 0.78 [0.7-0.94] | 0.65 [0.5-0.77] | 0.62 [0.5-0.75] |
| Age standardized height | 1.15 [0.96-1.4] | 0.78 [0.6-0.94] | 0.96 [0.7-1.39] | 0.72 [0.5-1.09] | 0.94 [0.8-1.1] | 0.64 [0.5-0.89] |
| Age standardized weight | 0.71 [0.5-0.94] | 1.23 [0.93-1.6] | 1.08 [0.7-1.71] | 1.16 [0.6-2.16] | 0.89 [0.7-1.1] | 1.45 [0.9-2.26] |

*[Table 1: Impact of ART treatment Duration on Neurocognitive Impairment among HIV Positive Children]*

**Conclusions:** Sequential processing skills pertaining to working memory were improved with prolonged ART duration and increased duration of schooling was associated with a reduction of neurodevelopment impairment. Early initiation and sustained use of ARTs as well as longer schooling are needed to reduce neurocognitive impairment among HIV infected school aged children.

## TUPEC156

### VIROLOGICAL RESPONSE TO FIRST-LINE ART IN CHILDREN IN THE EUROPEAN PREGNANCY AND PAEDIATRIC HIV COHORT COLLABORATION (EPPICC)

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**Background:** Studies comparing efficacy of PI- and NNRTI-based initial ART regimens in children have shown inconsistent results. We investigated virological response in children from 18 cohorts across 16 European countries and Thailand.
**Methods:** Time of virological suppression ('response') was estimated as the mid-point between the first VL<400c/mL and previous VL≥400c/mL. Multivariable stepwise logistic regression models (backwards elimination, exit probability p=0.05) were used to identify factors associated with virological suppression by 12 months from ART initiation (baseline).
**Results:** 2202 children initiating ART < 18 years with a boosted PI or NNRTI plus >2 NRTI had baseline VL and ≥1 VL measurement available within the first 15 months of ART. 91% were perinatally infected with median[IQR] age 3.8[0.8,8.5] years at HIV diagnosis and 6.4[1.6,10.7] years at ART initiation. Median[IQR] baseline CD4% was 16[8,24]. 91% achieved virological response by 12 months. In multivariable analysis, the effect of ART regimen on virological response varied by age at ART initiation (Table): in children <3 years, compared to a PI-based regimen, odds of response were significantly reduced for those starting a NVP+2NRTI regimen, but not significantly different for those initiating on NVP+3NRTI; conversely, children ≥3 years had higher odds of virological response compared to those <3 years, with no significant differences between regimens. Additionally, across all ages, starting an abacavir-containing regimen, VL <100,000 copies/mL, and more recent calendar year at ART initiation were associated with increased odds of virological response. Children in Russia/Ukraine had reduced odds of response. There was no significant effect of gender, being born abroad, baseline CDC clinical stage, CD4%, HCV/HBV-status or mode of infection.

| | | N (%) | aOR (95% CI) | p |
|---|---|---|---|---|
| Regimen/age interaction: | | | | |
| | bPI+NRTI, <3yrs | 345 (16) | 1.0 | 0.003 |
| | NVP+2NRTI, <3yrs | 263 (12) | 0.42 (0.26, 067) | |
| | NNRTI+3NRTI, <3yrs | 98 (4) | 0.62 (0.28, 1.39) | |
| | bPI+NRTI, ≥3yrs | 417 (19) | 1.71 (1.01, 2.91) | |
| | NVP+2NRTI, ≥3yrs | 337 (15) | 2.35 (1.24, 4.44) | |
| | FFV+2NRTI, >3yrs | 742 (34) | 1.82 (1.11, 2.97) | |
| Abacavir use: | No | 1379 (63) | 1.0 | 0.03 |
| | Yes | 823 (37) | 1.58 (1.05, 2.39) | |
| VL: | <100,000 c/mL | 979 (44) | 1.00 | 0.03 |
| | ≥100,000 c/mL | 1223 (56) | 0.70 (0.50, 0.97) | |
| Calendar year: | 1997-2003 | 610 (28) | 0.82 (0.57, 1.18) | 0.005 |
| | 2004-2007 | 808 (37) | 1.0 | |
| | 2008-2013 | 784 (36) | 1.71 (1.11, 2.62) | |
| Region: | UK/Ireland | 811 (37) | 1.33 (0.88, 2.01) | <0.001 |
| | Rest of Europe | 792 (36) | 1.0 | |
| | Thailand | 378 (36) | 0.82 (0.52, 1.29) | |
| | Russia/Ukraine | 221 (10) | 0.35 (0.21, 0.59) | |

*[Table: Factors at ART initiation associated with virological response by 12 months]*

**Conclusions:** Most children achieve virological suppression by 12 months. Response was more likely in recent years and less likely in children starting NVP+2NRTI <3 years, possibly due to under-dosing. Further work will explore predictors of virological failure.

## TUPEC157

### SPATIAL CONFOUNDING ADJUSTMENT OF CHILDHOOD MALNUTRITION IN RURAL NORTH-EAST SOUTH AFRICAN HOUSEHOLDS: A BAYESIAN MULTIVARIATE AND STRUCTURAL EQUATION MODELLING APPROACH

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**Background:** The extent of geographical-social disparities on childhood malnutrition associated with HIV, has hardly been explored yet it is a reservoir of information for effective public health interventions. Our primary aim was to determine factors associated with two malnutrition indicators (weight-for-age and height-for-age) adjusting for their multivariate spatial random effects. Secondarily, pathways linking independent factors, HIV and malnutrition indicators, were examined. We tested the hypothesis: "HIV retards child growth controlling for other factors and household spatial random effects".
**Methods:** We analyzed data from a cross-sectional anthropometric survey of 648 children aged 1 - 5 years collected in 2007. We employed a Bayesian multivariate spatial model to simultaneously analyze the two indicators of child malnutrition. To assess the mediator impact of HIV on correlated malnutrition indicators and other explanatory variables we used structural equation models adopting a systems thinking approach from spatially adjusted posterior estimates.
**Results:** Spatial multivariate adjusted analyses revealed a negative effect due to HIV and protective effects with older aged children and mothers, and maternal education. Pathway analyses of these factors showed that HIV had a significant mediator effect and the greatest worsening effect of -0.55 (95% CI: -1.09,-0.02) and -0.61(95% CI: -0.98,-0.24) for weight-for-age and height-for-age z-scores respectively.
**Conclusions:** Interventions directly or indirectly targeted at the mother are key in controlling malnutrition. Child malnutrition interventions can be more effective if there is a dual focus on those HIV infected and the geographical areas of greatest risk, which can be modeled as a system to guide policy makers more objectively. Public health population level interventions aimed at reducing malnutrition are pivotal in lowering morbidity and mortality in rural African areas.

## EPIDEMIOLOGY OF HIV IN YOUTH AND ADOLESCENTS

### TUPEC158

#### A CROSS-SECTIONAL STUDY OF HIV-RELATED KNOWLEDGE AND ATTITUDES AMONG MEDICAL AND PARAMEDICAL STUDENTS IN A UNIVERSITY, NEW DELHI, INDIA

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**Background:** The HIV/AIDS pandemic is in its fourth decade. However, stigma and discrimination at health care setting, work places and at educational institutions are still presents as challenges and concern. Hence, this study was conducted with an objective to determine the knowledge and attitude about HIV/AIDS and towards people living with HIV, among the first year medical and paramedical students.
**Methods:** This cross-sectional study was carried out at Jamia Hamdard University in October 2014. All the 100 medical and 100 paramedical students were considered for the study (absentees excluded). Hence a total of 179 students were interviewed. The data were collected using a pre-designed, pre-tested, alpha numeric coded, self-administered, structured questionnaire and further analysis was done using MS excel and other relevant statistical tests.
**Results:** Out of 200 students, 179 were present on the day of data collection. This study revealed that television (89.39%), the internet (87.15%), teachers (89.39%), newspapers (83.80%) and books (93.30%) were the students' major source of information on HIV/AIDS. Students (171) are more comfortable discussing HIV/AIDS with the friends of the same sex (95.5%). Regarding disease transmission, the majority of students (174) were aware of the major routes of transmission; however; 56 (31.2%) students believed that HIV can be transmitted through a mosquito bite. The study also revealed that 168 nos. of the students (93.8%) know that HIV is a preventable disease, and that condoms play an important role in prevention. Out of 179, only 89 nos. (49.7%) of students ever heard of anti-retroviral therapy. 167 (93.2%) students have respect towards people with HIV/AIDS, yet almost half of the students think that HIV+ couples should not have children.
**Conclusions:** This study indicates that students have a wide variety of sources to obtain information on HIV/AIDS. While students understand the major routes of transmissions, misconceptions persist. Further action is required to improve HIV--related knowledge and attitudes in this university setting.

### TUPEC159

#### COMMUNITY-BASED ADOLESCENT AND YOUTH HIV TESTING AND ENROLLMENT IN HIV CARE IN HAITI

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**Background:** Adolescents account for 40% of new HIV infections in Haiti, yet only 20% of adolescents know their HIV status. Community-based testing strategies may increase HIV testing among high-risk adolescents and youth.
**Methods:** A community-based adolescent and youth HIV testing and counseling (HCT) campaign was conducted in 7 slum areas of Port-au-Prince, Haiti from December 2014 to September 2015. Community health workers (CHW) provided community sensitization and recruited adolescents and youth ages 10-24 to test for HIV, Syphilis, Gonorrhea, Chlamydia, and pregnancy and screen for Tuberculosis (TB). Guardian consent was required for adolescents $\leq$16 years, per national guidelines. HIV-infected individuals were escorted to the GHESKIO HIV clinic for same-day enrollment in HIV care, which included confirmatory testing and point-of-care CD4 testing.
**Results:** Among 3,348 individuals tested, HIV prevalence was 2.65% (n=89), of whom 73% were female with median age of 19 years (IQR 17-20). HIV prevalence varied from 0.6% to 7.4% within slum areas (defined by participant address), and was 7.9% (14/177) among 10-15 year-olds compared to 2.4% (75/3,082) among 16-24 year-olds. 100% of HIV-infected individuals enrolled in care the same day as testing, with median CD4 529 cells/uL (IQR 363-761). Among all participants, 2.6% had syphilis infection and 9.3% had Gonorrhea or Chlamydia. 168 participants reported TB symptoms, and among those with symptoms, 13 (7%) had microbiologically-confirmed disease. Over 80% of 16-24 year-olds were sexually active, yet only 1% reported using modern family planning and 17% reported regular condom use. Challenges included the need for guardian consent for adolescents $\leq$16 years and violence in the slums which resulted in cancelled testing. There were no reported adverse events of social harms or loss of confidentiality.
**Conclusions:** This community-based HIV testing campaign identified an adolescent and youth population with an HIV prevalence three times higher than the estimated national adolescent HIV prevalence in Haiti (0.8%), including a subpopulation who likely acquired HIV perinatally. The campaign identified clustering of HIV across slum communities which may inform targeting of follow-up campaigns. Active recruitment of adolescents and youth for HIV testing is an approach which could control the HIV epidemic in Haiti.

### TUPEC160

#### CHANGING SOCIAL NETWORKS AND INCREASED HIV PREVALENCE IN KENYAN ADOLESCENT WOMEN

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**Background:** Kenyan adolescent women are at high risk of HIV infection: 2% prevalence in early adolescence (10-14 years), 3% in mid-adolescence (15-17) and 15% in late adolescence (18-24). Social relationships are also dynamic during this phase. Understanding the association between social networks and HIV infection may suggest novel intervention strategies. We sought to elucidate demographic and social predictors of HIV infection and to understand how social dynamics differed with age.
**Methods:** As part of the SEARCH trial (NCT01864603), 14,812 adolescent women were tested for HIV in rural Kenya. Along with demographic information, residents aged ≥15 were asked to name social contacts that provided support in five domains: health, money, emotions, food, and free time. For all adolescent groups, the adjusted relative risk (aRR) of each demographic predictor of HIV status was evaluated with targeted maximum likelihood estimation (TMLE), controlling for confounders. For the two older age groups, associations between network characteristics (number and age of contacts) and HIV status were evaluated with TMLE, adjusting for demographics.
**Results:** Risk factors for HIV infection varied by adolescent group. Among early adolescent women, significant predictors included maternal death (aRR:3.1) and living in a community with high adult HIV prevalence (aRR:1.6). Among mid-adolescent women, significant predictors included lower socio-economic status (aRR:2.5), self-reported sexual activity (aRR:2.4), and leaving school (aRR:2.0). Among late adolescent women, significant predictors included living in a high prevalence community (aRR:1.3) and leaving school (aRR:2.3). Social networks also differed by age. For all domains, late adolescent women named more contacts and older contacts than mid-adolescent women (p< 0.01). Having fewer adult (age>24years) social contacts with whom to discuss financial (aRR:4.3) and emotional matters (aRR:2.5) increased HIV risk among mid-adolescent women.
**Conclusions:** Demographic and social predictors of HIV infection, as well as egocentric social network characteristics, varied significantly by adolescent stage among Kenyan women. After controlling for known risk factors including poverty, leaving school, orphanhood, and sexual activity, low social support for financial and emotional concerns were associated with higher HIV risk in mid-adolescent women. Interventions to increase social support of adults to young women may reduce HIV incidence.

### TUPEC161

#### HIV TRENDS AMONG ADOLESCENTS AND YOUNG ADULTS, AGES 15-24, IN 23 HIGH-BURDEN COUNTRIES

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**Background:** Coverage of HIV-related services among adolescents and young adults remains low, despite evidence of increased HIV risk among females in this age group in sub-Saharan Africa. In response, PEPFAR has launched the DREAMS initiative. Epidemiological data on these age groups are needed to inform implementation of DREAMS. However, there is a lack of such data in the current literature.
**Methods:** The USAID- and PEPFAR-funded Health Policy Project used official 2015 Spectrum files to analyze epidemiological trends among people, ages 15 to 24, in 23 high-burden countries. Analysis was based on seven indicators: prevalence, in-

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## TUPEC172

### COCAINE USE INCREASES BIOMARKERS OF LIVER DISEASE IN THE MIAMI ADULT STUDIES OF HIV (MASH) COHORT

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**Background:** Advances in antiretroviral therapy (ART) have significantly reduced HIV-related mortality; however, substance abuse accelerates HIV-disease and may facilitate progression of liver disease. Hepatic injury results in fibrogenesis, associated with apoptosis, increased levels of plasma LPS and oxidative stress. While a proportion of people living with HIV (PLWH) engage in substance abuse, its effect on liver fibrogenesis is not known.
**Methods:** A total of 259 PLWH who were not co-infected with Hepatitis B or C were recruited from the MASH cohort and followed for biomarkers of liver disease for 24 months. Substance abuse was determined with questionnaires and confirmed with urine toxicology. AUDIT was used to determine alcohol consumption. Fasting blood was obtained for biomarkers of liver apoptosis (cytokeratin 18 [CK-18]), microbial translocation (LPS, sCD14), and oxidative stress (plasma glutathione and mitochondrial-specific 8-oxo-dG). Markers of HIV disease were obtained from medical records. Multivariable regression and Mixed Models were adjusted for age, gender, baseline CD4 counts, HIV-viral load and alcohol consumption.
**Results:** Mean age was 47.2±7.7SD years, 61% were men, and 77.5% Black. There were 77 PLWH who used cocaine during follow-up, and 182 PLWH who did not use cocaine. HIV-viral load was higher (*P*=0.019) and BMI was lower (*P*=0.026) among cocaine users. Cocaine users had higher levels of CK-18 (β=23.643, SE=11.53, *P*=0.041), plasma LPS (β=0.0399, SE=0.0186, *P*=0.0178), oxidized glutathione (β=0.051, SE=0.0267, *P*=0.049) and mitochondrial-specific 8-oxo-dG (β=0.052, SE=0.026, *P*=0.048), compared to cocaine non-users. CK-18 was higher with more frequent cocaine use (OR=5.45, 95%CI:1.07, 28.2, *P*=0.042) and was significantly related to FIB-4 (β=19.438, SE=4.1131, *P*< 0.0001) over a 24-months of follow-up.
**Conclusions:** Cocaine use was significantly associated with higher HIV viral load and lower BMI. Cocaine users had higher levels of liver apoptosis, plasma LPS, and oxidative stress compared to those who did not use cocaine. Moreover, more frequent use of cocaine was associated with higher level of liver apoptosis and with the progression of liver fibrosis over a 24-months of follow-up. Effective interventions to reduce cocaine consumption and target the biomarkers of liver fibrogenesis are needed to prevent complications of liver disease in PLWH.

## TUPEC173

### HIV RISK BEHAVIOURS AMONG FEMALE INJECTING DRUG USERS IN INDONESIA

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**Background:** Injecting drug users in Indonesia have an HIV prevalence rate of 36.4%. HIV transmission risk among female injecting drug users remains neglected in prevention research and in the national HIV response. The *Perempuan Bersuara* study examined HIV risk behaviors in the country's largest sample of active female drug injectors.
**Methods:** 731 female injecting drug users were recruited using respondent driven sampling from urban sites in Jakarta, West Java and Banten provinces between September 2014 and May 2015. Women were interviewed by trained peer fieldworkers using a structured questionnaire with standardized scales. The questionnaire included items on sexual and injection-related HIV risk and potential risk factors at the individual, interpersonal and structural levels. Descriptive statistical analyses were performed using STATA.
**Results:** Self-reported HIV prevalence was 47% (N=341). Women in the sample reported high injection-related risk as measured by injecting with someone else' used syringe and by sharing other injecting equipment such as filters, spoons/mixing containers and water used in drug preparation in the previous 30 days. Among sexually-experienced women (N=728), about 4 in 10 reported having multiple sexual partners (N=301; 41.4%). More than 1 in 3 women (N=250; 34.3%) reported engaging in transactional sex in the previous year. Rates of physical, injurious and sexual intimate partner violence were high at 51.9% (N=380), 35.9% (N=263) and 32.5% (N=237), respectively. Verbal, physical and sexual police harassment was reported by approximately 6 in 10 women who came into contact with law enforcement in the last year (63.8%, 210/329).
**Conclusions:** Female injecting drug users experience double HIV risk related to both sexual and injecting risk behaviours at multiple levels. HIV prevention programmes in the Indonesian context should acknowledge female injecting drug users as a distinct risk group requiring targeted intervention. High rates of intimate partner violence and police harassment in this sample warrant further attention in research and practice.

# EPIDEMIOLOGY OF HIV IN MALE, FEMALE AND TRANSGENDER SEX WORKERS

## TUPEC174

### PREVALENCE OF HIV AND ASSOCIATED RISKS OF COMMERCIAL SEX WORK AMONG YOUTH IN THE SLUMS OF KAMPALA

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**Background:** Youth who engage in sex work are a key target population for HIV prevention because they are disproportionately burdened by HIV. The purpose of this analysis is to examine the prevalence of HIV among youth engaging in sex work in Kampala, Uganda, and to determine the psychosocial and environmental factors associated with increased risk.
**Methods:** Analyses are based on a cross-sectional survey data conducted in March 2014. Participants comprised a convenience sample (N=1,134) of urban service-seeking young people (aged 12-18 years, 56.1% female and 43.9% male) living on the streets or in the slums, who were participating in a Uganda Youth Development Link drop-in center. Bivariate and multivariate logistic regression analyses were conducted to examine factors associated with sex work (gender, age, education, parental drunkenness, parental living status, alcohol use, HIV/STD, previous rape, parental abuse of youth and experiencing suicidal ideations). IRB approvals were obtained from the Georgia State University and the Uganda National Council for Science and Technology.
**Results:** Among young people interviewed, 13.7% who have ever had sexual intercourse said they were engaged in sex work. The prevalence of self-reported HIV among these youth was 22.5%. The majority of youth started sex work between the ages of 15-16 (75.6%) and most were female (93.8%). Most of the youth were also paid by money for sex (97.5%), but a large portion of youth were paid in alcohol (40.7%). Engaging in sex work was associated with being female (AOR 9.0; 95% CI: 3.4, 24.0), being an orphan (AOR 3.3; 95% CI: 1.4, 7.5), ever drinking alcohol (AOR 6.8; 95% CI 2.9, 15.9), experiencing any rape (AOR 4.9; 95% CI: 2.7, 9.0), and having suicidal ideations in the previous year (AOR 1.8; 95% CI: 1.02, 3.4).
**Conclusions:** The prevalence of involvement in sex work is very high among youth in the slums of Kampala and is associated with a range of health risk and mental health concerns. In particular, the high level of HIV, alcohol use, and suicidality warrants immediate attention to reduce risk of further exacerbated health concerns, HIV transmissions, and mortality in this vulnerable population.

## TUPEC175

### HIV AND SEXUALLY TRANSMITTED INFECTIONS AMONG FEMALE SEX WORKERS IN IRAN: FINDINGS FROM THE 2010 AND 2015 NATIONAL SURVEILLANCE SURVEYS

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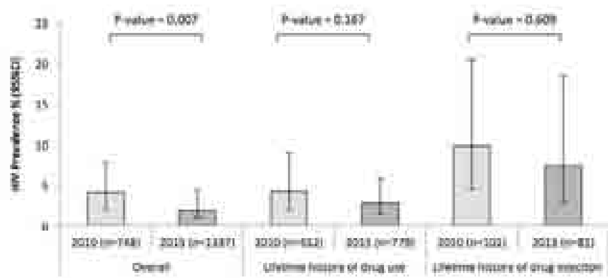
**Background:** Female sex workers (FSWs) acquire and transmit HIV and other sexually transmitted infections (STIs) through unsafe sex and injection with their partners. The 2010 and 2015 surveys assessed the prevalence of HIV and other STIs (only in 2015) in FSWs in Iran.

**Methods:** We conducted a facility-based plus street-based outreach sampling at 21 sites (25 in 2010) in 13 cities (12 in 2010) to recruit women aged ≥18 years reported selling sex to more than one male client in the past 12 months. Consenting FSWs were interviewed using a behavioral questionnaire and tested for HIV and five other STIs. We considered study sites as clusters in the analysis and 2-sided fisher's exact test to compare the HIV prevalence between the two rounds.
**Results:** In 2015, 1337 participants had a median age of 35 (IQR: 29-41) years. HIV prevalence was 1.9% (vs. 4.0% in 2010, p-value 0.007). Lifetime drug use and injection was reported by 59.8% (vs. 73.8% in 2010, p-value < 0.001) and 6.1% (vs. 13.6% in 2010, p-value < 0.001), respectively. In those with history of drug use, the HIV prevalence was 2.8% (vs. 4.2% in 2010, p-value 0.167) and in those who had ever injected drugs, it increased to 7.4% (vs. 9.8% in 2010, p-value 0.609) [Figure 1].



[Figure 1 - HIV prevalence overall and in subgroups of FSWs who reported lifetime history of drug use or injection in 2010 and 2015, Iran]

Prevalence of other STIs in 2015 was 0.4% (95%CI: 0.1, 1.4) for syphilis, 1.3% (95% CI: 0.7, 2.5) for Gonorrhea, 6.0% (95% CI: 3.9, 9.1) for Chlamydia, 11.9% (95% CI: 8.5, 16.5) for Trichomoniasis, and 41.8 (95% CI: 38.3, 45.5) for Human Papillomavirus.
**Conclusions:** HIV prevalence among FSWs in Iran is relatively low and stable if not decreasing, which may point to decrease in drug use or injection. Harm reduction programs for both sexual and injection harms need be continued and scaled up to further reduce the HIV transmission in FSWs.

## TUPEC176

### INCIDENCE AND TIME-VARYING PREDICTORS OF HIV AND SEXUALLY TRANSMITTED INFECTIONS (STIS) AMONG MALE SEX WORKERS IN MEXICO CITY

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**Background:** Male sex workers (MSWs) are a vulnerable population for acquisition of HIV/STIs. We estimated HIV/STI incidence rates and identified time-varying predictors of STI acquisition among MSWs in Mexico City.
**Methods:** MSWs recruited from ClínicaCondesa HIV Testing Clinic and community sites in Mexico City were tested and treated for STIs (chlamydia, gonorrhea, syphilis, and HIV) and viral hepatitis (hepatitis B and C) at a baseline, 6-month follow-up, and 12-month follow-up clinic visits. We estimated incidence rates and calculated 95% confidence limits using a bias corrected and accelerated bootstrap method with 1,000 replicates. We used mixed effects logistic regression with individual fixed effects to examine unadjusted and multivariable adjusted time-varying predictors of incident STIs.
**Results:** Among 227 eligible participants, the median age was 24 and baseline HIV prevalence was 32%. Incidence rates were as follows: HIV (5.28 per 100 person-years (PY); 95% 2.25, 11.75), chlamydia (4.63 per 100 PY; 95% 2.10, 9.09), gonorrhea (3.92 per 100 PY; 95%1.88, 7.58), active syphilis (12.44 per 100 PY; 95% 8.17, 18.51), hepatitis B (2.13 per 100 PY; 95% 0.52, 5.01), hepatitis C (0.96 per 100 PY; 95%0, 4.02), and any STI except HIV (21.00 per 100 PY; 95% 15.80, 30.69). In unadjusted mixed effects models, risk of incident STIs did not vary by older age, marriage, engagement in a stable romantic relationship, offering services to five or more clients, alcohol use, polysubstance use, sexual assault perpetration, condom use, provision of penetrative sex, or provision of receptive sex. However, risk of STIs did differ by educational attainment and was lower among those who completed high school (odds ratio (OR) = 0.28, 95% 0.09, 0.85) or college/post-grade education(OR=0.13, 95% 0.03, 0.53) compared to those who only had completed primary or secondary schooling. The association between risk of STI infection and completion of high school (adjusted OR [AOR]=0.23; 95% 0.06, 0.93) or college/post-graduate education (AOR=0.17; 95% 0.03, 0.93) persisted in the multivariable adjusted model.
**Conclusions:** HIV/STI incidence is high among MSW in Mexico City. Education appears to be an important potential predictor of HIV/STI infections, and may be an important component of economic and structural interventions to prevent infections.

# EPIDEMIOLOGY OF HIV IN MSM

## TUPEC177

### HIGH PREVALENCE OF HIV AND LOW AWARENESS OF HIV INFECTION AMONG YOUNG MSM AND TRANSGENDER WOMEN IN CAPE TOWN AND PORT ELIZABETH, SOUTH AFRICA

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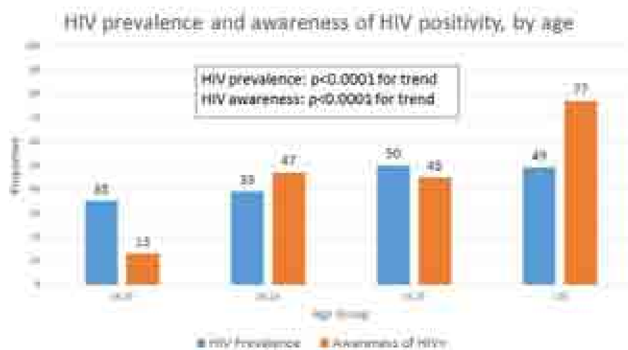
**Background:** Men who have sex with men (MSM) and transgender women (transwomen) are disproportionately impacted by HIV globally, but data about the burden of HIV across Sub-Saharan Africa remain sparse. Understanding the patterns of the burden and awareness of HIV infection is important in defining the scale and content of HIV prevention, treatment, and care programs.
**Methods:** The Sibanye Health Project is a longitudinal cohort study of MSM/transwomen in Cape Town (CT) and Port Elizabeth (PE), South Africa, recruited by outreach in community settings. At baseline, participants were tested for HIV using the provincially approved algorithm. Demographic, behavioral, and clinical data were collected by study staff and through tablet-administered surveys. Age- and race- specific prevalence are described; differences by race were evaluated with chi-squared tests, and trends by age were evaluated with the Cochran-Armitage test for trend.
**Results:** 292 participants enrolled, 115 in CT and 177 in PE (88% black, 12% coloured or white; 15% aged 18-19, 42% 20-24, 20% 25-29, 24% ≥30; 91% MSM, 9% TW). HIV prevalence was 46% (CT:30%; PE: 51%). HIV prevalence increased with age (Figure) and was higher among black (46%) than coloured/white (21%; p< 0.0001). 42% of those living with HIV were aware of their HIV infection; awareness increased with age (Figure) but was not different by race.




[HIV Prevalence and Awareness of HIV Positivity, by Age]

**Conclusions:** HIV prevalence was high in both cities. Prevalence of 35% among 18-19 year olds suggests early sexual initiation and/or very high HIV incidence among young MSM/transwomen. HIV prevention programs for MSM and transwomen should include PrEP and should address the needs of adolescent and young populations. HIV testing programs should also target adolescent and young MSM/transwomen, among whom 8 of 9 living with HIV were unaware of their infection.

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## TUPEC178

### HIV PREVALENCE AND UNPROTECTED ANAL INTERCOURSE AMONG MSM IN JAPAN: A SYSTEMATIC REVIEW

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**Background:** In Japan, HIV infection is prevalent in men who have sex with men (MSM), who constitute the greatest number of the cumulative 24,000 reported HIV cases and accounted for 72% of cases in 2014. Despite high infection numbers, understanding of the burden of HIV among MSM in Japan remains limited. We aimed to assess the HIV burden and risk behaviors, specifically unprotected anal intercourse (UAI), among MSM in Japan in order to inform HIV programs.
**Methods:** We searched PubMed, Embase, Ichushi-Web (a database of Japanese biomedical literature), and the Ministry of Health, Labour and Welfare Grants System database (MHLW), which contain technical reports, published up to December 15, 2015. Studies of any design that measured the prevalence of HIV and UAI and associated factors among MSM across Japan, published in English or Japanese, were included. We used Comprehensive Meta-Analysis Version 3 to obtain HIV prevalence and 95% confidence intervals (CI).
**Results:** Of 127 selected publications, 33 were related to HIV infection and 94 to UAI. Ninety percent of studies were from MHLW, and almost all studies applied convenient sampling methods. The pooled HIV prevalence was 2.9% (CI: 2.5-3.3) across Japan. City-level HIV prevalence was highest in Tokyo (6.7%; CI: 4.6-8.9), followed by Osaka (3.5%; CI: 2.9-4.1), Yokohama (2.9%; CI: 1.4-4.3), Nagoya (2.2%; CI: 1.7-2.6), and Okinawa (1.8%; CI: 0.1-3.7). Simulation studies estimated HIV prevalence reaching 10% by 2040. We were unable to locate studies on HIV-associated risk factors. UAI prevalence in the past 6 months was high, ranging from 41.2-84.5%. UAI prevalence was higher among men having sex with regular male partners than with casual partners. Four studies reported on risk factors of UAI, which is strongly associated with self-perception of not being at risk, increased number of partners, and drug use.
**Conclusions:** HIV and UAI among MSM is an emerging public health concern in Japan. The problem is likely to increase in the future if no action is taken. Practical interventions and rigorous studies (population-based) to inform interventions are needed.

## TUPEC179

### EPIDEMIOLOGICAL SYNERGY: THE ROLE OF HETEROSEXUAL HIV TRANSMISSION IN THE SPREAD OF HIV AMONG MEN WHO HAVE SEX WITH MEN IN SOUTH AFRICA

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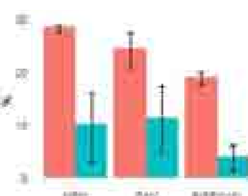
**Background:** South African men who have sex with men (MSM) have among the highest HIV prevalence levels in MSM populations globally, but the reasons for this are not well understood. Previous mathematical models have not accounted for interactions between MSM and heterosexuals in generalized HIV epidemics.
**Methods:** An agent-based model of the heterosexual HIV epidemic in South Africa was extended to include MSM, with distinction between 'gay' men (always homosexual) and 'bisexual' men (propensity for same-sex activity changing over the life course). The model was calibrated to HIV prevalence and sexual behaviour data from South African studies of MSM, as well as data on HIV prevalence in the general population.
**Results:** Consistent with MSM surveys, the model estimates that a high proportion of South African MSM are bisexual, and MSM sexual activity is concentrated at young ages. Median HIV prevalence in MSM in 2010 is estimated at 28.2% (IQR: 27.4-28.9%), compared to 14.2% (IQR: 13.6-14.6%) in all men aged 15-49. When the model was used to simulate a counterfactual scenario in which heterosexual transmission was set to zero (mimicking a concentrated epidemic setting), median HIV prevalence in MSM declined to 10.7%, with the proportional reduction in prevalence being substantially greater in bisexual men than in gay men (Figure).



*[Figure: HIV prevalence in 2010]*

Male-to-male transmission in the counterfactual scenario was 50% lower than that in the main scenario.
**Conclusions:** The extremely high levels of HIV prevalence in South African MSM are to some extent due to the high level of HIV prevalence in the general population, and are not only the result of risk behaviours specific to MSM. Interventions to reduce male-to-male transmission among MSM should not ignore the substantial acquisition of HIV from female partners.

## TUPEC180

### SOCIAL NETWORK CHARACTERISTICS AND HIV INFECTION AMONG OLDER BLACK SOUTH AFRICAN MSM

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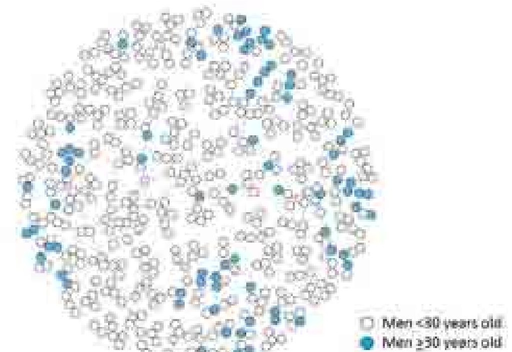
**Background:** Studies conducted among populations of MSM in sub-Saharan Africa primarily reach young MSM; older MSM who have participated were found to have an increased risk of HIV infection. The current study aims to explore the social network characteristics, HIV status, and potential causal pathways for HIV infection among older black South African MSM.
**Methods:** An HIV prevalence study with behavioral survey was conducted using respondent driven sampling among 480 black MSM in Tswhane, South Africa. Social network characteristics were calculated using recruitment ties among participants. Multivariate analyses were conducted using ordinary least squares regression models.
**Results:** The overall mean age was 24 years. Eighteen percent (18%) were thirty years or older.




*[Figure 1. Distribution of men ≥30 years old among networks of n=480 black MSM in Pretoria, South Africa]*

Older men (≥30) did not differ from younger men in social network size (p=.99) or the number of men they recruited into the study (p=.42). Older men were more likely to refer another older man (60% vs. 16%, p< .001) and be referred by another older man (49% vs. 15%, p< .001). Thirty percent (30%) of men were HIV positive. Older men were more likely to be HIV infected (48% vs. 27%, p< .001). Older age was a risk factor for HIV infection (aOR=2.5, 95%CI: 1.6-4.1, p< .001). While older men reported more UAI over the past 6 months (mean=20 vs. 10, p=.02), this nor any other characteristic mediated their risk for HIV infection.
**Conclusions:** Older MSM were under-represented in this study and were found to bear a disproportionate burden of HIV infection. While older men reported more frequent UAI, this nor other HIV risk factors explained their increased burden of HIV infection. Our findings suggest the need to find effective ways to include older MSM in research in order to achieve more representative samples. This might also benefit prevention efforts as these are likely to be confronted with the same problem.

## TUPEC181

### PANEL CONDITIONING AS A THREAT TO VALIDITY IN SEXUAL BEHAVIORAL TRIALS OF GAY, BISEXUAL AND OTHER MEN WHO HAVE SEX WITH MEN: RESULTS OF THE MEN'S INTERNET III (MINTS-III) TRIAL

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**Background:** In repeated measurement trials (e.g., RCTs), the effect of earlier surveys on later results is termed 'panel conditioning', 'time in sample bias,' or 'reactivity'. Least committed and Black respondents appear to be more susceptible to behavioral change through being surveyed. Panel conditioning effects, studied across a wide range of behaviors, appear to reflect *genuine* behavior change. The *Cognitive Stimulus (CS)* model posits that being asked questions (even in surveys) stimulates reflection on behavior, which increases motivation, and behavior change. This potentially explains why answering questions on a survey can substantially reduce risk behavior.
**Methods:** To study the frequency of panel conditioning on HIV prevention trials of gay bisexual and other men who have sex with men (GBM), we reviewed ten recent RCTs of sexual risk behavior in GBM. To test panel conditioning effects directly, the MINTS-III trial was an online RCT (N=1,450 GBM) with three recruitment periods: 6 months before the study (wash-in group), at baseline (traditional group) and a no-baseline immediate post-test group. All participants completed sexual risk assessments every three months until 12 months post-intervention.
**Results:** Operationalizing evidence of panel conditioning as reduced risk behavior in the control arm ($T_2$-$T_1$), ten of ten published studies (100%) showed evidence of panel conditioning effects. In our RCT, across both treatment and control, and at each wave, all groups showed evidence of panel conditioning effects sustained over twelve months. Effect sizes of 5-20% at each time period remained evident both when analyzing frequency totals for the whole sample, and in sub-analyses controlling for attrition.
**Conclusions:** Panel conditioning is extremely common in HIV prevention trials of GBM producing significant effects sizes. In behavioral trials, the effect sizes observed in MINTS-III appear sufficient to mask intervention effects. In biomedical trials, including those for PrEP, panel conditioning may lead to behavioral compensation being under-reported or missed. Researchers should consider adding wash-in periods (covering up to 3 behavioral assessments) when designing behaviorally focused RCTs. Intervention designers should incorporate monitoring risk behavior at regular intervals as it appears a strong intervention component to lower risk behavior.

## TUPEC182

### LABORATORY-CONFIRMED DIAGNOSES OF AND SELF-REPORTED TESTING BEHAVIORS FOR HIV AND STIS AMONG MSM IN TAJIKISTAN

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**Background:** Little is known about the prevalence and associations of HIV/STI diagnoses and testing behaviors among men who have sex with men (MSM) in Tajikistan.
**Methods:** A non-governmental organization conducted a cross-sectional study (n=502) of MSM assessing laboratory-confirmed HIV/STI diagnoses, self-reported HIV/STI testing prevalence in the past six months, sociodemographics, HIV/STI risk factors, and victimization/discrimination. Data for this study were collected from March through August 2015. Participants first completed a questionnaire on various topics (e.g., demographics, sexual risk behaviors, and HIV and STI testing behaviors) administered by trained Equal Opportunities staff. Participants on average took 20 to 45 minutes to complete the questionnaire. After completing the interviewer-administered survey, Equal Opportunities staff provided voluntary counseling for HIV/STIs. Participants were then offered to have blood drawn to get tested for HIV and other STIs. A trained nurse from the Tajikistan AIDS Centers administered all blood draws. All men that participated in any part of this study were incentivized with a hygiene package, which included a number of toiletries. All study procedures were approved by both the Bioethics Committee of the Academy of Medical Sciences through the Ministry of Health and Social Welfare of the Republic of Tajikistan and the University of Pittsburgh's Institutional Review Board.
**Results:** In total, 2.6% were diagnosed with HIV, 2.2% with syphilis, 17.6% with chlamydia, and 56.0% with herpes. Prevalence rates for recent HIV and STI testing were low (35.9% and 14.1%, respectively). In multivariable models, MSM with a high school education or less had lower odds of recent HIV and STI testing compared to men that completed university (odds ratio [OR]=0.43 and 0.23, respectively).
**Conclusions:** Given the low HIV prevalence, there is a window of opportunity to extinguish the epidemic before it worsens. Non-governmental organizations are indispensable for expanding testing strategies because they can efficiently reach MSM in Tajikistan.

## TUPEC183

### RISK FACTORS FOR ACUTE HIV INFECTION AMONG THAI YOUNG MEN WHO HAVE SEX WITH MEN

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**Background:** Men who have sex with men (MSM) and transgender women (TGW) are disproportionately affected by HIV in Bangkok, Thailand, and high incidence has been documented among younger members of these two populations in Asia. We evaluate factors associated with acute HIV infection (AHI) among young MSM and TGW in the Bangkok MSM Cohort Study (BMCS).
**Methods:** From 2006 to 2010, we enrolled Thai MSM and TGW aged ≥18 years into the BMCS, and followed participants for 3-5 years; for this analysis we restricted our data to those 18-24 years old. Socio-demographic and behavioral information were collected at each 4-month visit. At baseline and at each follow-up visit, anti-HIV Ab testing was performed on oral fluid with serologic confirmation. Starting in February 2010, blood samples from participants with oral fluid non-reactive anti-HIV were screened for AHI using pooled nucleic acid amplification testing (Aptima) and confirmed by viral load (Roche) and/or fourth generation EIA (Abbott). AHI was defined as undetectable anti-HIV Ab in blood with the presence of HIV-1 RNA and/or p24 Ag. We determined the proportion of participants with AHI and assessed factors independently associated with AHI using generalized estimating equations logistic regression modeling.
**Results:** From February 2010 to November 2015, we evaluated AHI in 343 young MSM and TGW with undetectable anti-HIV Ab in 2,253 visits. Median age among this subset was 22 years old. We detected AHI in 17 (5.0%) young MSM and TGW (0.8 infections per 100 tests, 95% CI 0.4-1.2). Factors independently associated with AHI included reporting more than two male steady partners in the past 4 months (adjusted Odds Ratio (aOR) 4.7, 95% CI 1.1-20.9), reporting fever in the past 4 months (aOR 5.9, 95% CI 1.1-32.2), positive hepatitis B core antibody (aOR 15.8, 95% CI 2.8-88.5), and ever having rectal *Neisseria gonorrhea* (aOR 58.2, 95% CI 5.2-645.3).
**Conclusions:** Among young Thai MSM and TGW in our cohort who tested negative for anti-HIV, 5% had AHI. A history of STIs were highly associated with AHI. Increasing HIV and STI screening among young MSM and TGW can support and enhance HIV prevention efforts through provision of early treatment.

## TUPEC184

### INTIMATE PARTNER VIOLENCE AND HIV INFECTION AMONG MEN WHO HAVE SEX WITH MEN IN SHANGHAI, CHINA

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**Background:** Intimate partner violence (IPV) research is extremely limited among Chinese men who have sex men (MSM), a population playing key roles in HIV epidemic. We examined prevalence and correlates of IPV and HIV infection among MSM in Shanghai, China.
**Methods:** All MSM attending two voluntary HIV counseling and testing clinics in Shanghai during Mar.2015 to Aug. 2015 were recruited to participate in a cross-sectional survey. To measure male-on-male IPV, participants were asked about lifetime experience of violence perpetration against or from intimate male partners. Violent behaviors included being hit or thrown objects, being threatened with harm or harm to others, being threatened to reveal sexual orientation, being physically forced to have sex, or destruction of property. Separate multiple logistic regression analyses were conducted to determine correlates of IPV and their association with HIV infection.

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## TUPEC190

### FLUCTUATIONS IN DEPRESSION AND HIGH-RISK SEXUAL BEHAVIOR AMONG YOUNG BLACK GAY AND BISEXUAL MEN IN NEW YORK CITY

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**Background:** Young black gay and bisexual men (YBGM) are one of the only groups with increasing HIV incidence in the United States. This population also has limited access to prevention and treatment strategies. While many studies have shown weak evidence for a relationship between depression and risk behavior, these studies are plagued by methodological problems; findings should be considered inconclusive. YBGM contend with a variety of social and environmental factors that influence mental health, and strengthen a relationship between depression and risk behavior. This study examines associations between within- and between-person changes in depression, and high-risk sexual behavior, among YBGM in New York City.
**Methods:** Data were obtained from 124 YBGM (mean age = 25 years). Participants completed weekly surveys for 2 months. Self-report measures assessed details of sexual encounters had over the 8-week study time period, including condom use and partner HIV status. Participants also completed brief weekly depression assessments using the K-10 (Kessler et al., 2002) and POMS depression subscale (McNair et al., 1981). Multi-level logistic models were used to examine within- and between-person associations of depression and HIV risk behavior.
**Results:** Over the 8-week time period, participants reported on 460 sexual episodes (mean = 3.7). Twenty-eight percent of participants reporting having sexual episodes involving serodiscordant condomless anal intercourse (CAI), and 15% reported engaging in high-transmission risk CAI (e.g, HIV- men engaging in receptive CAI with HIV+ partners). Within-person changes in depression were shown to be associated with serodiscordant CAI and high-transmission risk CAI - when participants were more depressed than average (i.e., their person-mean), they were more likely to report have a risk episode (*ps* = .01 - .03). Additionally, using the K-10, we observed between-person differences were positively related to risk episodes (*p* = .01).
**Conclusions:** This study is one the first to examine the association of within-person changes in depression with HIV risk behavior in YBGM. It contributes new evidence to literature exploring the relationship between depression and sexual risk, and provides direction for intervention. Future research should employ longitudinal designs to explore pathways linking within-person changes in depression with risk behavior.

## EPIDEMIOLOGY OF HIV IN SERODISCORDANT COUPLES

## TUPEC191

### FACTORS ASSOCIATED WITH FERTILITY DESIRES AND PREGNANCY INCIDENCE AMONG HIV-POSITIVE CONCORDANT AND SERODISCORDANT COUPLES IN RAKAI, UGANDA

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**Background:** In communities characterized by high levels of fertility and HIV infection, it is important to assess factors affecting HIV risk and pregnancy rates. Couples were followed prospectively from 2001 to 2011 and factors potentially influencing pregnancy desire and pregnancy rates were examined.
**Methods:** We linked longitudinal data from 10 years from the Rakai Community Cohort Study in Rakai, Uganda from HIV negative (M-F-), concordantly HIV-infected (M+F+), and discordant (M+F- or M-F+) couples. We used multinomial regression models to estimate the prevalence rate ratios (PRR) of desiring more children, and pregnancy incidence by couples HIV serostatus.
**Results:** A total of 2606 couples contributed to 16,399 couple-rounds of observations. Fertility desire decreased with increasing female age and schooling, irrespective of HIV status. Other factors associated with fertility desire (Table 1) were report of non-marital relationships by the male or female partner, the number of co-resident biological children, and whether one or both of the HIV-positive spouses were enrolled in HIV care. Pregnancy incidence was lower among older women and when both partners were HIV positive; pregnancy incidence was higher among women of low and medium SES compared with high SES; women with more than one co-resident child; and women who desired more children. When stratified by couples' HIV status, pregnancy incidence was higher among HIV serodiscordant couples compared with seropositive concordant (adjPRR: M-F+1.74(1.01-3.0), M+F-1.73(1.04-2.89).

| | M-F adjPRR (95%CI) | M+F+ adjPRR (95% CI) | M-F+ adjPRR (95%CI) | M+F adjPRR (95%CI) |
|---|---|---|---|---|
| Non-Marital Relationships (Ref=None) | 1.00 | 1.00 | 1.00 | 1.00 |
| Female | 0.9(0.84-1.1) | 1.5(1.13-2.12) | 1.9(1.11-3.26) | 0.9(0.62-1.4) |
| Male | 1.1(1.04-1.12) | 1.2(1.01-1.42) | 1.0(0.8-1.3) | 1.0(0.8-1.32) |
| Co-resident biological children (Ref=0) | 1.00 | 1.00 | 1.00 | 1.00 |
| 1-2 | 1.1(1.03-1.12) | 0.9(0.7-1.02) | 0.9(0.71-1.15) | 0.7(0.6-0.9) |
| 3-5 | 0.7(0.71-0.78) | 0.5(0.42-0.67) | 0.6(0.43-0.82) | 0.5(0.35-0.6) |
| 6+ | 0.3(0.24-0.32) | 0.1(0.02-0.34) | 0.4(0.14-1.1) | 0.3(0.15-0.61) |
| HIV+ spouse in care | | 0.8(0.64-1.05) | 0.5(0.37-0.73) | 0.9(0.68-1.11) |
| Both HIV+ partners in care | | 0.6(0.45-0.77) | | |

*[Table 1: Prevalence Rate Ratios of Desiring More Children by HIV status of Couples]*

**Conclusions:** Couple's HIV serostatus and enrolment in HIV care significantly impact both the desires for more children and pregnancy incidence. Although couples with co-resident children desired less children, pregnancy rates among these couples were significantly higher indicating a need to address the potential unmet need for contraception among these couples. Where HIV prevalence and fertility are high, understanding risk factors is critical in order to ensure effective pregancy prevention and safe pregnancy outcomes among HIV infected couples.

## TUPEC192

### RISKY SEX AND HIV ACQUISITION AMONG HIV SERODISCORDANT COUPLES IN ZAMBIA: WHAT DOES ALCOHOL HAVE TO DO WITH IT?

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**Background:** Heavy alcohol use is a widespread problem among those at risk for and living with HIV, and its use by at least one partner can affect HIV transmission and acquisition risks to both partners. This study evaluates the effects of alcohol consumption on high-risk sexual behavior and HIV acquisition in a prospective longitudinal cohort of 3,049 serodiscordant couples in Lusaka, Zambia.
**Methods:** We evaluated factors associated with alcohol consumption at baseline, and its effect on having outside sexual partnerships and condomless sex with primary partner using multivariable logistic regression. We analyzed the effect of alcohol consumption on HIV acquisition using mutivariable Cox models stratified by gender of HIV-infected partner.
**Results:** Over one-half of couples were female HIV-positive (n=1656; 54.3%). Only 3.2% women reported getting drunk weekly or daily/almost daily, compared to 33.5% men. Factors associated with women's alcohol use included older age (aOR=1.03; 95%CI=1.01, 1.05), partner heavy drinking (aOR=4.13; 95%CI=3.29-5.19), and HIV-positive status at baseline (aOR=1.62; 95%CI=1.27-2.05). Among men, heavy drinking was associated with younger age (aOR=0.98; 95%CI=0.96-0.99), age disparity with partner (aOR=1.04; 95%CI=1.02-1.06), STI in last year (aOR=1.21; 95%CI=1.06-1.38), and partner heavy drinking (aOR=2.83; 95%CI=2.00-4.04). Men's heavy drinking was associated with increased odds of having outside partnerships (aOR=2.02; 95%CI=1.58-2.57) and condomless sex with main partner in past 3-months (aOR=1.61; 95%CI=1.28-2.04) compared to non-drinkers. Women's heavy drinking was associated with an increased odds of having outside partners (aOR=1.89; 95%CI=1.35-2.64), and condomless sex with main partner in the past 3-months (aOR=1.54; 95%CI=1.31-1.82). Women's heavy drinking was associated with increased HIV acquisition (aHR=3.71; 95%CI=0.90-15.25). Men's heavy drinking was associated with increased HIV acquisition (aHR=1.72; 95%CI=1.01-2.93), and transmission to women (aHR=1.42; 95%CI=0.97-2.10) compared to non-drinkers.
**Conclusions:** Alcohol consumption is a risk factor for outside sex partnerships, condomless sex and HIV acquisition in HIV-serodiscordant couples. Serodiscordant couples should be screened for and counseled about alcohol use risk.

| | Crude HR (95% CI) | Adjusted HR (95% CI)* |
|---|---|---|
| **Men heavy drinking and women's HIV acquisition (n=1393 M+F- couples)** | | |
| Men reported never drinking in past year | Ref | Ref |
| Men reported drinking => 4/week | 1.08 (1.00, 1.14)* | 1.07 (0.99, 1.16)** |
| Men reported being drunk weekly or greater | 1.36 (0.94, 1.97) | 1.42 (0.97, 2.10)* |
| **Women heavy drinking and HIV acquisition (n=1393 M+F- couples)** | | |
| Women never reported being drunk in past year | Ref | Ref |
| Women reported being drunk less than monthly | 1.43 (0.78, 2.61) | 1.47 (0.80, 2.70) |
| Wome reported being drunk daily or almost daily | 3.63 (0.88, 14.91) | 3.71 (0.90, 15.25)** |
| **Men heavy drinking and HIV acquisition (n-1656 M-F+ couples)** | | |
| Men never reported being drunk in past year | Ref | Ref |
| Men reported being monthly or less than monthly | 1.51 (0.73, 3.13) | 1.23 (0.78, 1.93) |
| Men reported being drunk weekly or daily / almost daily | 1.62 (0.89, 2.96) | 1.72 (1.01, 2.93)*** |
| **Women heavy drinking and men's HIV acquisition (n-1656 M-F+ couples)** | | |
| Women never reported being drunk in past year | Ref | Ref |
| Women reported being monthly or less than monthly | 0.68 (0.33, 1.40) | 0.71 (0.34, 1.46) |
| Women reported being drunk weekly, daily or almost daily | 1.23 (0.30, 5.01) | 1.70 (0.42, 6.93) |
| *Adjusted for age, litericy, years cohabiting, male circumcision (in men's models) and number of previous pregnancies (in women's models)<br>** p<0.10<br>*** p<0.05 | | |

*[Table. Time to seroconversion stratified by gender of seroconverter as estimated by Cox regression models]*

## TUPEC193

### HIV INCIDENCE AND PREDICTORS OF HIV ACQUISITION FROM AN OUTSIDE PARTNER IN SERODISCORDANT COUPLES IN LUSAKA, ZAMBIA, 1995-2012

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**Background:** There is limited research on the effect of fertility desire on HIV transmission and acquisition in sub-Saharan Africa. We evaluated the incidence and predictors of seroconversion from an outside partner among a long-running cohort of serodiscordant couples in Zambia.

**Methods:** Serodiscordant couples were enrolled from couples-counseling and testing sites in Lusaka, Zambia. Demographic, behavioral, and clinical exposures were measured. HIV-uninfected partners were re-tested every three-months. Genetic analysis classified incident infections as those acquired from the study partner (linked), or acquired from an outside partner (unlinked). Factors associated with time to unlinked HIV infection were evaluated using multivariable Cox models.

**Results:** Forty-five unlinked HIV infections occurred among women (1.58/100-couple-years [CY]; 95% CI=1.17, 2.10). Risk of female unlinked infection (relative to non-seroconverting couples) was associated with baseline female alcohol consumption (aHR=5.44; 95% CI=1.03, 28.73), recent genital ulcers and/or genital inflammation (aHR=6.09; 95% CI=2.72, 13.64 and aHR=11.92; 95% CI=5.60, 25.37, respectively). Reporting outside partner(s) was not associated with unlinked infection (aHR=2.07; 95% CI=0.42, 10.28) adjusting for woman's age, age disparity with partner, income, literacy, previous pregnancies, contraceptive use, and sperm present in vaginal swab. Fifty-five unlinked HIV infections occurred among men (1.63 per 100 couple years; 95% CI=1.24, 2.11). Risk of male unlinked HIV infection (relative to non-seroconverting couples) was associated with recent genital inflammation (aHR=8.52; 95% CI=3.82, 19.03), genital ulceration (aHR=4.27; 95% CI=2.05, 8.89), self-reporting =>1 outside partner (aHR=3.36; 95% CI=1.53, 7.37) versus none, and reporting being drunk weekly/daily at baseline (aHR=3.52; 95% CI=1.19, 10.46) vs. never, controlling for man's age, couple's income, male literacy, and male circumcision status.

**Conclusions:** The strongest predictors of unlinked infection in serodiscordant relationships were alcohol use, genital inflammation and ulceration prior to infection. Genital symptoms should be screened for and treated, or treated prophylactically for HIV-negative partners in serodiscordant couples. The risks of alcohol use should be included for both partners in risk-reduction counseling.

| | Adjusted Hazard Ratio (95% CI) |
|---|---|
| **MODEL 1: Female unlinked seroconversion* (Man HIV+ Woman HIV- couples, n=1393 couples)** | |
| **Time-varying** | |
| Genital inflammation in past 3 months (woman) | 11.92 (5.60, 25.37) |
| Genital ulcer in past 3 months (woman) | 6.09 (2.72, 13.64) |
| Self-report =>1 outside partner in past 3 months | 2.07 (0.42, 10.28) |
| **MODEL 2: Male unlinked seroconversion** (Man HIV- Woman HIV+ couples, n=1656 couples)** | |
| **Baseline** | |
| **Alcohol use in past year** | |
| Man reported being drunk weekly or daily (vs. never) | 3.52 (1.19, 10.46) |
| Man reported being drunk monthly or less (vs. never) | 2.24 (0.50, 10.12) |
| **Time-varying** | |
| Self-report =>1 outside sex partner during study (man) | 3.36 (1.53, 7.37) |
| Genital inflammation in past 3 months (man) | 8.52 (3.82, 19.03) |
| Genital ulcer in past 3 months (man) | 4.27 (2.05, 8.89) |
| * Adjusting for woman's age, age difference, woman's literacy, number of previous pregnancies, couple income (in USD), contraceptive method use, and sperm present on wet-prep<br>** adjusting for man's age, man's literacy, couple income (in USD), and male circumcision status (before or during study) | |

*[Table. Multivariable Cox survival models of predictors of time to unlinked HIV infection among women (Model 1) and men (Model 2). Reference group is non-seroconverting and couples (n=2571 non-seroconverting couples)]*

## EPIDEMIOLOGY OF HIV IN MIGRANTS

## TUPEC194

### HIV TRANSMISSION AMONG FOREIGN-BORN PEOPLE IN THE UNITED STATES

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**Background:** In the United States, foreign-born persons are disproportionately affected by HIV and differ epidemiologically from U.S.-born persons diagnosed with HIV. Understanding HIV transmission dynamics among foreign-born persons is important to guide HIV prevention efforts for these populations. We conducted molecular transmission network analysis to describe HIV transmission dynamics among foreign-born persons diagnosed with HIV.

**Methods:** Using HIV-1 polymerase nucleotide sequences reported to the U.S. National HIV Surveillance System during 2001-2013, we calculated genetic distance, identified pairs of linked sequences (representing potential transmission partners) and examined place of birth (foreign-born vs. U.S.-born) and birth region of potential transmission partners.

**Results:** Of 77,686 HIV-1 nucleotide sequences, 12,074 (16%) were from foreign-born persons. Overall, 28% of foreign-born persons linked to at least one other person. Of these persons, 25% linked only to other foreign-born, 40% linked only to U.S.-born, and 35% linked to both other foreign-born and U.S.-born persons. A higher percentage of women (57%) and persons with infection attributable to heterosexual contact (50%) linked only with foreign-born persons. Only 19% of persons with infection attributable to male-to-male sexual contact linked only with foreign-born persons. The proportion of potential transmission partners born in the U.S. varied from 48%-79% by birth region (Figure). Persons born in Africa, the Caribbean, or Latin America shared the same birth region with most of their foreign-born potential transmission partners.

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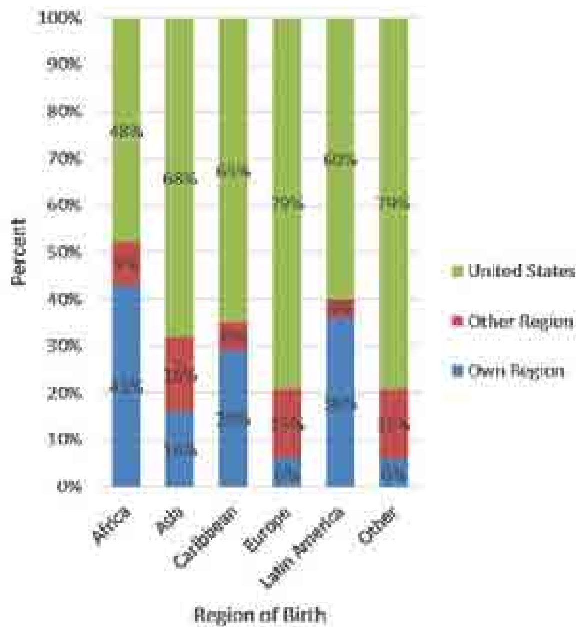


*[Figure. Location of Birth of Potential Transmission Partners of HIV-Infected Foreign-Born Persons, United States]*

**Conclusions:** These data suggest that HIV transmission among foreign-born persons in the United States occurs primarily, but not exclusively, with U.S.-born persons, with important differences by key demographic and risk characteristics. HIV prevention efforts among persons born outside the U.S. should address the specific risk and distinct social aspects of populations from different regions of the world.

## TUPEC195

### DEFINING MIGRANTS AT RISK OF HIV IN EUROPE

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**Background:** Many European countries consider migrants as an important sub-population in their response to HIV. Despite this, no common definition of a migrant is applied across Europe. We investigate ways of characterising migrant populations at risk of HIV infection in Europe which avoid promoting xenophobia and stigmatisation.

**Methods:** Computerised and manual literature searches were conducted. Key search terms included HIV, AIDS, migration, migrants, and Europe. Countries reporting a high number of new HIV diagnoses among migrants were also included as search terms. These included Denmark, France, Germany, Netherlands, Sweden, Switzerland, and the United Kingdom.

**Results:** Several definitions of migrants were identified which may provide a foundation for public health action. These included country of birth, ethnicity, nationality, and HIV sub-type. The advantages and disadvantages of each definition were considered. Country of birth was shown to highlight heterogeneity of risk according to national HIV prevalence but to mask variations in risk across country-specific sub-populations. Ethnicity was found to be commonly applied in public health research to highlight health inequalities but to group both non-European and European born persons in broad ethnicity categories. Nationality was found to have major limitations in studying the impact of migration on HIV. For example, a non-European born person obtaining citizenship within a European country will be, correctly, reported under their newly acquired nationality. The use of sub-type also had major limitations. Historically the identification of non-B subtypes has been interpreted as representing HIV-infection acquired outside of Europe. However, a number of recent studies have shown non-B subtypes to be prevalent among European born persons. Applied alone, none of the definitions clearly differentiated migrant populations at risk of HIV. Heterogeneity in risk of living with or acquiring HIV can be highlighted when broad ethnicity categories are presented in combination with country or world region of birth.

**Conclusions:** We identified several definitions of migrants which may provide a foundation for HIV public health action and, if applied sensitively, avoid negative stereotyping. We present evidence for the utility of categorising migrants according to both their ethnicity and country of birth to highlight heterogeneity in risk of acquiring or living with HIV.

## TUPEC196

### LABOR EXPLOITATION AND HIV/STI RISK AND INFECTION AMONG CENTRAL AMERICAN FEMALE MIGRANTS AT THE MEXICO-GUATEMALA BORDER

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**Background:** Recent reports indicate that increased migration across Central America north to Mexico and the US, is feeding human trafficking and labor exploitation. The International Labor Organization estimates that globally 20.9 million people have been trafficked for forced labor (mostly females), with domestic and agriculture work among the sectors of most concern. Labor exploitation often includes sexual violence. Sexual violence in the context of migration and sexual exploitation has been found to greatly elevate risk for HIV infection. However, to date limited studies have assessed the HIV risk among migrant women who are exploited for labor in this region.

**Methods:** This mixed methods study surveyed 200 migrant women ( identified via respondent-driven sampling (RDS) across 4 cities along the Mexico-Guatemala border from August 2012-September 2015. The questionnaire included:
1) socio-demographics,
2) labor exploitation,
3) sexual behavior and experiences (including exploitation and sexual violence), and
4) agricultural or domestic work history. 30 in-depth interviews (15 in each country) were conducted with migrant women screening positive for labor exploitation via the quantitative survey. Participants also underwent diagnostic testing for HIV and STIs.

**Results:** Of the women surveyed, 55.3% reported labor exploitation in the context of agricultural or domestic work in Mexico. Over half (66.8%) migrated as a child and started working prior to age 13. One in 8 participants reported sexual exploitation while working as an agricultural or domestic worker, 64.4% had no education beyond primary school and 14.1% entered sex work after working as an agricultural or domestic worker in Mexico. Of the overall sample 4.6% tested positive to HIV, 16.2% to Syphilis and 4.2% to HCV.

**Conclusions:** These findings contribute to the dearth of literature on an emerging and neglected social phenomenon. Future research is urgently needed to better understand the temporality and precise nature of observed relations between labor exploitation and HIV/STI risk and infection among migrant women including improving linkages to care in this region.

## TUPEC197

### HIV ACQUISITION POST-MIGRATION: EVIDENCE FROM FOUR EUROPEAN COUNTRIES

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**Background:** Two in five people living with HIV in Europe were born outside of the European country where they were first diagnosed. However, there may be a misplaced belief that acquisition has predominantly occurred in the home country. To better inform prevention and testing programs, we provide country-specific estimates of the proportion of migrants who probably acquired HIV after arrival in their country of diagnosis (post-migration).

**Methods:** We analysed new HIV-diagnosis reports among migrants (defined by country of birth/origin) diagnosed in the United Kingdom (UK), Belgium, Sweden and Italy in 2011. We estimated a probable period of HIV seroconversion using modelled CD4-cell count distribution and decline speed shortly after seroconversion. A migrant was classified as having acquired HIV 'post-migration' or 'abroad', or 'overlapped' when the estimated period of seroconversion was 'after', 'before' or 'overlapped with' the year of arrival. At the population level, a lower estimate of the proportion of migrants having acquired HIV post-migration was gained when only those classified as 'post-migration' were included; an upper estimate includes both those classified as 'post-migration' and 'overlapped'; and a central estimate was gained when the 'overlapped' were reassigned to either 'post-migration' or 'abroad' based on estimated median CD4-cell count and decline speed.

**Results:** 2,351 migrants were recruited (1,683 UK, 329 Belgium, 185 Sweden and 154 Italy). In all countries, the majority were aged 25-44 years (>70%), heterosexual (>70%) and born in Africa (>60%). Overall, an estimated 38% (range: 32-46%) of diagnosed migrants had probably acquired HIV post-migration. The UK had the highest proportion 43% (range: 36-52%) followed by Belgium 29% (26-34%), Sweden 24% (21-30%) and Italy 23% (20-27%). An estimated 42% (203/481; 38-50%) of men who have sex with men probably acquired HIV post-migration compared to 38% (658/1,713; 32-47%) among heterosexual people.
**Conclusions:** We present for the first time multi-country estimates of probable place of HIV-acquisition among migrants living with HIV in Europe. More than a third of migrants diagnosed in these four European countries acquired HIV post-migration, and this proportion was high in MSM and heterosexuals. Our findings call for targeted prevention efforts to reduce HIV transmission among the migrant populations within Europe.

## Epidemiology of HIV in transgender persons

### TUPEC198

### Global HIV epidemiology among trans populations: new data, unique vulnerabilities

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**Background:** The rapid increase in research on transgender (trans) populations necessitates an update of global HIV data. Stigma is a significant determinant of health and may drive syndemics of HIV in trans populations. This review synthesizes the most recent epidemiology of HIV and related syndemics in trans populations, describes current gaps in HIV-related research and interventions with trans populations, and makes recommendations to improve the effectiveness of HIV prevention, treatment, and care programs.
**Methods:** A systematic review was conducted of manuscripts and abstracts published between January 1, 2012 and November 30, 2015. Experts in HIV among transgender populations were contacted for unpublished HIV prevalence data meeting other inclusion criteria. Title and abstract reviews for relevance were conducted on unduplicated references independently by two reviewers, with subsequent full-text review for data abstraction. Studies with original quantitative HIV data that disaggregated transgender participants from other populations were included. Laboratory-confirmed HIV data are presented.
**Results:** Estimates varied dramatically by location and participant characteristics. In 8 studies in the United States, HIV prevalence in trans feminine individuals ranged from 2.0% in an HIV testing program to 40.1% among sex workers. In 10 Latin American studies, prevalence ranged from 12%-34.1%; In 7 Asian studies, prevalence ranged from 0% in a small RDS sample (n=23) to 45.2% in an urban STI clinic. Among 8 studies with trans masculine people, prevalence ranged 0%-4.3% with the highest estimate in those seeking STI screening. See table for summary of syndemics in trans populations.

| Citation | Location | Study Population | Sampling Method | Syndemic Production |
|---|---|---|---|---|
| [illegible] | | | | |
| [illegible] | Boston, MA | 23 adults | EMR review | [illegible] |
| [illegible] | Boston, MA | [illegible] | Convenience | [illegible] |
| [illegible] | | | | |
| [illegible] | Los Angeles, CA | [illegible] youth | Outreach and referral | [illegible] |
| [illegible] | Los Angeles, CA | 282 youth | Baseline cohort data | [illegible] |
| [illegible] | San Francisco, CA | 191 adults | purposive | UAI, alcohol, and drug use intercorrelated [illegible] |
| [illegible] | Multi-site, India | 300 youth | Convenience | [illegible] |
| [illegible] | Richmond, VA; Washington, DC | 117 adults | Various sources | [illegible] |
| [illegible] | | | | |
| [illegible] | San Francisco, CA | 15,896 PLHIV | Registry monitoring | [illegible] |

[illegible]

*[Summary of studies examining syndemic production of HIV in trans populations, 2012-15]*

**Conclusions:** Trans feminine individuals continue to bear one of the highest burdens of HIV in the world. Data on trans masculine individuals are limited, but suggest potential risk for individuals with non-trans male partners. Addressing HIV-related syndemics and transgender-specific challenges will be critical to ensuring engagement and retention in HIV care and treatment by this very vulnerable population.

### TUPEC199

### High prevalence of HIV and syphilis among transgender women in Vietnam

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**Background:** Transgender women (TGW) have high risk for HIV infection, exacerbated by stigma, discrimination, and gender-based violence. This is the first bio-behavioral survey of TGW in Vietnam.
**Methods:** A cross-sectional study was performed in Ho Chi Minh City (HCMC) during March-April, 2015. Inclusion criteria were > 18 years old, biological male at birth, self-identified as transgender, and able to give informed consent. TGW were recruited by chain-referral methods using existing social networks. Participants completed a standardized questionnaire and had blood drawn for HIV and syphilis serology.
**Results:** A total of 205 TGW, median aged 25 (range 18-64) years, completed the survey. Hormone use was reported by 67%, of which 88% had used injectable hormones and only 2% were prescribed by a physician. High-risk sexual behavior was common: 35% reported sex work in the previous month, 12% purchased sex form male sex workers, 31% reported inconsistent condom use with clients and casual partners, and 14% used amphetamines in the previous month. Overall, 99.5% had ever had sex with male partners and 3.4% had sex with female partners. Prevalence of HIV was 18% (37/205) and syphilis was 17.6% (36/205). Only one TGW with HIV infection was previously aware of her status. On multivariable analysis, the two factors significantly associated with HIV infection were buying sex from male sex workers (aOR 4.0, 95% CI 1.4-11.4) and amphetamine use in the previous month (aOR 2.9, 95% CI 1.3-6.6).
**Conclusions:** TGW in HCMC engage in high-risk behavior and have a high prevalence of HIV infection. No HIV prevention programs in Vietnam specifically target TGW. Existing programs that serve the population of men who have sex with men may fail to engage with TGW. Targeted interventions are needed to provide HIV prevention education, HIV counseling and testing, and screening and treatment for sexually transmitted infections to Vietnamese TGW.

## Epidemiology of HIV in other populations

### TUPEC200

### People with disabilities are at increased risk of HIV infection and adverse sexual health outcomes: results from the HandiVIH study (ANRS 12302)

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**Background:** Although people with disabilities (PWD) living in resource-limited countries seem to be particularly vulnerable to HIV infection, they have often been left behind in the HIV response probably due to lack of reliable epidemiological data measuring their vulnerability. The HandiVIH study aimed to document the vulnerability of PWD to HIV, and to compare their situation to that of people without disabilities in Yaounde (Cameroon).
**Methods:** This cross-sectional survey conducted in 2015 used a two-phase random sampling to recruit adults with disabilities and controls matched for age, sex and residential location from the general population using the Washington Group Disability questionnaire. An HIV test and a life-course history interview were proposed to participants. The analysis uses conditional (fixed-effects) and unconditional logistic regressions.
**Results:** A total of 807 PWD and 807 controls (52% of women) were included. Among PWD, 23%, 12%, 43% and 21% had visual, hearing, physical and intellectual and/or mental limitations respectively. The proportion of subjects sexually active

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was similar among those with physical or visual impairments and their controls (91% vs 92%, p=0.8). However, it was lower among those with intellectual and/or mental impairments (52% vs 87% in controls, p< 0.001). The level of knowledge on HIV was lower among PWD (p< 0.001). However, this difference was no more significant after adjusting for education (p=0.1).
HIV test results were available for 90% of the subjects. The overall crude HIV prevalence was 3.9%, 95%CI:2.9-5.3 among controls and 6.5%, 95%CI: 4.7-8.3 among PWD (OR=1.67, p=0.05).
Compared to controls, women with disabilities were more frequently involved in sexual relationships in exchange for money (2.46% vs 0.72%, p=0.05). Besides, PWD - especially women - were at increased risk of sexual violence (OR=1.5, p=0.02). The proportion of condom use with casual partner was lower among PWD compared to controls (62% vs 78%, p=0.05) and was associated to the lower education level (p=0.004) and higher rate of sexual violence observed in this group (p=0.004).
**Conclusions:** This study shows that PWD are at increased risk of HIV and of other negative sexual outcomes including sexual violence. Effective preventive interventions are urgent to protect one of the world's largest minorities.

## TUPEC201

### ADHERENCE AND VIRAL FAILURE IN ASYMPTOMATIC PATIENTS STARTING ART: THE SWISS HIV COHORT STUDY

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**Background:** In response to the TEMPRANO and START trials, the WHO recommended in November 2015 that HIV-infected individuals should begin ART regardless of CD4 cell count. A higher share of individuals initiating ART will be asymptomatic with a preserved immune system. We aimed to explore adherence patterns and clinical outcomes in patients starting ART according to symptom status.
**Methods:** All ART-naïve patients aged ≥18 years, not pregnant, starting ART between January 2003 and July 2014, followed for ≥1 year and completing ≥1 adherence questionnaire were included. Asymptomatic was defined as CDC-stage A at the time of starting ART. Self-reported missed doses in the last 4 weeks were recorded at each clinical visit. Viral failure was defined as RNA viral load>500 copies/ml after > 24 weeks on ART. Cox proportional hazard models were used to assess the association between symptom status and viral rebound.
**Results:** 3457 patients were included. Overall, 2458 (71.1%) individuals were asymptomatic when starting ART with the percentage increasing over time from 49% in 2003 to 85% in 2014 (median CD4 cell count 228 (IQR: 151-359) and 355 (IQR: 215-514) cells/μl, respectively). Individuals starting ART when asymptomatic were more often male, younger, better educated and reporting having unsafe sex. Adherence to ART was significantly better in asymptomatic compared to symptomatic patients with missed doses reported in 48% and 55% of patients, respectively (p< 0.001). Overall, 581 individuals (17%) experienced viral rebound a median of 1.6 years (IQR: 0.8-3) after starting ART and 35% of failures occurred in the first year on ART. The rate of viral rebound was significantly lower in asymptomatic patients (14.8% versus 22.4%, p< 0.001). In survival models adjusting for socio-demographic and treatment variables, starting ART when asymptomatic was an independent predictor of a reduced hazard for viral failure (hazard ratio: 0.83, 95% CI: 0.69-1.00).
**Conclusions:** In the era prior to 'test and treat', choosing to start ART when asymptomatic had a positive effect and was associated with better adherence and lower rates of viral failure. However, under current guidelines where asymptomatic patients are recommended to start ART, the question of readiness may become more important.

# EPIDEMIOLOGY OF TB AND HIV CO-INFECTION

## TUPEC202

### HIV IN ACUTE CARE: A REVIEW OF THE BURDEN OF HIV- ASSOCIATED PRESENTATIONS TO AN EMERGENCY DEPARTMENT

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**Background:** Human immunodeficiency virus (HIV) is a leading cause of morbidity and mortality in sub-Saharan Africa. Our objective was to determine the burden of HIV disease and its co-infection on a district-level Emergency Department (ED) in KwaZulu-Natal.
**Methods:** A retrospective study over a 3 month period identifying patients presenting with HIV and its complications was conducted. Patient demographics, disease presentation, severity of illness, investigations performed and disposition of patients were assessed.
**Results:** 428 of the 861 (49.7%) medical patients presenting to the ED were HIV positive. 37% of patients were unaware their HIV status. In the HIV-positive cohort, the median age of presentation was 37 years, with almost equal male-to-female distribution. 57.5% were referred and 68% of patients presented after hours. More than 80% of patients were triaged as high acuity cases. The predominant systems involved were the respiratory and central nervous systems, with pulmonary tuberculosis, community-acquired pneumonia and meningitis being the most common diagnoses. X-rays and laboratory testing were the most common investigations requested. Lumbar punctures, pleural paracentesis and pericardiocentesis were common emergency procedures performed. The majority (89.3%) of patients were admitted to the medical ward. Of the HIV-positive patients, 33% were on anti-retroviral therapy. ED mortality was 1.9%.
**Conclusions:** This study highlights the significant impact HIV places on the resources of an ED. Strengthening of the primary health care system with a more aggressive approach to HIV testing and ARV initiation may contribute positively to reducing the burden of HIV emergencies and comorbidities presenting to the ED.

## TUPEC203

### THE DIFFERENTIAL IMPACT OF HIV AND ART ON GENDER- AND AGE-SPECIFIC TUBERCULOSIS RATES

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**Background:** Tuberculosis (TB) rates are higher among men than women, which is thought to be due to social and/or biological differences. Cape Town has a very high burden of TB and HIV. We aimed to investigate the changes in gender and age-specific TB rates, HIV-associated risk of TB and the population attributable risk fraction (PAF) of HIV over time in Cape Town since the onset of the HIV epidemic and the roll-out of antiretroviral therapy (ART).
**Methods:** We used annual TB notifications from the Medical Officer of Health reports (1993) and the metropolitan electronic TB register (2003-2014), and mid-year population estimates from Statistics South Africa. HIV prevalence estimates were sourced from the Actuarial Society of South Africa Western Cape AIDS model 2008. TB notification rates were calculated per 100,000 population and stratified by gender, 10-year age group and HIV status. Annual rate ratios (RR) of TB associated with HIV infection and the annual PAF were calculated by gender.
**Results:** In 1993, TB rates were higher among men than women (146/100,000 versus 247/100,000). By 2009, TB rates increased 5.2-fold (to 758/100,000) among women and 3.7-fold (to 922/100,000) among men. Thereafter TB rates declined by 26% and 16%, respectively. In the HIV-era TB rates peaked at a younger age in women than in men (25-34 versus 35-44 years). The RR of TB associated with HIV infection was 30% higher in women than in men in 2003 (28 versus 17), but decreased to equalisation in 2013 (15 versus 16). More TB disease was attributable to HIV among women than men (53% versus 35% in 2003, 49% versus 37% in 2014).
**Conclusions:** The HIV epidemic led to a greater increase in TB rates among women than men, in keeping with the higher HIV burden among women. Nevertheless, TB rates among men remained higher. HIV infection was associated with higher rates

of TB in women than men early in the epidemic suggesting HIV removed the protective effect of gender. The recent declining difference is likely caused by differential access to ART. Despite this encouraging trend, TB control programmes need to focus on TB prevention and treatment among young women.

## Epidemiology of sexually transmitted infections (STI) and HIV co-infection

### TUPEC204

#### Sexually transmitted infections (STI) and HIV co-infection among youth living in the slums of Kampala, Uganda

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**Background:** The prevalence of co-infection with sexually transmitted infections (STI's) and HIV is high worldwide, particularly in sub-Saharan Africa. Certain STI's increase the risk of acquisition of HIV. However, little is known about HIV/STI co-infection among high-risk groups in sub-Saharan Africa, particularly among vulnerable youth. The objective of this study was to assess the risk and protective factors associated with HIV/STI co-infection among youth living in the slums of Kampala, Uganda.
**Methods:** Analyses are based on cross-sectional survey data collected in March 2014. Participants comprised a convenience sample (N=1,134) of urban service-seeking youth living on the streets or in the slums, 12-18 years of age who were participating in a Uganda Youth Development Link drop-in center (56.1% female and 43.9% male). Multinomial logistic regression was used to determine factors (gender, age, education, condom use, alcohol use, and sex work) associated with reporting HIV/STI co-infection, HIV only, STI only, and neither HIV/STI. IRB approvals were obtained from the Georgia State University and the Uganda National Council for Science and Technology.
**Results:** Among youth who had ever had sex, the self-reported HIV prevalence was 13.2%, and the prevalence of HIV/STI co-infection was 9.9%. STI only prevalence was 42.8%. Among youth who reported HIV/STI co-infection, the majority were female (74.1%) and 18 years old (51.7%). HIV/STI co-infection was associated with being female (AOR 2.08; 95% CI: 1.04, 4.15), alcohol use in the previous 12 months (AOR 2.83; 95% CI: 1.43, 5.59), and engaging in sex work (AOR: 2.78; 95% CI: 1.19, 6.49) compared to the absence of HIV/STI. Compared to HIV infection alone, HIV/STI co-infection was associated with being female (AOR: 5.00; 95% CI: 1.62, 15.36). Alcohol use in the past 12 months was also associated with having an STI only (AOR 1.73; 95% CI: 1.17, 2.56) compared to the absence of HIV/STI.
**Conclusions:** Youth living in the slums of Kampala, Uganda have a high prevalence of HIV/STD co-infection. HIV/STD co-infection was also associated with modifiable risk factors that could be addressed to reduce further health complications of their existing health conditions.

### TUPEC205

#### HSV-1 and HSV-2 are associated with HIV seropositive status among young gay, bisexual, and other men who have sex with men: preliminary findings from the P18 cohort

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**Background:** There is a strong and consistent relationship between HIV and herpes simplex virus (HSV)-2. Previous analyses from the P18 cohort document racial disparities in HIV incidence for black and multirace/other race YMSM. Disparities in HIV burden may be attributable, in part, to HSV-2. Less understood, however, is the relationship between HSV-1 and HIV. This relationship is of particular interest given the higher prevalence of HSV-1 vs. HSV-2 as well as virological and pathological similarities HSV-1 and HSV-2.
**Methods:** P18 is an ongoing prospective cohort study of young gay, bisexual, and other men who have sex with men (YMSM) in New York City. At each semi-annual visit, men complete risk assessment surveys and undergo HIV testing. Beginning in October 2015, serologic testing for HSV-1 and HSV-2 was added to the 54-month visit. To date, 108 men have complete data on HSV and HIV.
**Results:** The mean age of the sample is 23.6 years (range 22-25). Most were male-(91.4%) and gay-identified (83.7%); 44.3% were Hispanic/Latino, 28.3% were black, 8.5% were white, 7.6% were Asian/Pacific Islander, and 11.3% other race. HIV prevalence was 12.7%. Prevalence of any HSV was 65.7%; 41.7% had HSV-1 only, 12.0% had HSV-2 only, and 12.0% were co-infected with HSV-1 and HSV-2. All 14 HIV+ men were co-infected with at least one HSV-type; 35.7% had HSV-1 only, 21.4% had HSV-2 only, and 42.9% were co-infected with HSV-1 and HSV-2. In a multivariate logistic regression model, both HSV-1 and HSV-2 were associated with increased odds for HIV (HSV-1 AOR=5.1, 95% CI=1.2, 22.1 and HSV-2 AOR=10.3, 95% CI=2.8, 37.7). Race/ethnicity was not associated with HSV-2 infection alone, but blacks were significantly more likely to have HSV-1 (OR=3.1, 95% CI=1.1, 8.7) and HSV-1 or HSV-2 as compared to Hispanics
(OR=4.0, 95% CI=1.2, 13.5).
**Conclusions:** These preliminary cross-sectional data suggest that both HSV-1 and HSV-2 are associated with HIV infection among YMSM and that there may be racial disparities in HSV prevalence. HSV may lead to HIV especially since it often goes undiagnosed. Prospective studies are needed to determine whether both HSV-1 and HSV-2 increase risk for HIV acquisition.

### TUPEC206

#### Explaining the heterogeneity in the prevalence of gonorrhea across the Middle East and North Africa: meta-regression analyses

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**Background:** A recent systematic review of the epidemiology of Neisseria gonorrhoeae (NG) in the Middle East and North Africa (MENA) region found substantial heterogeneity across studies. Our aim was to identify sources of heterogeneity in NG prevalence and quantify their contribution to the increased odds of infection across MENA. Gonorrhea can be valuable to consider in the context of HIV as it can increase risk of HIV transmission and can offer some indicator of populations at greater risk for HIV.
**Methods:** We assessed the individual contributions of five potential sources of heterogeneity—the population's risk of exposure to NG, type of assay, sample size, publication date, country, and sex—to higher odds of NG. Factors identified as significant in the univariable analysis (p-value< 0.1) were incorporated in a random effects multivariable meta-regression model where their respective contributions to the increased odds of NG were quantified using adjusted odds ratios (aOR) and 95% confidence intervals (95% CI).
**Results:** Our univariable meta-regression analyses showed significant associations between increased odds of NG and all potential sources of heterogeneity except for publication date. Our multivariable meta-regression model indicated that population's risk of exposure to NG and sample size were significantly associated with NG prevalence: high risk populations (aOR: 6.71, 95% CI: 2.94-15.33), infertility clinic attendees (aOR: 6.21, 95% CI: 1.91-20.16), symptomatic males (aOR: 62.24, 95% CI: 19.65-197.15), and symptomatic females (aOR: 1.96, 95% CI: 1.07-3.62) had higher odds of NG compared to the general population. Studies with less than 200 participants had higher odds of NG than those with a larger sample size (aOR: 1.77, 95% CI: 1.07-2.92). The amount of heterogeneity explained by the multivariable meta-regression model as indicated by the adjusted $R^2$ was 63.58%.
**Conclusions:** Our study identified population and study-related factors associated with NG prevalence in MENA. These findings highlight the need for prioritizing programs for high risk populations, and for an in-depth assessment of a possible link between NG infection and infertility. Further research aimed at characterizing better NG epidemiology and disease burden in MENA, and its link to HIV is warranted.

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## TUPEC207

### THE SPECTRUM MODEL ESTIMATING NATIONAL SYPHILIS AND GONORRHEA PREVALENCE & TRENDS: RESULTS FOR 10 LOW- AND MIDDLE-INCOME COUNTRIES, AND IMPLICATIONS FOR STRENGTHENING STI SURVEILLANCE

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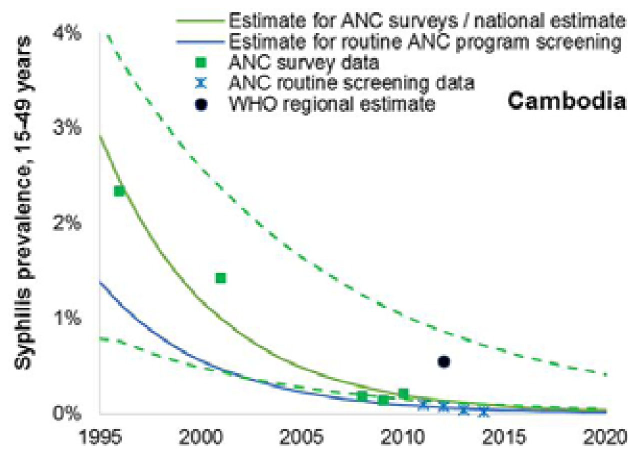
**Background:** Estimates of population-level burdens and trends in Sexually Transmitted Infections (STIs) are important to underpin STI control strategies, programs and resource mobilization, and could inform HIV/AIDS surveillance. We developed the first-ever standardized method estimating trends in gonorrhea and active syphilis, anchored on countries' annual indicator reporting through the Global AIDS Response Progress Reporting System.

**Methods:** Gonorrhea prevalence levels and trends were fitted on general adult population prevalence surveys (from the country, neighboring countries and regional estimates; as a moving average, weighting country-owned data heaviest), with trends informed additionally by laboratory-diagnosed gonorrhea and/or urethral discharge case reports where judged of reasonably stable completeness. Syphilis prevalence trends were fitted through logistic regression for pregnant women attending antenatal clinics (two-yearly sentinel surveys, and increasingly routine programmatic screening), weighting each data point by its national coverage and representativeness. Prevalences were adjusted for diagnostic test performance, missing high-risk populations, urban/rural and male/female differences, using WHO's assumptions from recent global and regional-level estimations. Uncertainty intervals were obtained by bootstrap resampling.

**Results:** Across Namibia, Zimbabwe, Morocco, Cambodia, Sri Lanka, Indonesia, Cuba, Bolivia, Peru and Mongolia, estimated national gonorrhea prevalences in 15-49 years ranged from 0.49%-7.5% in 2000 and 0.71-6.9% in 2015. Syphilis prevalences were 0.03-6.1% in 2000, and 0.08-4.3% in 2015. Over 2000-2015 estimated syphilis prevalence had declined in 8 countries (by on average 45%), and increased in two. For gonorrhea, time trends were less certain.




*[Syphilis prevalence estimation Cambodia_AvenirHealth pilot_03Feb2016]*

**Conclusions:** Country-level syphilis trends and burdens can be estimated based on surveillance and program data, but for gonorrhea rely on non-routine prevalence surveys. Provisional estimates could be improved by national HIV/STI strategic information experts validating and updating input data. The estimation method will be integrated in the Spectrum suite of health estimation and strategic planning projection tools, informing existing Spectrum modules estimating HIV/AIDS trends and program impacts.

## TUPEC208

### HIGH PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS IN A COHORT OF SOUTH AFRICAN MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN FROM PORT ELIZABETH AND CAPE TOWN, SOUTH AFRICA

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**Background:** Though there is little research describing sexually transmitted infection (STI) prevalence among men who have sex with men (MSM) and transgender women (transwomen) in Africa, previous models suggest that an effective comprehensive HIV prevention strategy for this group requires diagnosing and treating STIs.

**Methods:** The Sibanye Health Project is a one-year prospective study of combination HIV prevention among MSM/transwomen from Port Elizabeth and Cape Town, South Africa. The study conducts baseline screening for prevalent HIV infection, syphilis, gonorrhea and chlamydia. We describe overall STI prevalence by organism and site of infection (urethral/rectal) and stratified by age, city, and HIV status.

**Results:** From February to September 2015, we enrolled 292 MSM and transwomen, of whom 125 (43%) were living with HIV infection. At baseline, 124 participants (42%) had any type of STI, 34 (12%) had a urethral STI and 60 (31%) had a rectal STI (see Table). Rectal STIs were found in 57% of participants 18-19 years and significantly decreased with older age. Compared to HIV-negative persons, those living with HIV infection were more likely to have had syphilis but were less likely to have had urethral Chlamydia. Of those with a biologically-confirmed STI, 8% (10/124) had a symptomatic STI diagnosis during the clinical assessment.

*[Sexually Transmitted Infections among Men Who have Sex with Men and Transwomen, Sibanye Health Project]*

**Conclusions:** Biologically-confirmed STI prevalence is high in this cohort of MSM/transwomen from South Africa, particularly rectal STIs among the youngest groups. The associations between STIs and HIV status may be due to differences in underlying sexual risk behaviors or previous screening/treatment. A comprehensive HIV prevention strategy for MSM/transwomen should include a full set of STI screening - including rectal - and treatment when indicated. These data further suggest that reliance on syndromic surveillance for STI would have missed more than 90% of these infections, highlighting the need for presumptive testing or even presumptive treatment for those at highest risk.

## TUPEC209

### HIGH RATES OF SEXUALLY TRANSMITTED INFECTIONS: RESULTS FROM THE POPULATION-BASED HOUSEHOLD SURVEY IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** South Africa has a high burden of HIV and sexually transmitted infections (STI), with the province of KwaZulu-Natal (KZN) particularly affected by both epidemics. STIs have been associated with adverse reproductive health outcomes and contribute to an increased risk of HIV acquisition and transmission. Whilst STI data are available from select populations, there is little information on population level prevalence.

We assessed the prevalence of STIs among participants enrolled in the HIV Incidence Provincial Surveillance System (HIPSS), a population based-household survey conducted in the Vulindlela and Greater Edendale sub-districts of uMgungundlovu District, KwaZulu-Natal, South Africa.
**Methods:** In addition to completing a questionnaire, participants aged 15-49 years provided clinical specimens including peripheral blood, first-pass urine (males), and self-collected vulvo-vaginal swab samples (females). STIs included *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG) (by multiplex PCR of swabs or urine). Sera were tested for evidence of syphilis infection using non-treponemal rapid plasma reagin (RPR) assay and for herpes simplex virus type 2 (HSV-2) antibodies by enzyme-linked immunosorbent assay.
**Results:** More than one-third of the 9812 participants were under the age of 25, and two-thirds were females. Prevalence of all STIs was higher in women than men with the exception of *M. genitalium*, and all STIs were more common in HIV-infected individuals apart from *C. trachomatis*. HSV-2 antibodies was prevalent in 63% of participants (72% of females and 46% of males, p< 0.001). Syphilis antibodies were prevalent in 2.9% (3.1% in females and 2.5% in males). *N. gonorrhoeae, C. trachomatis*, and *M. genitalium* were present in 3.0%, 7.6%, and 5.4% of participants, respectively. Each reached peak prevalence in women aged 20-24 (6.2%, 15.1%, and 8.5% for NG, CT, and MG, respectively), whereas for men this peak prevalence occurred at age 25-29 (and 30-34 for MG). *T. vaginalis* was detected in 11.7% of participants, with a prevalence of 15.9% in females and 4.3% in males.
**Conclusions:** STIs are common in this population-based survey of a high HIV burden region. Strategies to better diagnose and manage these infections are urgently needed.

## TUPEC210

### Anogenital HPV infection and associated disease in HIV-positive men in Johannesburg, South Africa

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**Background:** Persistent high-risk human papillomavirus (HR-HPV) infection is associated with anogenital and oropharyngeal cancers in men, particularly in men living with HIV/AIDS (MLWHA). We report on baseline results of a prospective study in MLWHA to determine the influence of HIV on the burden and natural history anogenital HPV infection and disease.
**Methods:** We enrolled 304 sexually active consenting MLHA ≥18 years. Socio-behavioral data was collected by questionnaire. Trained clinicians examined for anogenital warts (AGWs), collected blood (CD4+ counts and HIV viral load [VL]), genital (n=283), anal (n=227) swabs for HPV DNA (Roche Linear Array) and anal smears. Factors associated with anogenital disease were assessed by logistic regression.
**Results:** Participants median age was 38 (IQR 10) years. Most (65%) participants were on ART with a median duration of 33 (IQR 42) months, and 20% of those on ART for > 12 months had undetectable VL (i.e. < 40 copies/ml). Among those with anogenital swab results, 79% had HPV detectable, 52% had HR-HPV and 64% had LR-HPV. The prevalence of AGWs was 12%. Infection with HPV 6 [aOR=3.79 (1.4-9.9), ≥1 LR types [aOR=42.67 (14.06-129.48)] and being ≤ 6 months on ART [aOR=6.56 (1.66-22.97)] were associated with AGWs. VL [aOR=0.93 (0.93-9.25)] at baseline was not associated with AGWs. Among those with anal swab results, 39% had HPV detectable, 14% with >1 infection; 24% had HR-HPV while 25% had LR-HPV. HPV 6 (8%) was the most commonly detected type; 30% had HPV detected in both anal canal and genitalia with 21% having type concordance. 44% of those with HPV detected had an abnormal anal smear (10% ASCUS and 34% LSIL). 262 anal smears were analysed. 8% were of poor quality, 47% were normal, whilst 18% and 27% were ASCUS and LSIL respectively. There were no HSILs. Infection with ≥ 1 HR types [aOR=1.71 (1.04-2.81)] was associated with abnormal cytology. VL [aOR=0.52 (0.12-2.5)] at baseline was not associated with abnormal cytology.
**Conclusions:** AGWs and cytological abnormalities were prevalent among MLWHA. Infection with ≥ 1 type was associated with disease. Further research is needed to understand incidence, persistence and progression of infection and disease to inform future prevention strategies.

## TUPEC211

### Associations between HPV and HIV among young, gay, bisexual and other men who have sex with men: preliminary findings from the P18 cohort study

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**Background:** A growing body of literature suggests a relationship between human papillomavirus (HPV) infection and HIV. However, few studies have examined the relationship between site-specific and type-specific HPV infections and HIV among young men who have sex with men (YMSM). Given the high infectivity of HPV as well as its association with anal, penile and oropharyngeal cancer, more information on the relationship between HPV and HIV among YMSM is especially warranted.
**Methods:** Participants were enrolled in the P18 study, a prospective cohort study of health states among young gay, bisexual and other men who have sex with men. Beginning in October 2015, HPV DNA testing via nucleic acid hybridization assay was initiated at the 54-month visit; to date, n=108 YMSM have provided samples for oral HPV and n=99 for anal HPV testing.
**Results:** In this sample of YMSM (mean age=24 years old; 48.2% Hispanic/Latino, 32.4% Black, 9.3% White, 10.2% Asian/Pacific Islander or other race) HIV prevalence was 13.0%. For anal HPV, overall prevalence was 38.2%; by type, prevalence of high-risk strains was 24.5% and 17.3% for low-risk strains. For oral HPV, overall prevalence was 6.4%; by type, prevalence of high-risk strains was 3.6% and 1.8% for low-risk strains. Additionally, 11.8% of this sample tested positive for quadrivalent vaccine preventable strains (6,11,16,18) while 21.6% tested positive for the nonavalent vaccine preventable strains (6,11,16,18,31,33,45,52,58). Finally, the presence of anal HPV (any type) was associated with an HIV seropositive status (OR=5.63, 95% CI=1.44, 21.97; p=0.013) as was the presence of oral HPV (OR=12.13, 95% CI=2.37, 62.12; p=0.003).
**Conclusions:** Our findings provide evidence of high HPV prevalence in YMSM by site (anal/oral) and type (low/high risk strains) as well as for vaccine preventable strains. First, as anal, oral, and oropharyngeal cancers are significant sequellae of HPV infection, further investigation to examine vaccine uptake in YMSM is warranted. Second, the strong associations between HIV and both anal and oral HPV in this new generation of YMSM warrant further investigation to understand how site-specific HPV is associated with increased risk for HIV as well as to understand how HPV persistent is associated with HIV infection.

# Epidemiology of viral hepatitis and HIV co-infection

## TUPEC212

### Development and validation of a risk score to assist testing for acute HCV infection in HIV-infected MSM

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**Background:** Current guidelines recommend annual hepatitis C virus (HCV) testing of HIV-infected men who have sex with men (MSM) with ongoing risk behavior, without specifying the type of risk behavior. To improve early detection of HCV, development of clear-cut recommendations is relevant. Therefore, we developed and validated a risk score to assist HCV testing in HIV-infected MSM.
**Methods:** The risk score was developed using data from a Dutch case-control study of HIV-infected MSM with and without an acute HCV infection (MOSAIC study). Self-administered questionnaires on recent sexual behavior were collected and risk factors for HCV were determined using multivariable logistic regression. For each patient an individual risk score was calculated by summing the ß-coefficients of all significant risk factors reported by that patient. Using ROC curves, an optimal cut-off for the risk score to predict acute HCV infection was determined, defined as the

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highest sensitivity in combination with the highest specificity. The risk score was validated among HIV-infected MSM from case-control studies in Belgium and the UK and from cross-sectional surveys at a Dutch STI-clinic.

**Results:** Receptive unprotected anal intercourse (ß 1.1), sharing of sex toys (ß 1.2), unprotected fisting (ß 0.9), injecting drug use (ß 1.4), sharing straws when snorting drugs (ß 1.0) and ulcerative STI (ß 1.4) were included in the risk score. The optimal cut-off was ≥ 2.0, at which 43% of the study group would be advised to be tested for HCV, with a sensitivity of 78% and a specificity of 79%. In the validation studies sensitivity ranged from 73% to 100% and specificity from 56% to 66% (table).

| | Development study | Validation studies | | |
|---|---|---|---|---|
| | MOSAIC (N = 213) | Belgium (N = 142) | UK (N = 190) | STI-clinic Amsterdam (N = 284) |
| **HCV positive (n)** | 82 | 52 | 60 | 10 |
| **HCV negative (n)** | 131 | 90 | 130 | 274 |
| **Sensitivity** | 78% | 73% | 93% | 100% |
| **Specificity** | 79% | 66% | 56% | 61% |
| **Proportion with a risk score of ≥ 2.0 (% to be tested)** | 43% | 49% | 59% | 42% |
| **Area under the ROC curve (95% CI)** | 0.82 (0.76 - 0.88) | 0.74 (0.66 - 0.83) | 0.82 (0.76 - 0.88) | 0.92 (0.85 - 0.98) |

*[Table. Performance of the HCV risk score among HIV-infected MSM in the development and validation studies]*

**Conclusions:** Our risk score was successful in selecting HIV-infected MSM at risk for acute HCV infection. It could be a promising tool to improve HCV testing strategies for HIV-infected MSM in various settings such as STI-clinics, lowering the number of MSM needed to be tested for HCV and hence test costs.

## EPIDEMIOLOGY OF OTHER DISEASES AND HIV CO-INFECTION

### TUPEC213

### ANXIETY AND MOOD DISORDERS AND HOSPITALISATION IN HIV-INFECTED AND -UNINFECTED GAY AND BISEXUAL MEN

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**Background:** Prevalence of anxiety and mood disorders (AMDs) in HIV-infected individuals have varied widely due to the variety of measurements used for assessment and differences in risk factor profiles between different populations. We aimed to address the question of whether HIV-infection was an independent risk factor for hospitalisation for AMDs in gay and bisexual men (GBM).

**Methods:** HIV-infected (n=557) and -uninfected (n=1325) GBM recruited in Sydney, Australia were probabilistically linked to their hospital admissions and death notifications (2000-2012). Random-effects Poisson models were used to assess risk factors for hospitalisation. Cox regression methods were used to assess risk factors for mortality.

**Results:** We observed 300 hospitalisations for AMDs in 15.3% of HIV-infected and 181 in 5.4% of -uninfected participants. Being infected with HIV was associated with an increased risk of hospitalisation for AMDs in GBM [IRR 2.49 (95%CI 1.47-4.21)]. Other factors which conferred an increased risk included being unemployed [2.41 (1.41-4.12)], identifying as bisexual or 'other' compared with gay, queer or homosexual [5.24 (2.34-11.74)], having a religious belief [2.21 (1.40-3.49)], having previously sought counselling for mental health [4.25 (2.96-8.27)], and being a daily smoker [1.94 (1.22-3.08)]. In the HIV-infected cohort, previous hospitalisation for HIV-related dementia was also associated with hospitalisation for AMDs [IRR 3.08 (95%CI 1.78-5.30)], as was a more recent HIV-diagnosis [linear trend p-value=0.025] and a CD4 T-cell count above 350/mm$^3$ [CD4 cell count 351-500: IRR 0.20 (95%CI 0.07-0.56); 501-750: 0.33 (0.13-0.85); over 750: 0.23 (0.08-0.63)]. Being hospitalised for an AMD was associated with increased risk of mortality [HR 5.48 (95%CI 1.88-8.05)]; this association did not differ by HIV status. Alcohol use was listed as the primary or secondary cause of death for 42.1% HIV-infected and 50.0% -uninfected participants hospitalised for AMDs.

**Conclusions:** Our findings support a higher prevalence of AMDs in HIV-infected compared to -uninfected GBM. There is a need to provide more effective strategies to identify and treat AMDs in HIV-infected GBM and to better understand causes of increased risk in this population at different stages of infection. Our research highlights the importance of further examination of the effects of substance use, neurocognitive decline and AMDs on the health of HIV-infected individuals.

### TUPEC214

### MORTALITY RISK OF NON-AIDS NON-HODGKIN'S LYMPHOMA AMONG HIV-INFECTED HISPANICS ADULTS IN THE COMBINATION ANTIRETROVIRAL THERAPY ERA

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**Background:** HIV associated immune dysfunction is related to an increased risk for the development of malignant disorders, including the non AIDS defining non-Hodgkin's Lymphomas (NAD-NHL). Multiple spectrum antiretroviral therapy (ART) and its use in combination (cART) have resulted in a dramatic reduction in HIV viremia with improvement in the immunological function and an increment in overall survival. The presence of malignant transformation in HIV infected patients often severely curtails their survival and results in significant morbidity. Our study evaluates the NAD-NHL mortality risks in a Hispanic cohort of HIV infected adults.

**Methods:** The database of HIV infected adults (>20 years) followed in the Retrovirus Research Center at Bayamon, Puerto Rico was matched with the Puerto Rico Central Cancer and Mortality Registries databases. Six and 12 months mortality after NAD-NHL diagnosis were evaluated. Cox proportional hazard analyses including age, sex, smoking, injecting drug use (IDU), CD4 cell count < 200, and cART prescription were used to evaluate the mortality risks.

**Results:** Of the 3,433 HIV adults followed between Jan 1996 and Dec 2013, 31 (0.9%) had a validated NAD-NHL diagnosis. Of them, 67.7% were male, 58.1% smoked, 35.5% were IDUs, 9.7% had one previous AIDS defining condition, 71.0% had a CD4 cells count < 200 and 77.4% received cART previously. The mean age at NAD-NHL diagnosis was 45.6 years and the mean HIV disease duration was of 5.4 years. The 6 and 12 months mortality were 64.5% and 74.2% respectively. Higher 6 and 12 months mortality risk were significantly associated with CD4 cell counts < 200 (HR=4.5; 95% CI: 1.2-16.9 and HR=5.1; 95% CI: 1.25-17.3, respectively) and IDU (HR=3.6; 95% CI: 1.1-12.1 and HR=4.1; 95% CI: 1.2-14.5, respectively). The use of cART was not significantly associated with the mortality risk variation.

**Conclusions:** High NAD-NHL mortality risks in the cART era is suggestive of the role of oncogenic risk factors, inadequate cancer prevention, and inadequate cART adherence that could contribute and accelerate the malignant transformation risk among these vulnerable individuals. Adequate and opportune HIV and NAD-NHL diagnosis and treatment are important to reduce this mortality trend, and are highly recommended.

### TUPEC215

### NON-COMMUNICABLE CHRONIC DISEASES IN HIV-INFECTED PATIENTS IN MALAWI AND THE IMPACT OF ANTIRETROVIRAL THERAPY

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**Background:** Background The burden of non-communicable chronic diseases (NCDs) is increasing in sub-Saharan Africa, and is becoming significant cause of morbidity and mortality. More data are needed in the HIV population to inform evidence-based policies addressing these conditions. The objective of this study was to assess the prevalence of hypertension, raised blood glucose, obesity, and renal dysfunction in a population of HIV-positive patients naïve to antiretrovirals and to assess the impact of 6 years of ART on these parameters.

**Methods:** Methods A retrospective analysis was performed of routinely collected data of HIV-positive patients starting antiretroviral treatment in Malawi within the DREAM Program from January 2006 to May 2015. Measurements, including blood pressure, random blood glucose, body mass index (BMI) and estimated Glomerular Filtration Rate (eGFR), were obtained at baseline (before treatment start) and every year for up to 6 years of antiretroviral therapy (ART). Multiple logistic regression models were used to identify factors associated with NCDs and the Cox model was used to assess predictors of survival in the cohort.

**Results:** Results A total of 6297 patients, mean age 37 years, females 57.4%, were studied. At baseline the prevalence of hypertension was 10% (grade II hypertension was 5.2%), diabetes was present in 0.3%, obesity in 1.8%, eGFR < 60 ml/min in 16.9% of the subjects. Increasing age, male sex and higher BMI were correlated to both hypertension and diabetes at baseline. After 6 years of ART the prevalence of hypertension was unchanged, diabetes and obesity slightly increased (1.5% and 3.6% respectively) and the proportion of patients with renal dysfunction strongly decreased (8.9%). Male sex (P=0.017), increasing age (P< 0.001) low baseline BMI (P< 0.001), low baseline hemoglobin (P< 0.001), the presence of diabetes at baseline (P=0.001) were all independent predictors of mortality in the cohort.
**Conclusions:** Conclusions Diabetes and obesity were rare in this HIV-infected population, the prevalence of hypertension was moderate while decreased renal function was common. Antiretroviral therapy had a modest impact on these conditions, with the exception of renal function which significantly improved. These findings are re-assuring in a perspective of general progressive expansion of ART to all HIV-infected people.

## MOLECULAR EPIDEMIOLOGY

### TUPEC216

#### CLINICAL CHARACTERISTICS, TRANSMITTED DRUG RESISTANCE MUTATIONS (TDRM), SUBTYPES AND TREATMENT INITIATION AMONG NEWLY IDENTIFIED INFECTIONS IN SÃO PAULO REFERENCE CENTER, BRAZIL

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**Background:** Acute and early HIV is a pivotal phase during HIV infection, but in many situations it is still undiagnosed, limiting linkage to care, and antiretroviral therapy initiation, that could both benefit patient and help controlling the epidemic. Our objective was to evaluate clinical and laboratory characteristics of an active effort to recruit newly diagnosed patients in the São Paulo Reference Center.
**Methods:** Consecutive patients with a recent positive HIV test were recruited. At entry, clinical exam, CD4 (flow cytometry, BD), viral load (RT-PCR-Abbott) and HIV genotyping
(RT-PCR followed by nested PCR and big dye, Life) were performed. Sequences were evaluated at Stanford-db (CPR and GRI) and Rega and NCBI was used for genotype.
**Results:** 386 patients were included from November 2013 to December 2015, median age 28 yo (25-34), mostly male( 95.8%), the majority MSM, with a median CD4 514 (25th-75th, 327-666) and viral load of 4.3 (3.8-4.9) at inclusion. A previous seronegative test was reported by 236(61%), with a median time to a positive test of 398 days (197-731). Most common acute infection-like manifestations, observed in 126 cases, were: fever 54%, lymphadenopathy 42%, malaise 41%, myalgia 38% and pharyngitis 34%. Patients were included at a median of 38 days (26-65) after diagnostic. Of 341 sequences evaluated at CPR, TDRM was identified in 11.2 % (NNRTI 6.7%, NRTI 3.9%, PI 1.8%, including 10.3%, with NRTI+NNRTI TDRM). K103N was the most common TDRM. When any resistance mutation was considered, 26.4% of the sequences had at least one mutation to NRTI, NNRTI or a major PI. Subtype B was the most prevalent (74.6%), subtype C 11.3%, F 3.3%, one (0.4%) G and different recombinant forms (10.4%), most BF or BC. The median proportion of nucleotide ambiguities was 0.2% (25th -75th 0 - 0.55); ARV was initiated in 79%. The most commonly used ARV regimens were EFV+3TC+Tenofovir, in 77.7%, and ATZ/r+3TC+TDF, in 12.7% Patient's with DRM received (or changed upon availability of genotype test), a regimen appropriate for the resistance profile.
**Conclusions:** TDR is at intermediate levels but higher than previous studies, with subtype C increasingly been recognized.

### TUPEC217

#### ANALYSIS OF MASSIVELY PARALLEL SEQUENCING OF HIV-1 PROVIRAL GENOMES REVEALS HIGH GENETIC DIVERSITY AMONG BRAZILIAN BLOOD DONORS WITH LONG-STANDING INFECTION

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**Background:** Here, we aimed to gain a comprehensive picture of the HIV-1 diversity in the northeast and southeast part of Brazil. To this end, analysis of massively parallel sequencing "MPS" data were performed to characterize the near full length (NFLG) and partial HIV-1 proviral genomes in 194 HIV-1 infected blood donors with long-standing infection at four major blood centers in Brazil: Pro-Sangue foundation (São Paulo state (SP), n 50), Hemominas foundation (Minas Gerais state (MG), n 28), Hemope foundation (Recife state (PE), n 78) and Hemorio blood bank (Rio de Janeiro (RJ), n 38).
**Methods:** The MPS data covering the NFLG and partial genomes were extracted from our recently generated HIV-1 genomes sequenced by a paired-end protocol (Illumina). Validated *fastq* files from each viral genome were de novo assembled into contiguous sequences and used for further analysis.
**Results:** Of the 194 samples studied, 161 (83%) NFLGs and 33 (17%) partial fragments were *de novo* assembled into contiguous sequences and successfully subtyped. Of these 194 samples, 130 (67%) were pure subtypes consisting of clade B (n = 121, 62.4%), C (n = 6, 3.1%), F1 (n = 2, 1%), and D (n = 1, 0.5%). Recombinant viruses were detected in 64 (33%) samples and consist of unique BF1 (n = 35, 18%), BC (n = 7, 3.6%), BCF1 (n = 4, 2%), CF1 and CDK (n = 1, 0.5%, each), CRF70_BF1 (n = 3, 1.5%), CRF71_BF1 (n = 10, 5.1%), and CRF72_BF1 (n = 3, 1.5%). Evidence of dual infection was detected in four patients coinfected with the same subtype (n = 3) and distinct subtype (n = 1).
**Conclusions:** The overall results revealed a broad array of 12 genetically different HIV-1 variants consisting of four genuine subtypes, three circulating recombinant forms, and five variants with different recombinant profiles. The elevated number of HIV-1 subtypes co-circulating as well as diverse recombinant viruses observed in this work may represents a tangible challenge for future vaccine development, as well as for the efficiency of antiretroviral treatment and diagnostic tests.

### TUPEC218

#### DIVERSE HIV-1 NON-SUBTYPE B CLUSTERS ARE SPREADING AMONG MEN WHO HAVE SEX WITH MEN IN SPAIN

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**Background:** In Western Europe, HIV-1 subtype B has been largely predominant among men who have sex with men (MSM). However, recently, other clades have been reported in this population, including a large subtype F cluster rapidly expanding in Spain. Here we describe four other non-subtype B clusters spreading among MSM in Spain.
**Methods:** HIV-1 samples from 7780 individuals from seven Spanish regions collected in 1999-2015 were analyzed. A pol fragment was amplified from plasma RNA and sequenced. Phylogenetic analyses were performed via maximum likelihood. Viruses related to identified clusters were searched using BLAST algorithm and phylogenetic analyses. Times of most recent common ancestors (tMRCAs) of clusters were estimated using a Bayesian method.
**Results:** Among identified clusters, there were five large ones of non-subtype B clades associated with recently diagnosed MSM, of subtypes A1 (A1_1, n=29), C (C7, n=15) and F1 (F1_1, n=124; F1_3, n=14), and of CRF02_AG (CRF02_1, n=27). The largest, F1_1, was reported previously. All individuals in these clusters were male, all were infected sexually, and all but two with specified sexual behavior were MSM. None had been diagnosed before 2008. Clusters with greatest recent expansions were A1_1 and F1_3, with most and all cases, respectively, diagnosed in 2014 or 2015. A1_1 comprised viruses from three Spanish regions, Portugal and United Kingdom, and was related to viruses from Southeast Europe. CRF02_1 was found in four Spanish regions, comprised a Japanese subcluster, and was related to viruses from four Western European countries and Ecuador. C7 comprised viruses from two Spanish regions and Portugal. All F1_3 viruses were from the Basque Country, and were related to viruses from Romania. Mean tMRCAs were 1996, 2001, 1988, and 2012 for clusters A1_1, CRF02_1, C7, and F1_3, respectively, and 2010, 2004,

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and 2005 for the largest subclusters A1_1_1 (n=17), CRF02_1_1 (n=25), and C7_1 (n=10), respectively.

**Conclusions:** The HIV-1 epidemic among MSM in Spain is becoming increasingly diverse through the recent expansion of non-subtype B clusters, which are related to viruses circulating in other countries. The recent expansion of HIV-1 clusters among MSM makes necessary reinforcing public health measures aimed at preventing high risk sexual behaviors in this population.

## TUPEC219

### ANALYSIS OF HIV-1 SUBTYPE C ENVELOPE SEQUENCE DIVERSITY IN THE FEMALE GENITAL TRACT FROM EARLY INFECTION REVEALS NO EVIDENCE FOR COMPARTMENTALIZATION

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**Background:** The majority of HIV-1 infections in sub-Saharan Africa are acquired heterosexually through the genital mucosa. A better understanding of the properties of the viruses replicating in the genital tract is important as these viruses are the target of microbicide and vaccine strategies. However, such samples are more difficult to access and viral loads are considerably lower compared to blood.

**Methods:** Plasma and cervicovaginal lavage (CVL) samples were obtained from 18 women enrolled in the CAPRISA Acute Infection study in Durban, South Africa within 2 to 15 weeks of infection and from 3-6 time-points later in infection. HIV-1 RNA was isolated and full length envelope genes were amplified from single genomes by nested PCR and sequenced. Phylogenetic analyses of sequences obtained from each individual were performed using Bayesian Evolutionary Analysis by Sampling Trees (BEAST). The concentrations of 42 cytokines were measured in CVL samples using Luminex Multiplex Flow Cytometric assays.

**Results:** Amplification rates of envelope sequences from acute CVL samples were low (4/18, 22%). Successful amplification was significantly associated with the presence of pro-inflammatory cytokines in the CVL supernatant. From these 4 individuals, a total of 205 plasma and 208 CVL envelope sequences were generated during acute and chronic infection and used to compare evolution in the genital tract and blood. Phylogenetic analysis revealed that all sequences from each individual clustered together and with subtype C reference strains. At all time points CVL and plasma sequences were intermingled on the Bayesian Maximum Clade Credibility trees. Although partial tissue specific clusters were present in each individual, these were largely composed of monophyletic sequences and did not persist. There were no sustained tissue-specific differences in genetic diversity, signature amino acid residues, differential co-receptor usage or the number of PNG sites.

**Conclusions:** In conclusion, although there was some local replication, there was no evidence for the existence of independent viral populations in the genital tract of HIV infected women during early and chronic infection. This suggests that viral populations traffic between the systemic and genital compartments.

# GEOGRAPHICAL INFORMATION SYSTEMS AND HIV

## TUPEC220

### MAPPING OF PAP SMEAR QUALITY AND RESULTS USING ROUTINELY COLLECTED SOUTH AFRICAN HEALTH FACILITY DATA

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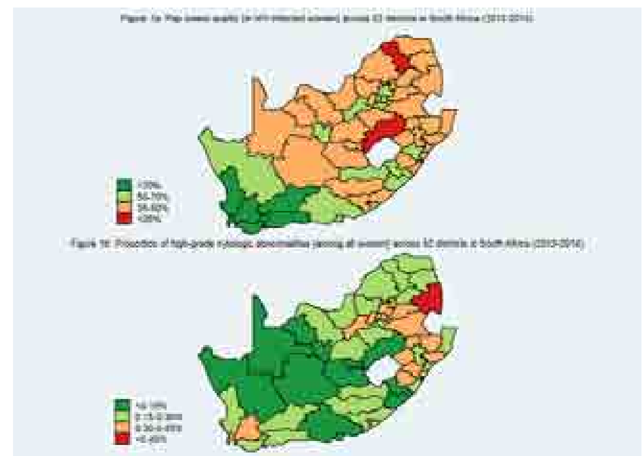
**Background:** In South Africa, cervical cancer remains among the most common cancers and a leading cause of cancer death. Co-infection with HIV increases the risk of developing cervical dysplasia and cancer. We analysed National Health Laboratory Service (NHLS) cervical cytology data using choropleth maps to create pictorial representations of Pap smear quality and to investigate geographic variations in Pap smears abnormalities.

**Methods:** Facility-level data were extracted from the NHLS Central Data Warehouse for April 2013 -March 2014. We present results and maps detailing:
(1) Pap smear coverage in HIV infected women defined as the proportion of Pap smears submitted assumed to be from HIV infected women out of population estimate of HIV infected women.
(2) Pap smear quality defined as "adequate" smears in which endo- and ecto-cervical cells are present
(3) High-grade cytologic abnormalities defined as Pap smears suspicious for invasive carcinoma, high-grade squamous intraepithelial lesions (HSIL) or atypical squamous cells: cannot exclude HSIL (ASC-H).

**Results:** From April 2013-March 2014, 4562 facilities submitted 791,067 cytology slides. The interquartile range for Pap smear coverage among HIV infected women was 26-41% which was substantially lower than among HIV uninfected women (32-50%) and overall coverage (44-67%). Overall cytology results are not disaggregated by HIV status. 6/52 districts had adequacy rates above the national standard of 70% and 2/52 districts had adequacy rates below 35%, figure 1a. We observed marked variation in Pap smear abnormalities across the country, with the proportion of high-grade abnormalities >= 0.3% in 17/52 districts figure 1b.



*[Choropleth map showing geographic variations in Pap smear quality and Pap smear abnormalities across South Africa]*

**Conclusions:** Using choropleth maps, we are able to display cervical cancer quality and results. This has important implications for policy, programming and resource allocation, as women with abnormal Pap smears need additional treatment for effective cancer prevention. Urgent interventions are needed to improve coverage and quality or cervical screening, and to address observed regional disparities in results.

## TUPEC221

### SPATIAL DISTRIBUTION OF HIV PREVALENCE AND HIV CARE CASCADE ENGAGEMENT IN AN URBAN INFORMAL SETTLEMENT IN SOUTH AFRICA

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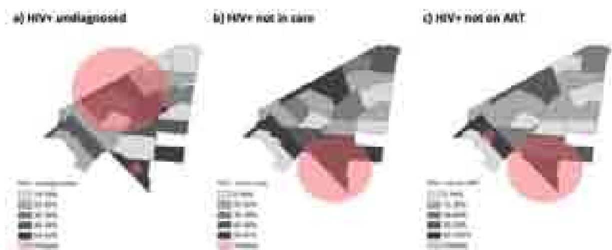
**Background:** Spatial analysis of the geography of HIV prevalence and engagement in care has the potential to inform policy and health care delivery. We assessed HIV prevalence and self-reported care status to examine gaps in the treatment cascade and hotspots of HIV infectiousness in an urban South African township.
**Methods:** In 2013-2014, we conducted a cross-sectional randomly selected household community survey of 1231 individuals in Diepsloot, South Africa. HIV prevalence, engagement in HIV care (diagnosed, in care, on treatment), and likelihood of infectiousness (defined as not on treatment or not adherent) were mapped by neighborhood and clusters were identified using Kulldorff's SaTScan™ method (Poisson model, p< 0.05). A log binomial model was used to identify factors associated with HIV infectiousness.
**Results:** Among 1231 individuals enrolled, 195 (16%) were HIV positive. Two-thirds (64%, n=124) self-reported a known positive HIV status, 71 (36%) were newly diagnosed with HIV. Of those known to be HIV positive, two-thirds (68%, n=84) were in care. Based on the 2013 South African ART eligibility guidelines (CD4 count ≤350 cells/µl), 68 of 91 (74%) patients eligible for ART were on treatment. Sixty-seven percent (n=130/195) of HIV positive individuals were classified as infectious. HIV prevalence varied geographically (range 6-24%) and clusters were identified for each step of the care cascade with little geographic overlap between diagnosis and care (Figure). HIV infectiousness was associated with being employed (Risk Ratio=1.34, 95%CI: 0.97-1.86), younger age (18-29 years vs. 30-39 years, RR=1.40, 95%CI: 1.13-1.73), and originating from a country other than South Africa (RR=1.14, 95%CI: 0.93-1.40).




*[Figure 1. Levels of the HIV care cascade by neighborhood in Diepsloot, South Africa 2013-2014]*

**Conclusions:** In a poor urban informal settlement in South Africa, we observed geographical variation in engagement in the HIV care cascade and level of HIV infectiousness, suggesting different drivers for each level of the care cascade. Our findings support the potential for targeted interventions at the neighborhood level.

## TUPEC222

### HIV/AIDS CLINICAL TRIAL ACTIVITY ON THE AFRICAN CONTINENT: AN ANALYSIS OF HIV/AIDS TRIALS REGISTERED ON THE PAN AFRICAN CLINICAL TRIALS REGISTRY (PACTR)

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**Background:** HIV/AIDS is a major public health problem which poses a significant threat to livelihoods and social security in resource-poor countries due to rapid spread of infection amongst individuals at the prime of their productive age. Sub-Saharan Africa is most affected with an estimated 24.7 million people living with HIV in 2014, and accounts for almost 70% of new infections globally.
The Pan African Clinical Trials Registry (www.pactr.org) is the only World Health Organization endorsed primary registry in Africa and aims to improve research transparency and reduce publication bias. This study describes the current status of HIV clinical trials registered on PACTR.
**Methods:** We conducted a cross-sectional analysis of HIV/AIDS trials registered on PACTR. Data extraction included trial location, intervention studied, principle investigator location, participant age range, and funder. Descriptive analysis was run in MS Excel™.
**Results:** 623 trials were registered on PACTR from 1 May 2007 - 03 February 2016. Eighty trials (13%) report planned or ongoing research on HIV/AIDS interventions. Twenty-nine (29/80) trials evaluate treatment. Twenty-two trials evaluate prevention, of these nine investigate vaccines, five behavioural prevention interventions, three diagnostics, four PMTCT and one early infant circumcision. Sample sizes range from 15 to 15 160 participants. Twenty trials include children, one includes participants aged 35 to 49 days.
Forty-nine trials are single-centred and conducted in South Africa, Uganda,Tanzania, Zimbabwe, Malawi, Nigeria, Kenya, Cameroon, The Gambia, Guinea Bissua, Ethiopia, Nigeria, Ghana, Zambia and Mozambique. Thirty-one multi-centre trials are conducted in South Africa, Ethiopia, Tanzania, Guinea Bissau, Gabon, Benin, Kenya, Mozambique, Nigeria, Zambia, Uganda, Senegal, Zimbabwe, Cote D'Ivoire, and Cameroon.
Fifty-seven principal investigators are from African counties with remaining 23 from Europe, United Kingdom, U.S.A. Twenty-four (30%) trials are funded partially or entirely by European and Developing Countries Clinical Trials Partnership (EDCTP). Five trials are funded by pharmaceutical companies.
**Conclusions:** Thirteen percent of trials in PACTR include planned or ongoing HIV/AIDS interventions, predominantly focused on HIV treatment. Increasingly, principal investigators are based in Africa. As registrations increase, PACTR may be used as a tool for mapping changing HIV/AIDS trial landscape. PACTR provides information on African trials to WHO's International Clinical Trials Registry.

## TUPEC223

### SPATIAL ANALYSIS OF HIV INFECTIONS IN HIGH BURDEN SUB-DISTRICTS IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** The HIV epidemic is heterogeneous within different regions of sub-Saharan Africa, with South Africa having one of the fastest growing HIV epidemics in the world. HIV heterogeneity exists not only between countries but also across national and provincial levels as well as at district and sub-district levels. To better understand the geographical heterogeneity of HIV infections for targeted interventions, we applied spatial analytical methods on the data obtained from the HIV Incidence Provincial Surveillance System (HIPSS), a household-based survey designed to monitor HIV prevalence and incidence in rural KwaZulu-Natal.
**Methods:** HIPSS enrolled 9812 individuals aged 15-49 years from randomly selected households in 2014-2015. Each individual was geo-located using Global Positioning Systems (GPS) to record the geographic co-ordinates of the household. HIV prevalence was calculated per municipal ward to create a thematic map using MapInfo Pro™ version 15.2 GIS software. Micro-geographical cluster detection of clusters of infections was performed using a Kulldorff spatial scan statistic (Bernoulli model) set with a maximum cluster detection radius of 3 km and a significance level of p< 0.05.
**Results:** Kulldorff clusters were superimposed on the generated HIV prevalence map. Overall HIV prevalence was 36.3% (95%CI 34.8-37.8) and prevalence by municipal ward ranged from 30.1% (95% CI: 27.1-33.2) to 50.1% (95% CI: 44.9-55.4). At a micro-geographical level, one high-risk cluster was identified in the North West of the study area by the Kulldorff spatial scan statistic where HIV prevalence exceeded 70% (relative-risk =1.75; p=0.017). This cluster was located in a semi-rural community with only one health care facility being relatively in close proximity.
**Conclusions:** Our findings confirm the extremely high burden and variability of HIV infections across the study area. The presence of a localised high-risk community at this stage of the epidemic suggests that this community may play a key role in sustaining the epidemic within this region and thus should be the focus of a geographically targeted intervention. Further work is ongoing in the high-risk community identified in this survey.

# STUDIES OF RISK BEHAVIOURS AND THEIR IMPLICATIONS FOR PREVENTION

## TUPEC224

### TRANSACTIONAL SEX, HOUSING INSTABILITY, AND SAFER SEX MOTIVATION DETERMINE SEXUAL RISK AMONG RECENT AFRICAN GAY AND BISEXUAL IMMIGRANTS TO NEW YORK CITY

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**Background:** To understand HIV risk in gay and bisexual men who migrated from countries where homosexuality is illegal and suppressed, to places with increased tolerance and opportunities for sexual expression.

**Methods:** We conducted structured face-to face interviews with 70 sexually active gay and bisexual men who had migrated within the past 5 years from Western and Eastern African countries to New York City (NYC). Sexual risk was assessed as an index based on number of times and number of men with whom one had condomless receptive and/or insertive anal sex (range 0 to 4). Housing instability was assessed with a 5-item scale (α=.72). Eight men who reported being HIV positive were excluded from the analyses.

**Results:** The 62 men who were HIV negative or did not know their status (mean age 31 years) came from 15 different African countries. Sexual repression was the most common reason for leaving one's home country. Over a third of the men reported always having used condoms in the past year; among the other men, sexual risk varied. Current engagement in transactional sex and motivation to avoid HIV infection were identified as independent predictors of sexual risk in a forward stepwise regression analysis that also included HIV knowledge, attitudes towards condoms, alcohol and drug use, social support, internalized homophobia, mental distress, PTSD, stability of immigration status, migratory grief, and housing instability ($R^2$=.35). Examination of bivariate relationships suggests that motivation to avoid HIV infection is undermined by housing instability, whereas housing instability also seems to promote engagement in transactional sex. Housing instability was furthermore associated with an unstable migration status (being undocumented or seeking asylum), less social support, having to borrow money from friends, and more alcohol and drug use. Men for whom migration had been difficult, who had been less open about their homosexuality in their home country, and who had forced sex experiences before coming to NYC, also reported more housing instability.

**Conclusions:** To prevent HIV transmission among African gay and bisexual immigrants it is critical to address the disempowerment caused by the migration experience, particularly as it concerns housing and social position more generally.

## TUPEC225

### TRANSACTIONAL SEX AND ITS ASSOCIATED FACTORS AMONG WOMEN ATTENDING ANTIRETROVIRAL CLINICS IN OGUN STATE, NIGERIA

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**Background:** Despite global advancement in HIV research and control, HIV prevalence and transmission is still of public health concern in low resource climes like Nigeria. Transactional sex has been shown to be associated with HIV risk behaviours and increased transmission. This study therefore assessed the prevalence of transactional sex and its associated factors among women attending antiretroviral clinics in Ogun State, Nigeria.

**Methods:** A cross-sectional descriptive study was carried out 204 women attending antiretroviral clinics in two public tertiary health facilities in Ogun State, Nigeria via systematic random sampling. Data was collected using a validated, semi-structured, interviewer-administered questionnaire and was analysed using IBM SPSS 17.0. Relevant descriptive and inferential statistics were calculated with level of significance set at $p < 0.05$. Respondents' informed consent was obtained and strict confidentiality was ensured. Participation was fully voluntary.

**Results:** The mean age of respondents was 38.3±9.0 with the modal age group being 31-40 years. Two-thirds (66%) were in a monogamous marriage and majority (76%) were Christians. About two-thirds (64.2%) had at least secondary education. About one-third (36.3%) lived in a room apartment. Almost half (42.9%) spent over 50% of their monthly income on food. Majority (87.7%) were not on any food assistance program and over four-fifths (85.8%) have commenced antiretroviral therapy. Prevalence of transactional sex was 7.4%. Household size (p=0.031), marital status (p=0.015), reduction of food ration unwillingly (p=0.010), skipping of medications due to lack of food (p=0.001) and starving for a whole day (p=0.044) were significantly associated with transactional sex. Transactional sex had no significant association with age (p=0.473), educational status (p=0.498), family type (p=0.877), occupation (p=0.312), housing type (p=0.249), percentage of income spent on feeding (p=0.923), being on food assistance program (p=0.351) and commencement of antiretroviral drugs (p=0.154).

**Conclusions:** The prevalence of transactional sex was high. Feeding concerns and skipping of medications were significantly associated with transactional sex. Food assistance programs, socioeconomic empowerment schemes and targeted counselling should be given to people living positively with HIV to halt and reverse HIV transmission.

## TUPEC226

### STIGMA, RESILIENCY, AND CONDOM NEGOTIATION WITH CASUAL SEXUAL PARTNERS AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN SENEGAL

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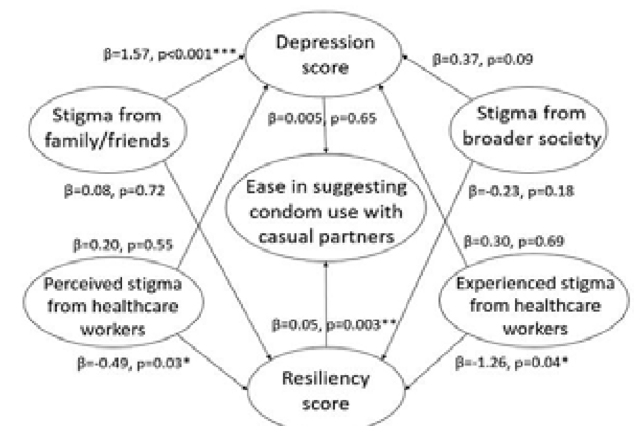
**Background:** Sexual behavior stigma is associated with increased risk for HIV infection and suboptimal HIV treatment outcomes among MSM particularly in low-and middle-income countries, although data on causal pathways of stigma are limited.

**Methods:** We collected data on 718 MSM aged >18 years across three cities in Senegal via respondent-driven-sampling. Participants were asked to report lifetime experiences of sexual behavior stigma as a result of having sex with men. In addition, participants were screened for depression (PHQ9), resilient coping ability (Brief Resilient Coping Scale), and were asked in general how difficult or easy it was to suggest the use of condoms with casual male sex partners. Structural equation modeling (SEM) was used to estimate indirect effects of stigma on perceived difficulty in suggesting condom use among MSM who had never been told they are living with HIV.

**Results:** 340 MSM reported any casual partners and were included in the final SEM. An asymptotic distribution free estimation method was used due to lack of joint normality of the endogenous variables. For each pathway modeled in the SEM, we adjusted for age and employment status. Perceived and experienced sexual behavior stigma from healthcare workers was significantly associated with reduced resilient coping ability (Figure 1). In contrast, higher resilient coping ability was associated with improved condom negotiation with casual male sex partners. Stigma from family/friends was associated with increased depression although not found to be associated with resiliency. Finally, there was no direct relationship between depression and condom negotiation.




*[Figure 1. SEM showing adjusted relationships between stigma, depression, resiliency, and ability to suggest condom use with casual male sex partners, among MSM in Senegal (N=340). ***p<0.001, **p<0.01, *p<0.05]*

**Conclusions:** In the context of novel HIV intervention approaches such as pre-exposure prophylaxis and universal treatment, consistent condom use with casual sexual partners remains crucial for the prevention of HIV acquisition and transmission. These results suggest that stigma and mental health represent important determinants of risk among MSM, and thus should represent targets of comprehensive intervention strategies.

## TUPEC227

### FACTORS ASSOCIATED WITH UNPROTECTED ANAL INTERCOURSE IN MEN WHO HAVE SEX WITH MEN (MSM): FINDINGS FROM THE FIRST BIO-BEHAVIORAL SURVEY USING RESPONDENT-DRIVEN SAMPLING AMONG MSM IN BAMAKO, MALI

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**Background:** HIV prevalence among men who have sex with men (MSM) in Bamako, Mali is 13.7%, 8-9 times that among men overall. A contextual understanding of unprotected anal intercourse (UAI) is needed to inform HIV prevention programs. We analyzed data from a recent survey of MSM to identify factors associated with UAI.
**Methods:** We conducted a cross-sectional survey of 552 MSM using respondent-driven sampling between October 2014 and February 2015. Eligibility criteria included being ≥18 years old, residence in Bamako or its suburbs in the preceding 6 months, and having had sex with another man in the preceding 6 months. Participants underwent a face-to-face interview before being counseled and tested for HIV. Weighted data analysis was conducted with RDSAT and SAS to generate population based results. Survey logistic procedures were used to identify factors associated with UAI in multivariate analyses, controlling for age and education.
**Results:** Most (54.3%, 95%CI 48.1, 60.6) MSM were 20-24 years old; 47.3% (95%CI 41.1, 53.6)had a secondary education and 91.8 (95%CI 88.5, 95.1) were never married. Nearly all MSM were Malian (94.5%, 95%CI 91.0, 98.0) and Muslim (88.3, 95%CI 84.0, 92.6). As for relevant knowledge and behaviors: 30.8% (95%CI 25.3, 36.3) had ≥3 male partners in the preceding 6 months; 44.0% (95%CI 37.5, 50.5) listed UAI as the riskiest type of sex; 57.1% (95%CI 50.9, 63.6) identified condom use during anal intercourse as more important than during vaginal intercourse; and 40.7% (95%CI 34.5, 46.8) of men reported UAI with their most recent partner. Factors independently associated with UAI in the preceding 6 months included: inability to access condoms (aOR 4.5, 95%CI: 2.3-9.0); number of male partners in preceding 6 months (aOR 3.9, 95%CI 1.9-8.0 for 2 vs. 1; aOR 2.6, 95%CI 1.3-5.1 for ≥3 vs. 1); knowing HIV-positive MSM (aOR 3.1, 95%CI:1.3-7.1); and age of first male partner (aOR 5.5, 95%CI 1.4-20.9 for < 14 vs. 15-24 years).
**Conclusions:** HIV prevention programs for MSM in Bamako should target UAI reduction among MSM by increasing condom access, reinforcing importance of reducing number of male sex partners, and encouraging limitation of anal intercourse when condoms are unavailable.

## TUPEC228

### SEX TOURISM AMONG CHINESE MEN WHO HAVE SEX WITH MEN: IMPLICATIONS FOR HIV PREVENTION

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**Background:** Sex tourism among men who have sex with men (MSM) provides a potential risk for spread of HIV and other STIs. Our objective was to characterize the frequency, socio-demographic characteristics, and sexual risk behaviors among Chinese MSM sex tourists.
**Methods:** An online, cross-sectional survey for MSM throughout China was conducted in November 2015. Questions covered sociodemographic characteristics and sexual risk behaviors. Sex tourism was defined as traveling outside of one's hometown and purchasing sex with gifts or money. Univariate and multivariate logistic regressions were performed to identify correlates of sex tourism. Using participant-reported sex tourism destinations, we compared the reported mean MSM HIV prevalence between their journey origins and destinations.
**Results:** In total, 1192 MSM completed the survey, with 62 (5.2%) identifying as sex tourists, and 20 (32.3%) traveling for the primary purpose of purchasing sex. Of the sex tourists, 53 (85.5%) were educated beyond high school, 19 (30.6%) reported more than three sex partners in the last three months and 23 (37.1%) reported condomless sex in the last month. In multivariate analyses, sex tourists were more likely to have high risk sexual behaviors such as sex while drunk (odds ratio (OR) 4.67, 95%CI 2.64-8.27), receiving payment for sex (OR 3.18, 95%CI 1.68-6.02), more than 6 sex partners in the last three months (OR 2.95, 95%CI 1.14-7.52), group sex (OR 2.81, 95%CI 1.44-5.51), and condomless sex in the last month (OR 1.86 95%CI 1.06-3.25). Sex tourists were more likely to report HIV testing (OR 1.50 95%CI 1.13-3.41) and a positive HIV result (OR 2.21 95%CI 0.82-5.98) in univariate analyses. Sex tourism travel was more often from locations with a lower MSM HIV prevalence (M=4.47, SD=2.01) to locations with a higher MSM HIV prevalence (M=6.86, SD=5.24); t(91)=-4.218, p< 0.001.
**Conclusions:** MSM sex tourists were more likely to participate in risky sexual behaviors and travel to locations with a higher HIV prevalence. Phylogenetic research would be useful to examine how sexual mixing among sex tourists influences onward HIV transmission. Programs that reach and retain high-risk, mobile groups of MSM such as sex tourists should be considered.

## TUPEC229

### CHARACTERISTICS OF HIV RISKS AMONG THAI YOUNG MEN WHO HAVE SEX WITH MEN AND TRANSGENDER YOUTH USING AN ECOUNSELING PLATFORM

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**Background:** Many young men who have sex with men (YMSM) and TG youth in Thailand are closeted, experience societal stigma and are not provided education on safe sex practices from their families or in schools, relying instead on the Internet or friends for basic information. We evaluated risk behaviors and characteristics of Thai YMSM and TG youth seeking sexual health advice and online HIV counseling.
**Methods:** Adam's Love (www.adamslove.org), an innovative HIV prevention intervention launched by The Thai Red Cross AIDS Research Centre (TRCARC) has established a sustainable e-counseling platform for Thai MSM and TG, to provide linkage to HIV testing and treatment services. Those counseled are encouraged to complete risk behavior surveys.
**Results:** Between Sep 2011 - Dec 2015, 17,357 MSM and TG received online counseling. Of 547 MSM and TG who received online counseling and completed a behavioral risk survey in the last quarter of 2015, 72% were age ≤25 years and almost half sought sex using social media (41.5%). Participants aged 14-18 years were less likely to use condoms with casual partners (50%) vs. those aged 19-25 years (33%) and aged ≥26 years (29%); P=0.004). Most had never been tested for HIV (79% vs. 51% for MSM aged 19-26 and 35% for those aged ≥26 years; P< 0.001). Seven percent of all participants reported illicit drug use in the previous 6 months, and rates were similar across age groups. In a multivariate logistic regression model, finding sex partners through social media (aOR 2.0, 95%CI 1.4-2.8; P< 0.001), using illicit drugs (aOR 2.1, 95%CI 1.1-4.1; P=0.03) and younger age was associated with inconsistent condom use with casual partners. Compared to participants aged ≥26 years, those aged 14-18 years had significantly higher odds of inconsistent condom use (aOR 2.8, 95%CI 1.6-4.9; P=0.001); in those aged 19-25 years the odds was comparable (aOR 1.3, 95%CI 0.8-1.9; P=0.3).
**Conclusions:** In this study, the youngest group of MSM and TG assessed engaged in the highest risk behaviors and had lower rates of testing. This highlights the need for continued investment in online interventions, such as e-counseling to provide linkage to HIV testing and treatment services.

## TUPEC230

### NETWORKS OF RECENTLY-INFECTED PEOPLE WHO INJECT DRUGS (PWID) IN ATHENS, GREECE, JUNE 2013 - JULY 2015: EPIDEMIOLOGICAL INSIGHT FROM A PROJECT TO REDUCE HIV TRANSMISSION

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**Background:** Following HIV acquisition, high viral loads and risky networks can interact to generate epidemic outbreaks if the newly-infected engage in risk behaviors with networks that include large numbers of **uninfected** partners. We describe 46 recently-infected PWID's injection and sexual networks.
**Methods:** HIV seropositive PWID were recruited and classified as recently-infected seeds using an algorithm incorporating data on HIV status, testing history and Limiting Antigen Avidity ODn. We recruited seeds' (last-6-month) injection and sexual network members, including people who attend injection sites or sex venues they use. Network members were assessed for recent and acute infection. All participants were interviewed about risk behaviors and numbers of partners.
**Results:** We recruited 45 recently-infected PWID (36 men; 9 women). They generated 66 network members whom we tested and interviewed, of whom 43 were uninfected (35 of these were PWID). On average, each *uninfected network member* reported sex with 2.4 partners in the last 6 months, for a total of 104 partners. These data seriously **underestimate** the numbers of HIV-negatives in their networks. This is shown by the fact that we could recruit only 66 members of the 45 recently-infected participants' networks but these 45 recently-infected participants reported injecting with 219 PWID and having sex with 340 partners. If their partners were 65% uninfected (the rate among the recruited network members), and accounting for overlap between injection and sex networks, this suggests that the 45 recently-infected participants had at least 200 uninfected people in their immediate networks—and these 200 people had the potential of infecting many more while their viral lads were high if they became infected. Reports on network members' risk behaviors indicate that men had condomless sex with 43% of their partners, women with 23% of their sex partners, and that 44% of PWID in the networks passed used syringes on to others.
**Conclusions:** Recently-infected PWID engage in risk behaviors with large numbers of HIV-negative sex and injection partners, and these also have large numbers of negative partners. This poses risk of explosive HIV outbreaks. Interventions to locate Recents and reduce their transmission potential are sorely needed.

## TUPEC231

### THE UNREACHED POPULATION IN HIV PREVENTION: FEMALE SEX PARTNERS OF CURRENTLY MARRIED MEN HAVING SEX WITH MEN IN THANE, MAHARASHTRA, INDIA

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**Background:** In India, Men having Sex with Men (MSM) is one of the key population for HIV prevention programme; but the programme has been facing challenges due to homosexuality being penalized and not socially accepted. Due to this status, the MSM population is hiding themselves and living a dual life. This analysis, is to study and understand whether the currently married MSM in Thane are sharing about their homosexual behavior with their female partners.
**Methods:** Behavioral Tracking Survey was conducted in 2015 among 458 MSM through probability-based two stage sampling. Descriptive analysis on age, age of first sex, age of first vaginal sex, the first female sex partner, current status on having a female sex partner and condom usage in the last one year. Bivariate analysis along with chi-square statistics has been conducted for significance between marital status aforementioned variables.
**Results:** The mean age of currently married MSM (N=148) and never married MSM (N=302) is 32.6 years and 25.1 years respectively. The mean age of first vaginal intercourse is much later among currently married MSM (21.8 years) than never married MSM (17.7 years). Among the currently married, the self-identity is distributed with 21.6% kothi, 27.7% panthi, 23% double-decker and 27.7% bisexual, Whereas among never married MSM, it is predominantly kothi identity (58.6%), followed by 19.2% double-decker, 13.6% panthi and 8.6% bi-sexual. Among 45% of the currently married MSM presently living with a female sex partner, 52% (35/67) had reported of not using condom during the last sexual encounter. Highly significant proportion of currently married MSM had reported of ever had vaginal intercourse (P< 0.001) against never married MSM. The never married MSM are increasingly sharing about their male sexual partners, to their female sex partners, rather than the currently married MSM (P< 0.1).
**Conclusions:** The findings shows, the currently married MSM are hiding their homosexual behaviour with their female counterparts and 50% have practiced unsafe sex in last sexual encounter, thereby increasing the chances of HIV transmission. Hence HIV programme among MSM particularly in India, needs to find a strategy on reaching out to the female sex partners of MSM.

## TUPEC232

### COMMUNITY MEMBERSHIP, FINANCIAL SECURITY, SOCIAL PROTECTION AND HIV RISK BEHAVIORS AMONG MSM IN INDIA: FINDINGS FROM AVAHAN-III EVALUATION STUDY

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**Background:** Community membership, financial security and social protection are crucial to confront HIV risk among high risk population in developing countries. This study assesses community membership, financial security and social protection among Men who have Sex with Men (MSM), and explores its association with their HIV risk behaviors in India.
**Methods:** Data were drawn from the Avahan-III baseline evaluation survey- 2015, conducted among MSM (n=1005) in three states of India. Two stage cluster sampling approach was used to select the required number of MSM for the survey. Adjusted odds ratios (AOR) and their 95% confidence intervals (CI), bivariate analysis and frequency were used to assess the relationships between community membership, financial security and social protection with HIV risk behaviors.
**Results:** Most of the MSM were a registered member of any community organizations (88%) and having any social entitlements (Ration/BPL card, Aadhar card and Voter ID) (89%), whereas more than 73% had functional savings account either in a nationalized bank or post office, and 21% reported access to any social protection schemes. MSM, those who were member of a CO (21% vs. 3%; AOR: 8.7), had access to any social entitlements (20% vs. 11%; AOR: 2.1) and had a functional savings account (22% vs. 12%; AOR: 1.7) were significantly at higher chances of using condom consistently with both paying as well as paid male partners than others. The odds of consistent condom use with non-paying non-regular and non-paying regular male partners are also higher among MSM those had access to any social protection schemes, having a functional saving account compared to their counter parts.
**Conclusions:** Findings from the study show that there is significant association between community membership, financial security and social protection with consistent condom use with different type of sex partners among MSM. The maintenance of high levels consistent condom use is central to improve the usefulness and sustainability of HIV prevention programs. However, more community outreach activities, research and advocacy are required to highlight these issues in a wider context.

## TUPEC233

### ASSESSING SEXUAL RISK BEHAVIOR IN THE YOUNGER AND OLDER MALE DRIVERS IN IBADAN, NIGERIA

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**Background:** Long distance drivers like most mobile workers are at greater risk for acquiring and spreading sexually transmitted infection including HIV/AIDS. This community-based comparative study examined sexual risk behavior among long distance commercial drivers of different ages to identify their prevailing risky behavior.
**Methods:** Using multistage sampling technique, commercial drivers from six randomly selected motor parks in Ibadan, Nigeria were interviewed using a standardized questionnaire.
**Results:** There were 112 [37.5%] men ≤40years and 186 [62.2%] >40 years. The older men had spent more years driving [mean 24.1 vs 12.8 yrs, p< 0.0001] and the religious profile were similar. More younger men 57[50.9%] than older men

67[36.4%] $X^2$ =5.993, p=0.014 had completed secondary school and /or had higher education. The older men were more likely to be married [98.4% vs 91.1%, p=0.02], to be polygamous [36.8 vs 13.6%, p< 0.0001] and to have more wives [p=0.0001]. The younger men were more likely to have regular girlfriends [61.6% vs 50.5%, $X^2$ =3.46,p=0.06]. Mean age at sexual debut was significantly lower in the younger men [18.2 ±3.9 vs 22.1 ±11.2 yrs, p=0.0004]; A similar proportion of men in both groups had ever paid to have sex but the younger men were more likely to have had sex with a commercial sex worker [CSW] within last 12 months prior to this study [9.6% vs 2.3%,p=0.0075]. Younger men were more likely to report ever using condom [73.2 vs 56.5%, p=0.039]; the younger men were also likely to always negotiate condom with CSW [80 vs 44.4%]. There was no difference in the proportion that reported ever having an STI [p>0.05]; there was no difference in their mean attitude scores for HIV/AIDs , & the younger men had higher mean knowledge scores than their counterpart [p=0.08]. HIV testing was similar [26.8 vs 29.6% ,P>0.05]. Multivariate analysis showed that polygamy [OR=3.9 (1.9-7.9),p=0.000]; never use of condoms [OR=2.3 91.25-4.3),p=0.008]; and patronizing CSW [OR=5.0, (1.1-22.0) p=0.032] increased their risks. This however only explained 14.8% in the variance due to risky behavior.
**Conclusions:** Age has an impact on men's behavior. Preventive messages that will attract the attention of men of different ages must be embraced.

## TUPEC234

### Factors associated with inconsistent condom use by female sex workers with their non-paying partners in Johannesburg, Cape Town and Durban

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**Background:** The South African National Strategic Plan recognizes female sex workers (FSW) as a key population with high HIV-risk. The South African Health Monitoring Study (SAHMS) was conducted from 2013-2014 to characterize the HIV epidemic among FSW. Across many countries, including South Africa, FSW report high rates of condom use with clients. Of increasing concern are elevated risk behaviours with non-paying partners. We present findings of FSW condom use behaviours with non-paying partners.
**Methods:** We recruited 2,180 FSW aged 16 and older using respondent-driven sampling (RDS). Eligible participants took a behavioural survey, were offered rapid HIV counselling and testing, and provided blood samples for laboratory testing. Condom use with non-paying partners in the past six months was assessed through no condom used 'at last sex'. Condom use with clients was based on any reported unprotected sex. Data were analyzed in SPSS, and we present pooled analyses, unadjusted for RDS.
**Results:** Of the 2,180 FSW, 1,331 participants without non-paying partners were excluded from analysis. Of the remaining 849, 494 (58.2%) inconsistently used condoms with non-paying partners; 315 (37.1%) inconsistently used condoms with clients; 486 (57.2%) tested HIV-positive during study procedures; and 136 (16.0%) used antiretroviral therapy (ART). In bivariate associations, cohabitation; condom use with clients; marital status; 'permanent/main' designation of non-paying partner; and venues where FSW usually meets clients were associated with inconsistent condom use with non-paying partners; whereas exposure to peer education; ART use; HIV test results; perceived HIV status of non-paying partner; condom knowledge; and condom affordability were not. In multivariate analysis, cohabitation (adjusted OR (aOR)=1.93; 95%CI 1.27-2.92); inconsistent condom use with clients (aOR=1.69; 95%CI 1.23-2.32); 'permanent/main' partner status (aOR=2.59; 95%CI 1.87-3.58); and FSW who meet clients at 'street and premises-only' when compared to 'street only' (aOR=1.86; 95%CI 1.26-2.83) were associated with inconsistent condom use with non-paying partners.
**Conclusions:** Inconsistent condom use is high amongst South Africa FSW with their non-paying partners, warranting the implementation of other prevention methods like PrEP and universal treatment which could be of huge benefit to FSW with non-paying partners. Behavioural interventions need to assist FSW navigate relationship dynamics with non-paying partners to further minimise risk.

# Research designs in epidemiology

## TUPEC235

### Comparison of 48- and 96-week outcomes in adults initiating TDF+XTC+EFZ and those initiating two other NRTIs+EFZ using propensity-score matched observational cohort data and data from randomised controlled trials

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**Background:** Observational studies can inform clinical guidelines when RCT data are lacking. Propensity score matching has been hypothesised to better control for confounding in observational studies but has not been evaluated empirically for ART outcomes. We tested the comparability of a propensity-score matched analysis and a Cochrane systematic review of RCTs.
**Methods:** We calculated relative risks (RR) and 95% confidence intervals (CI) of two outcomes - all-cause mortality at 96 weeks and retention in care on initial regimen at 48 weeks - in ART-naïve HIV-infected adults ≥16 years old using propensity-score-matched IeDEA participants from three regions and compared results to outcomes obtained from a Cochrane systematic review of RCTs. We evaluated two regimens: TDF+XTC+EFV and 2 other NRTI combinations + EFV. For the observational analysis, we constructed propensity scores for receiving TDF+XTC+EFV based on sex, age, country and baseline CD4 count. Each individual receiving TDF+XTC+EFV was matched to one individual receiving 2NRTIs+EFV with a similar propensity score (within 0.001). We compared the propensity score-matched RR to the RR obtained from the systematic review of seven RCTs by computing RRPS/RRRCT.
**Results:** We evaluated 19,470 IeDEA participants. Risk of retention on initial regimen at 48 weeks was higher in the TDF+XTC+EFV group (RR=1.19, 95% CI 1.17, 1.21). Risk of 96-week all-cause mortality was similar in patients initiating the two regimens (RR=1.04, 95% CI 0.92, 1.18). In the systematic review, the risk of 48-week retention on initial regimen was higher in patients on TDF+XTC+EFV, but the risk of 96-week mortality was similar in the two arms. These findings were not different from those from our propensity-score-matched analysis.

| | 96-week mortality RR (95% CI) | 48-week retention RR (95% CI) |
|---|---|---|
| Crude analysis | 0.87 (0.78, 0.98) | 1.11 (1.09, 1.13) |
| Propensity score-matched analysis | 1.04 (0.92, 1.18) | 1.19 (1.17, 1.21) |
| Systematic review of RCTs | 1.00 (0.14, 7.07) | 1.14 (1.01, 1.30) |
| RRPS/RRSR | 1.04 (0.15, 7.44) | 1.04 (0.92, 1.18) |

*[Comparison of outcomes from IeDEA observational data and RCTs]*

**Conclusions:** We conclude that analysis of initial ART regimen using IeDEA data and propensity-score matching yields similar conclusions to systematic reviews of RCTs.

# Ethical and human rights issues in prevention research

## TUPEC236

### Participants' beliefs about preventive efficacy in the HPTN 069/ACTG 5305 HIV trial: preliminary data using the PREMIS measure

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**Background:** In HIV prevention trials, there is ethical concern that some participants have a "preventive misconception," an overestimate of the probability or level of personal protection afforded by participating in the trial. The purpose of this study was to collect preliminary quantitative data using a brief measure of preventive misconception (PREMIS) in an HIV prevention trial.
**Methods:** PREMIS was administered at the week 4 and 40 visits to participants in HPTN 069/ACTG 5305 [NCT01505114], a multicenter trial in the United States that included 4 arms comparing investigational maraviroc-containing regimens (vs. tenofovir/emtricitabine) for preexposure prophylaxis in men and women who have sex

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with men who were at risk of HIV infection. Descriptive statistics were computed for all responses. Paired *t* tests were used to assess item responses between weeks 4 and 40.
**Results:** Responses to PREMIS items did not differ significantly between weeks 4 and 40 (n=429), so only the latter are summarized. When asked about their confidence that the study medications would prevent them from acquiring HIV, 20% did not know or were unsure; the remaining respondents expressed high confidence (median, 80%; IQR, 60%-90%). When asked which study group they thought they were in, 66.2% said they did not know. Most (62.7%) believed they were assigned randomly to their group, whereas 9.8% believed a doctor chose the best group for them. When asked how many participants out of 100 would have their chance of acquiring HIV reduced, respondents gave similar responses for all 4 study groups (all medians = 80; 30.4%-37.6% answered "don't know/unsure"). Responses among respondents who thought they knew which group they were in were similar regarding the chance of benefit for the group in which they believed they were in (median, 80 out of 100 participants; 21.2% "don't know/unsure").
**Conclusions:** These data suggest that most trial participants expressed high confidence in a prevention effect due to their belief that all of the study groups had a high likelihood of benefit. Future work should assess the relationship of responses to PREMIS, reported risk behaviors, and HIV seroconversion to place these data into context.

## Estimation of the size of HIV-infected and key populations

### TUPEC237

### Using IBBS data and consensus population size estimates of female sex workers in three South African cities to estimate treatment and biomedical prevention needs

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**Background:** Results from a 2013-14 integrated biological and behavioral surveillance (IBBS) survey from South Africa show HIV prevalence is three to six times higher among female sex workers (FSW) than the general population. However, appropriate allocation of resources and benchmark-setting necessary to curtail the HIV epidemic among FSW has been hindered by the lack of methodologically rigorous estimates of FSW population size. For this reason, the 2013-14 IBBS included Population Size Estimation (PSE) methods to address this strategic information gap for FSW in South Africa's largest metropolitan areas of Johannesburg, Cape Town, and eThekiwni.
**Methods:** IBBS surveys recruited FSW using responding driven sampling (RDS); HIV prevalence results are presented as RDS-adjusted estimates. Multiple PSE methods were embedded in the survey, including 3 unique multiplier procedures, resulting in 4-5 point estimates for each city. We followed a Modified Delphi/consensus method to triangulate IBBS-based PSE results and previously collected population size data to derive PSEs with upper and lower plausibility bounds for each metropolitan area.
**Results:** A total of 764, 650 and 766 FSW were recruited in Johannesburg, Cape Town and eThekweni respectively. HIV prevalence estimates were high, ranging from 40%-72%. IBBS-based point estimates showed considerable variability; however, triangulated point estimates were consistent with prior PSEs, strengthening stakeholder confidence in the figures. Final consensus PSEs were 7,697 FSW (plausible range 5,000-10,895) in Johannesburg; 6,500 (4,579-9,000) in Cape Town; and 9,323 (4,000-10,000) in eThekweni (Table 1).
**Conclusions:** Current HIV prevalence estimates and PSEs demonstrate as many as 20,000 FSW in South Africa's three largest cities require HIV treatment; and as many as 17,000 would benefit from Pre-Exposure Prophylaxis. The Modified Delphi/consensus process for PSE facilitated adoption of estimates by stakeholders. We recommend this PSE method with key populations to achieve optimal stakeholder buy-in for planning and assessing programmatic impact.

| | HIV Prevalence | | Population Size | | Upper Estimates | |
|---|---|---|---|---|---|---|
| | Estimate (%) | 95% CI | Estimate | Plausibility | Require HIV treatment | PrEP candidates |
| Johannesburg | 71.8% | 56.5-81.2 | 7,697 | 5,000-10,895 | 8,847 | 4,739 |
| Cape Town | 39.7% | 30.1-49.8 | 6,500 | 4,579-9,000 | 4,482 | 6,291 |
| eThekweni | 53.5% | 37.5-65.6 | 9,323 | 4,000-10,000 | 6,560 | 6,250 |
| **Total** | | | 23,520 | 13,579-29,895 | 19,889 | 17,280 |

*[Table 1: IBBS and PSE data to estimate HIV treatment and prevention needs among FSW in three South African cities]*

### TUPEC238

### Methodological challenges in estimating the size of key populations using innovative method: network-based capture-recapture

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**Background:** Network-based capture-recapture (NCRC) method proposed by Dombrowski was introduced among methamphetamine users in the USA in 2012. This method was applied first time among Men who have Sex with Men (MSM) in Georgia and later among People Who Inject Drugs (PWIDs). The abstract presents key methodological challenges emerged during fieldwork while using this innovative method.
**Methods:** Different population size estimation (PSE) methods - 7 for MSM and 3 for PWIDs - were used in these studies, including the NCRC. The innovation of the NCRC is that the respondent provides both capture and recapture data coded for subject anonymity in a single-session, which for our studies were 210 adult MSM and 2,037 PWIDs recruited in Georgia in 2014 and 2015, respectively. Key populations were recruited through Respondent Driven Sampling using peer-referrals. For the capture phase the study participants reported their personal characteristics (approximate height, weight, hair color and ethnicity) and so called "telefunken codes" derived from the last four digits of their own mobile number. As for the recapture, the respondents provided the similar characteristics appealing to their randomly selected five contacts from the mobile phone directories. PSE study among PWIDs was linked to bio-behavioral surveillance survey. Statistical analysis was performed using Lincoln-Peterson method.
**Results:** The NCRC method provided MSM population size estimate that was in line with the estimates derived from other more established PSE methods. While for PWID this method yielded in underestimation compared to the median estimates of other PSE methods. This could be explained by difficulties to get the accurate responses on posed questions. Despite assurance of the confidentiality PWID were resistant to disclose personal characteristics of their peers, as well as giving information on the "telefunken codes". The inaccuracy of NCRC estimates was partially shown in total number of false matches, which was higher for PWIDs compared to the MSM PSE study. In addition to this refusal rate was 3.2% among PWIDs, while zero refusals were recorded among MSM.
**Conclusions:** Drug use is criminalized in Georgia. This contextual factor affected the reliability of the NCRC method among PWID. At the same time this method provided valid estimates among MSM.

## SURVEILLANCE OF HEPATITIS C (HCV) AND HIV CO-INFECTION

### TUPEC239

### CHARACTERISTICS ASSOCIATED WITH HCV MONITORING AMONG HIV/HCV CO-INFECTED ACTIVE INJECTION DRUG USERS

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**Background:** Co-infection with hepatitis C virus (HCV) and HIV is common, given their shared link to injection drug use, and is associated with high rates of morbidity and mortality. Inappropriate follow-up of HCV infection among people living with HIV/AIDS can occur. However, factors that lead to HCV monitoring among the HIV-positive illicit drug users population are not known.
**Methods:** We accessed data from the AIDS Care Cohort to evaluate Exposure to Survival Services (ACCESS), an observational prospective cohort of HIV-positive illicit drug users, to determine what characteristics are associated with HCV disease monitoring. The outcome of interest was self-report of receiving HCV-related bloodwork, biopsy or ultrasound in the previous six months. We used multivariable generalized estimating equations to identify longitudinal factors associated with receiving HCV-related follow-up over the study period.
**Results:** Between December 2005 and June 2014, 432 HIV- and HCV-positive active injection drug users were recruited and contributed to 2056 interviews. Among these, 1250 (61%) contained a report of recent HCV-related follow-up from 374 (87%) of participants. Multivariable analysis showed that receipt of HIV antiretroviral therapy for at least a day in the last six months (adjusted odds ratio [AOR] = 2.40, 95% Confidence Interval [95% CI]: 1.78-3.22), reporting HCV symptoms (AOR = 1.47, 95% CI: 1.20-1.81), methadone maintenance therapy (AOR = 1.41, 95% CI: 1.14-1.74) and older age (AOR 1.02 per additional year, 95% CI: 1.00-1.03) were associated with a greater chance of HCV monitoring.
**Conclusions:** We observed that a majority of HIV-positive illicit drug users co-infected with HCV received regular monitoring for HCV-related morbidity during the study period. Factors associated with monitoring included engagement in treatment for addiction and for HIV/AIDS. Knowing which factors lead to HCV monitoring, and subsequently protect individuals from severe liver complications, could guide public health interventions. In this new era of effective and well-tolerated treatment for HCV, finding and following the individuals that would benefit from such treatment is essential.

### TUPEC240

### PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS (HIV, HSV-2, SYPHILIS AND HBV) IN PREGNANT WOMEN IN ETHIOPIA: TRENDS OVER THE PAST 10 YEARS (2005-2014)

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**Background:** STIs are associated with adverse pregnancy outcomes. Aalthough prevalence data of STIs is highly pertinent for targeted intervention; there is paucity of data in Ethiopia. We determine the trends of sero-prevalence of HIV, HSV-2, Syphilis and HBV in pregnant women attending ANC clinics over the past ten years.
**Methods:** Serological tests for these STIs was conducted on plasma samples collected from pregnant women in 2005, 2007, 2009, 2012 and 2014 from 12 major cities.
**Results:** A total of 4957 pregnant women with mean ± SD of age 24±4.8 years old were included.
Data of all women irrespective of HIV status, showed a decline in the STIs by 50% in ten years (2005 to 2014):
**HIV**: 10.5% to 5.5%;
**Syphilis**: 2.5% to 1.1%;
**HSV-2**: 47.5% to 28.5%; and
**HBV**: 12.6 to 6.7%.
Although, there was a continuous decrease in HIV, syphilis and HBV in both HIV positive and negative women, the prevalence of these STIs remained higher in HIV positive women. In contrast, the prevalence of HSV-2 was increased overtime in HIV positive women while it remained at consistently lower level in HIV negative women. There was a wide disparity in prevalence of these STIs across the cities.
Data of all women showed, HBV prevalence in HIV positive younger women (15-25 years) to be higher than in older groups (26-45 years) (13.4% vs. 10.3%; p=0.10); but no difference in HBV prevalence in the HIV negative women between these age categories (6.8% vs. 6.1%; p=0.57). HSV-2 prevalence was higher in the older than in the younger age groups in both the HIV positive (65.8% vs 58.%; p=0.08) and HIV negative women (33.3% vs. 18.3%; p< 0.001).
**Conclusions:** We observed a continuous decline in HIV, HBV, HSV-2 and Syphilis in pregnant women, which showed the strength of infection prevention strategies in Ethiopia. However, the high prevalence of STIs by 2014 and the variation in prevalence among the cities indicated the need to strengthen targeted interventions. Further investigation is warranted to investigate the factors associated with the epidemiology, interaction, and clinical implication of those combined infections (HIV, HBV, HSV-2 and Syphilis) in pregnant women.

## SURVEILLANCE OF TB AND HIV CO-INFECTION

### TUPEC241

### LINKAGE TO HIV CARE AND ART INITIATION AMONG INDIVIDUALS DIAGNOSED SIMULTANEOUSLY WITH TB AND HIV IN THE UK, 2010-2014

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**Background:** HIV-associated TB contributes substantially to the burden of TB-associated morbidity and mortality. Survival is improved with early antiretroviral therapy (ART), following initiation of TB therapy. UK guidelines recommend ART initiation as soon as practicable for those with a CD4< 100 cells/mm$^3$; for individuals with a CD4>100, risk of drug toxicity should be considered and may result in delayed ART initiation. We investigate the time lag between HIV diagnosis, HIV care and ART initiation among individuals diagnosed simultaneously with TB and HIV.
**Methods:** Cohort data on adults (15+ years) diagnosed with HIV in the UK between 2010 and 2014 were linked to the national Enhanced TB surveillance system. Individuals were considered simultaneously diagnosed (TB-HIV) if they had a TB and HIV diagnosis within three months. Time lags were calculated using TB diagnosis date, first CD4 date and ART initiation date. Viral load (VL) suppression was defined as < 200 copies/ml.
**Results:** Between 2010 and 2014, 807 HIV-diagnosed adults were diagnosed with TB; 523 (65%) were simultaneous diagnoses. Median time from TB diagnosis to HIV care among TB-HIV individuals was 5 days [IQR 1-18.5] with 85% linked to care within one month, similar to 6 days [0-20] and 81% among HIV-diagnosed individuals without TB. Median time lag to ART initiation was 27 days [15-53] and 41 days [20-81] for TB-HIV individuals with a CD4< 100 and 100-349, respectively, similar to that of HIV-diagnosed individuals without TB in the same CD4 strata. Among those with a CD4>350, TB-HIV adults started ART sooner than HIV-diagnosed adults without TB (median 77 days [41-281] vs 388 days [70-967]). Following ART initiation, 95% of TB-HIV adults achieved VL suppression within 3-15 months regardless of CD4-cell count, similar to HIV-diagnosed adults without TB.
**Conclusions:** Linkage to HIV care and ART initiation are prompt among TB-HIV adults. At the population level, ART initiation was not significantly delayed among TB-HIV individuals, indicating increasing recognition of the importance of early ART initiation in TB-HIV adults with a CD4< 350, over potential risks of drug toxicity. Among TB-HIV individuals with a CD4>350, delaying ART until after the intensive phase of TB treatment is the norm.

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## ASSESSMENT OF POPULATION VIRAL LOAD IN EPIDEMIOLOGY STUDIES

### TUPEC242

#### VIRAL LOAD METRICS: AN ADDITIONAL BENEFIT FOR HIV SURVEILLANCE?

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**Background:** The use of viral load (VL) metrics as a tool for HIV surveillance has been debated, in particular how these quantities should be measured and interpreted. In this study, various in-care viral load (ICVL) and other VL metrics were compared in their time trends and their association with numbers of newly diagnosed HIV cases over time. We aimed to obtain more insight into the possible additional value of VL metrics for HIV surveillance.
**Methods:** Data from HIV patients registered in the national observational Dutch ATHENA cohort from 2002-2014 were used, including viral load measurements, CD4 cell counts, and epidemiological information. Various VL metrics were compared: log VL at diagnosis, five different ICVL metrics (e.g. median of the median, and mean of the mean, first, last, highest, of the patients' VLs in a year), the proportion of patients with transmission risk (>400 copies/ml), and with a suppressed VL (≤200 copies/ml) per year. Differences in VL metrics among subgroups were tested using Kruskal-Wallis tests and Wilcoxon rank sum tests. Negative binomial regression analyses were performed to study the association between the VL metrics and numbers of newly diagnosed HIV cases one, two, and three years later.
**Results:** Differences in all VL metrics were found for modes of transmission, region of origin, region of current residence, SES, and population density. Log VL at diagnosis increased over time and was negatively associated with numbers of newly diagnosed HIV cases two and three years later ($p < 0.001$). The different ICVL metrics showed similar decreasing trends, except for the median of the median log VL, which remained constant. Of the five ICVL metrics, the mean of the mean log viral load per year was chosen for further analyses. The strongest association was found between this ICVL metric and numbers of new HIV diagnoses in subsequent years, as compared to the other VL metrics.
**Conclusions:** VL metrics may have additional value for HIV surveillance to identify subgroups or locations with reduced treatment uptake or to provide insight in time between infection and diagnosis.

## ASSESSING IMPACT/COST-EFFECTIVENESS OF STRUCTURAL INTERVENTIONS

### TUPEC243

#### CAN SUSTAINABLE DEVELOPMENT GOAL 1.3 MITIGATE ADOLESCENT HIV RISKS?

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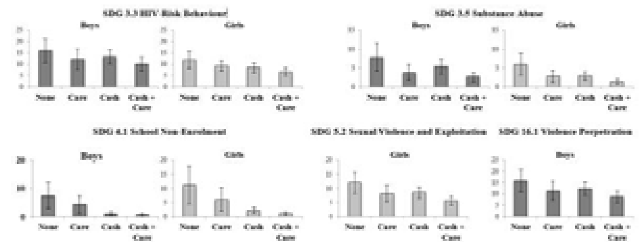
**Background:** The shift from MDGs to SDGs may risk reduction of HIV-specific resources, alongside rising adolescent HIV-infection and AIDS-deaths. But particular SDGs may also have large-scale potential to improve HIV outcomes. This study examines whether SDG goal 1.3: the implementation of national social protection systems, can impact key adolescent HIV risks in South Africa.
**Methods:** Longitudinal survey of adolescents (10-18 years) between 2009 and 2012 during a national adolescent social protection scale-up. Census areas were randomly selected in two urban and two rural health districts in two South African provinces, including all homes with a resident adolescent. Gender-disaggregated multivariate analyses assessed household receipt of 'cash' (i.e. cash transfers, free school) and 'care' (i.e. good parenting, teacher support) social protection, and HIV-related indicators that fell within five SDG goals, using multivariate logistic regression and marginal effects models.
**Results:** Social protection was associated with significant adolescent risk reductions in 11 of 17 gender-disaggregated HIV-outcomes that are also SDG indicators: hunger, HIV-risk behavior, tuberculosis, substance abuse, educational access, sexual exploitation, sexual and reproductive health and violence perpetration (SDGs 2, 3, 4, 5 and 16). For tuberculosis and mental health, and for boys' sexual exploitation, no effects were found and more targeted or creative means will be needed to reach adolescents on these key HIV-related risks.



*[SDG Graphs]*

**Conclusions:** National social protection systems are not a panacea, but findings suggest that they have multiple associations with reducing adolescent HIV risks. In moving beyond the MDGs, we need to act on the potential for utilising the Sustainable Development Goals to maximise the HIV/AIDS response.

### TUPEC244

#### IMPACT OF COMMUNITY-LED STRUCTURAL INTERVENTIONS FOR VULNERABILITY REDUCTION LEADING TO PRIMARY RISK REDUCTION OF HIV IN 5 STATES OF INDIA

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**Background:** Swasti along with its sister organizations of Vrutti and Catalyst Management Services are engaged by BMGF to lead the Avahan India AIDS Initiative (April 2014 to March 2017) across five high HIV prevalence states (Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu and Telangana) of India. Two key factors that shaped the design of phase III were, vulnerability reduction needs to compliment primary risk reduction to ensure effective sustainable results in HIV prevention and community institutions need to be strengthened further to for sustainability. 4 program strategies- safety, security and justice, social protection, financial security and community institution and strengthening-are implemented. The 4 pillars are mutually reinforcing, the first 3 focusing on the individual and ecosystem and last focusing on organization (agency).
**Methods:** Member Engagement and Communication is a systematic and continuous process undertaken from April to September 2015 by Field Workers of 84 Community Organization in their respective intervention areas covering 110 thousand female sex workers in order to collect the information required to identify their needs, prepare program strategies and serve as baseline for impact assessment.
The tool captured demographic and socio-economic profile of respondents and their access to safety, security, and justice, social protection and financial security services. A composite scale was used to compute vulnerability reduction intervention coverage score (range 3 to 15) for every respondent. Data collected was statistically analyzed using Stata 12.0. Multivariate analysis was used to determine the predictors of score and whether, after adjustment of covariates, outcomes (regular HIV testing and current history of STI) differed among the women of different levels of coverage score.
**Results:** Analysis shows that the women of high vulnerability reduction intervention coverage score were more likely (Odds Ratio 1.2) to undertake regular (6 monthly) testing for HIV and less likely (Odds Ratio 0.76) to be suffering from STI. The differences were statistically significant ($p < 0.001$).
**Conclusions:** The study provides an evidence of vulnerability reduction interventions leading to decreased risk of violence, increased social protection and financial security as well as empowerment to negotiate and make choices for safe sex behavior, reduced risk to HIV infection and sustained impact of HIV prevention.

## GENDER SENSITIZATION, EMPOWERMENT AND VIOLENCE REDUCTION

### TUPEC245

### DEVELOPING AND INTEGRATING GENDER-BASED VIOLENCE SCREENING PROGRAM WITHIN COMMUNITY ORGANIZATIONS

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**Background:** In Guyana, women and key populations (men who have sex with men, transgender individuals, sex workers) experience high levels of HIV and gender-based violence (GBV). Guyana's 2014 Bio-behavioural Surveillance Survey found that one quarter to one third of sex workers experienced rape (25.2% male, 25.1% female and 31.1% transgendered). Stigma and criminalization of these behaviours further exacerbate the experience of violence, and hinder access to HIV prevention and support services. Client-friendly, integrated HIV and GBV services would alleviate service barriers and expand referrals to support networks.
**Methods:** In 2014, Advancing Partners & Communities, supported by International Centre for Research on Women, commenced a nine-week pilot intervention at five sites to examine the feasibility of integrating GBV services within HIV services provided by community organisations. Pilot methodology involved adapting an existing GBV screening tool and referral programme, including situational analysis, a resource booklet, a directory of services and programme protocol. Key population members and PLHIV were offered screening while they accessed HIV counselling, testing or care and support services. Community organisation providers received gender-sensitivity and GBV-specific training and onsite mentoring, allowing them to sensitise their local support organisations.
**Results:** Of the 111 persons screened (76 female, 35 male), 51% (56) had experienced some form of violence in the preceding 12 months. 80% (45) of these reported experiencing emotional violence, 52% (29) physical, 39% (22) sexual and 46% (26) psychological, while 25% reported experiencing all forms of violence. Women were four times more likely to experience violence than men. About half (29/56) of the clients who screened positive for GBV were referred to services outside the pilot site, but only 14% (4/29) confirmed accessing these.
**Conclusions:** The pilot demonstrated the effectiveness of an integrated approach in identifying survivors of violence and gathering valuable information. It allowed community providers and referral agencies to have greater awareness of sexuality and gender and how HIV and violence are interlinked. Additionally, the pilot fostered relationships between providers and referral networks, promoting a more gender sensitive and client friendly environment. It acted as an impetus to initiate broader community-health system collaboration and improved response to HIV-related vulnerability.

### TUPEC246

### CREATING ENABLING ENVIRONMENT TO REDUCE VULNERABILITIES OF MSM TOWARDS HIV/AIDS THROUGH KEY STAKEHOLDER'S SENSITIZATION

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**Background:** Homosexuality—a criminal offense in India due to prevailing sodomy laws—invites further stigma and discrimination due to cultural and social influences. MSM are disproportionately impacted by HIV and remain vulnerable due to hostile environments that prevent access to healthcare and legal aid. Healthcare-legal stakeholders play a key role in creating enabling environments for MSM. Thus stakeholder sensitization is crucial and needs focus.
**Description:** The Humsafar Trust is Sub-Recipient for Global Fund Round-9 funded Project DIVA which focuses on to improve policy environment with regards to MSM, transgender and capacity building of the organizations implementing MSM HIV interventions with a focus on stakeholder sensitization conducted via workshops highlighting MSM issues with various training models and methodologies comprising discussion, presentation, case studies, and visual aid thus enabling organizations to engage in policy development, advocacy initiatives, and rapport building with stakeholders.
**Lessons learned:** Twenty one community-led and managed workshops involving 655 stakeholders (209 State AIDS Control Society Officials, 272 police and law enforcement personnel, 78 judiciary members, 96 Media personnel's) were conducted from October 2014-December 2015 on MSM issues in North, North Eastern areas. These workshops highlighted chief community concerns such as violence, harassment, invisibility and sensitized stakeholders with community participation and involvement. Stakeholders reported better understanding of MSM issues after the sensitization workshops.
**Conclusions/Next steps:** Community-led stakeholder sensitization is key in creating and fostering rational attitudes toward MSM. Enabling environments further empower MSM to seek healthcare and legal aid thus reducing their vulnerabilities to violence and HIV. Community involvement and wider replication of similar activities is strongly needed to promote human rights, overall wellbeing and social justice toward marginalized communities such as MSM.

| Sr. No. | Stakeholders | Number of Workshops | States | No. of Participants | Total |
|---|---|---|---|---|---|
| 1 | Govt. Official | 10 | Arunachal Pradesh | 22 | 209 |
| | | | Assam | 17 | |
| | | | Chandigarh | 16 | |
| | | | Chattisgarh | 19 | |
| | | | Haryana | 22 | |
| | | | Himachal Pradesh | 20 | |
| | | | Mizoram | 25 | |
| | | | Nagaland | 25 | |
| | | | Tripura | 17 | |
| | | | Uttarakhand | 26 | |
| 2 | Law Enforcement | 4 | Maharashtra | 211 | 272 |
| | | | Mizoram | 31 | |
| | | | Nagaland | 12 | |
| | | | Tripura | 18 | |
| 3 | Judicial Members | 4 | Arunachal Pradesh | 19 | 78 |
| | | | Mizoram | 7 | |
| | | | Nagaland | 13 | |
| | | | Uttarakhand | 39 | |
| 4 | Media Personnel's (Print and Electronic) | 3 | Mizoram | 48 | 96 |
| | | | Nagaland | 15 | |
| | | | Uttarakhand | 33 | |

*[Workshops detail summary table]*

### TUPEC247

### ROLE OF BUILDING CAPACITIES FOR SEXUAL CONSENT IN REDUCING HIV VULNERABILITY AMONG MSM AND TRANSGENDER WOMEN IN SOUTH ASIA

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**Background:** Behaviour change communication (BCC) efforts in HIV interventions targeted at men who have sex with men (MSM) and transgender (TG) women in South Asia have traditionally not emphasized negotiation of sexual consent. A seven-country South Asian regional study supported by UNDP on gender-based violence (GBV) faced by MSM and TG women suggests that addressing individual and community perceptions, skills and capacities around sexual consent has a key role in reducing HIV vulnerability. This abstract looks at data in particular from Afghanistan, India and Pakistan.
**Methods:** Ten FGDs conducted with MSM and TG women in Afghanistan, India and Pakistan used case vignettes to elicit narratives of GBV among study participants. The FGDs were supported by key informant interviews and literature review. Data was analyzed using a coding tree emergent from the reading of transcripts, and subsequently Atlas-ti software. Study protocols were reviewed by ethics research committees in each of the study countries. Training on gender and sexuality concepts and research ethics preceded the study.
**Results:** Analyses reveal that consent provided by MSM and TG women for unprotected sex with multiple male partners (including commercial partners) has several contexts: Financial compulsions around livelihood, maintaining intimate partners, meeting monetary expectations of community leaders; peer pressure to live up to norms around femininities and masculinities; uncertainty around availability of partners in a safe environment; dealing with stakeholders with institutional power; escape from incessant family and intimate partner violence; and the influence of substance use and mental ill health. Opinions on what constitutes consent and withdrawal of consent vary widely. Narratives of abusive first-time sexual encounters with male partners are frequent. These contexts constitute pathways through which GBV results in increased HIV exposure.

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**Conclusions:** Counselling and other BCC strategies in HIV interventions for MSM and TG women must go beyond exclusive emphasis on condom usage and STI/HIV testing and treatment to cover contexts that lead to unprotected sex and poor health seeking behaviour. They must facilitate access to economic inclusion, legal aid and mental health services and develop capacities in programme beneficiaries to provide well-considered consent and withhold or withdraw it as an HIV prevention strategy.

## TUPEC248

### ENHANCING STRUCTURAL INTERVENTIONS THROUGH BOYFRIEND'S FORUM FOR MITIGATING GENDER-BASED VIOLENCE AMONG FEMALE SEX WORKERS IN HIV INTERVENTIONS

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**Background:** Gender based violence (GBV) has been recognised as a global public health and human right setback leading to elevated rates of morbidity and mortality. Violence which includes sexual abuse and physical assault against female sex workers (FSWs) has been reported to increase the risk of HIV infection and sexually transmitted infection, resulting in reduced control of FSWs to negotiate HIV risk reduction practices with their partners (boyfriends). Low condom use during sex with boyfriends among FSWs represents a potential bridge for HIV transmission of HIV infection to the general population. This paper points out that physical and sexual violence against FSWs committed by boyfriends can be mitigated through structural interventions using boyfriend's forum.
**Description:** Society for Family Health is implementing a five year MARPs project funded by USAID in Nigeria. In Lagos State, the project is implemented in 15 Local Government Areas. In line with the National HIV Strategic Framework, structural interventions using boyfriend's forum was conducted as small group discussions.
The objectives of the boyfriend's forum were to: involve the partners of the FSWs in HIV interventions; create an enabling environment to support safer sex practices and promote sustainability of behaviour change; address emerging issues, social crisis and mitigate violence that affects the FSW communities. In conducting boyfriend's forum, each FSW was requested to invite her boyfriend to the small group discussion where issues' surrounding violence and HIV were discussed. Information gathered were collated, analysed using simple tools and disseminated to the FSW community.
**Lessons learned:** This forum created the opportunity of tackling the issue of non condom use by FSWs with boyfriends supporting the use of condom as at last sexual act. Involvement of boyfriends in structural interventions has impacted on reduction in violence experienced by FSWs. This discussion offers a cost effective way of involving partners of female sex workers in HIV interventions.
**Conclusions/Next steps:** HIV interventions targeting FSWs should encourage a forum among FSWs and their boyfriends to address the role of GBV in HIV related risk behaviours and infection thereby contributing to the reduction of HIV prevalence.

# COLLECTIVIZATION, MOBILIZATION, STIGMA REDUCTION PROGRAMMES

## TUPEC249

### AFRICAN AMERICAN HIV UNIVERSITY, SCIENCE AND TREATMENT COLLEGE: A MODEL TO ADDRESS HIV-RELATED STIGMA AND LOW HEALTH LITERACY IN BLACK COMMUNITIES

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**Background:** Black Americans have the most severe burden of HIV among all racial/ethnic groups in the nation. Research shows that lack of scientific literacy, stigma, conspiracy beliefs and misconceptions of HIV have presented considerable barriers to HIV prevention strategies among Black Americans. Additionally, the Black AIDS Institute's recent report on the state of HIV science and treatment literacy among the HIV workforce indicates that Black members of the workforce score significantly lower than their white counterparts on HIV knowledge questions. The African American HIV University (AAHU) Science and Treatment College (STC) is an intensive training and fellowship program that responds to these barriers in Black communities.
**Description:** Aimed at strengthening organizational and individual capacity to address the HIV/AIDS epidemic in Black communities, the African American HIV University (AAHU) Science and Treatment College (STC) is a comprehensive training fellowship and scholarship program. The program is designed to decrease stigma and misperception and increase the engagement and mobilization of the Black community in HIV prevention and treatment services. The STC curriculum prepares community-based and AIDS service organizations (CBOs/ASOs) to serve as liaisons between people living with HIV/AIDS (PLWHA). STC focuses on HIV and its relationship to human biology, virology, pharmacokinetics, epidemiology, and treatment strategies.
**Lessons learned:** An evaluation of the 2013-2014 AAHU STC cohort reveals a substantial increase of HIV science and treatment literacy among the Fellows (38% increase), their organizations (54% increase) and the communities they serve (42% increase). Fellows reported being more prepared to educate their organizations and communities on HIV science, provide exemplary linkage to care services to their clients and implement HIV programming at the local and regional levels due to skills learned at AAHU STC. The 2014-2015 cohort shows similar increases in knowledge (52% increase). The data from the 2015-2016 is forthcoming.
**Conclusions/Next steps:** AAHU is a successful model in improving science and treatment literacy of Black HIV/AIDS workforce and organizations serving Black PLWHA. AAHU STC incorporates UNAIDS' capacity building recommendations by utilizing both long and short term training and leadership strategies. Additionally, AAHU STC responds to the UNAIDS charge to increase HIV education among those serving highly-impacted communities.

# POSITIVE HEALTH, DIGNITY, PSYCHOLOGICAL WELL-BEING AND MENTAL HEALTH

## TUPED250

### ENHANCING POSITIVE OUTCOMES FOR POSITIVE PEOPLE: HOW DO WE PROMOTE LIFE SATISFACTION AMONG HIV+ LOW INCOME MEN WHO HAVE SEX WITH MEN AND PEOPLE WHO USE INJECTION DRUGS IN TAIWAN?

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**Background:** Increased life satisfaction may promote the health and wellbeing of people living with HIV (PLWH). Studies suggest several factors that may influence life satisfaction, including self-esteem, community engagement, and HIV-related stigma, which may vary across country and may be impacted by social and structural barriers that are differentially experienced by marginalized populations (e.g. men who have sex with men; MSM, people who inject drugs; PWID). The purpose of this study was to assess correlates of life satisfaction among those most affected by HIV/AIDS in Taiwan: MSM and PWID, in order to inform contextually-relevant interventions to improve life satisfaction for these marginalized populations.
**Methods:** During summer 2011, we conducted a cross-sectional, self-administered, paper-and-pencil survey among a convenience sample of MSM and PWID recruited from community-based organizations and local prisons across Taiwan. Items included socio-demographics and standardized measures of medication adherence, AIDS knowledge, empowerment, HIV community participation, HIV-internalized stigma, and life satisfaction. Two multiple linear regressions (1-MSM; 2-PWID) were conducted with life satisfaction as dependent variable.
**Results:** PWID (n=177) were significantly older, had lower SES, were more likely to live in a correctional facility, and had a lower mean life satisfaction score compared to MSM (n=178). Correlates in the MSM model accounted for 40.2% of the variance in explaining life satisfaction ($F(15, 147)=8.27$, $p< .001$). Higher personal empowerment ($\beta=0.39$, $p< .001$), higher interpersonal empowerment ($\beta=0.22$, $p< .05$), and higher HIV community participation ($\beta=0.15$, $p< .05$) were significantly associated with greater life satisfaction. Correlates in the PWID model accounted for 25.8% of the variance in explaining life satisfaction ($F(17, 139)=4.20$, $p< .001$). Higher personal empowerment ($\beta=0.23$, $p< .05$) and lived in a correctional institution ($\beta=0.05$, $p< .05$) were associated with greater life satisfaction.
**Conclusions:** These findings indicate that empowerment-oriented interventions aimed at promoting personal empowerment may increase life satisfaction for MSM and PWID in Taiwan. Life satisfaction among MSM may be further increased by addressing interpersonal empowerment and promoting HIV community engagement. More research is necessary to fully understand the experiences of Taiwanese PWID and to continue to fight not only for the health of these individuals but for their full participation in a satisfying life.

## TUPED251

### LIVING WITH HIV IN SWEDEN: A SURVEY STUDY ON LIVING SITUATION AND QUALITY OF LIFE

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**Background:** The aim of the study was to explore quality of life among people living with HIV and it is the first of its kind and size in Sweden.
**Methods:** In total, 1096 individuals responded to an anonymous survey which included different areas of life regarding self-rated quality of live. The study was performed at 15 health care units in Sweden, representing 75 per cent of the HIV care in the country, as well as two needle and syringe exchange clinics in Stockholm. The respondents are representative of the different sub groups of people living with HIV in Sweden.
**Results:** The participants reported high rates of general quality of life and 60% rated their general quality of life as 7 or above on the general quality of life scale that ranges from 0-10. However, the satisfaction with one's economic situation was low and 70% of respondents were also displeased with their sex life, mainly due to difficulties to engage in sexual relationships. Twenty-five per cent had stopped having sex with others after being diagnosed, and another 25% of the respondents reported that HIV had had a negative impact on their ability to experience pleasure in relation to intercourse. Two aspects of HIV stigma significantly correlated with lower quality of life; other people's attitudes to their HIV infection (concerns over public attitudes to people living with HIV) and self-stigma (negative self-image because of the HIV infection). No correlation was shown between quality of life and sex/gender, age, country of birth or city of residence. However, the results showed that psychological symptoms, psychiatric side effects from HIV medication, substance abuse and high consumption of alcohol, homelessness and low income correlated with lower quality of life.
**Conclusions:** Quality of life among people living with HIV in Sweden is generally high however the results show that quality of life is negatively affected by the social aspects of being open with your HIV status, issues of stigma, possibilities for intimate relationships and a sex life, rather than affected by the medical factors of the infection.

## TUPED252

### CHANGES IN QUALITY OF LIFE AMONG PLHIV IN ESTONIA FROM 2005 TO 2013

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**Background:** The HIV epidemic in Estonia erupted among PWID in early 2000s. Although HIV incidence has fallen from 108 to 21 per 100,000 (in 2001 and 2015, respectively), Estonia still has the highest incidence in Europe.
The aim of our study was to evaluate quality of life (QoL) of PLHIV in Estonia throughout the epidemic.
**Methods:** Data from series of cross-sectional studies (2005, 2008, 2013) using convenience sampling and standardised data collection methodology were analysed. Patients from three outpatient HIV clinics providing 90% of care to PLHIV in Estonia were recruited during routine visits to the clinic. PLHIV at least 18 years old and aware of their HIV-positive serostatus for at least three months were eligible. Data were gathered by self-administered questionnaire. QoL was measured with WHOQoL-HIV Bref. Descriptive statistics with $\chi^2$-test/ANOVA, and ANOVA followed by Tukey's range test were used for statistical analyses.
**Results:** Table 1 shows differences among PLHIV receiving outpatient care in Estonia and Table 2 analyses changes in QoL throughout the years.

| | 2005 | 2008 | 2013 | *p* |
|---|---|---|---|---|
| N | 446 | 441 | 800 | |
| Men (vs. women) | 237 (53) | 225 (51) | 471 (59) | .020 |
| Age* | 26±7 | 29±6 | 34±8 | <.001 |
| Russian ethnicity (vs. Estonian, other) | 381 (86) | 380 (86) | 676 (85) | .899 |
| Employed (vs. unemployed, studying, other) | 131 (29) | 136 (31) | 323 (41) | <.001 |
| On ART | 108 (24) | 219 (50) | 717 (91) | <.001 |
| >5y since first HIV+ test result (vs. <5 years) | 39 (9) | 192 (46) | 619 (77) | <.001 |
| HIV acquired through IDU (vs. sexual, other) | 267 (60) | 235 (54) | 368 (49) | <.001 |
| Note. Data presented as n (%), * data presented as mean±SD. | | | | |

*[Table 1. Socio-demographic characteristics of participants by year of study, Estonia]*

| | 2005 | 2008 | 2013 | *p* | *Post Hoc* |
|---|---|---|---|---|---|
| Physical | 13.4±3.6 | 13.3±3.3 | 13.9±3.4 | .002 | 2013-2005; 2013-2008 |
| Psychological | 13.7±2.7 | 13.2±2.8 | 12.4±3.2 | <.001 | 2013-2005; 2013-2008 |
| Independence | 13.8±3.4 | 14.2±3.3 | 12.5±3.4 | <.001 | 2013-2005; 2013-2008 |
| Relationships | 13.5±3.2 | 13.4±3.4 | 13.2±3.7 | .306 | |
| Environment | 12.2±2.4 | NA | 13.4±4.5 | <.001 | 2013-2005 |
| Beliefs | 13.6±3.3 | 13.8±3.3 | 14.1±3.5 | .055 | |
| Overall QoL | 3.1±0.9 | 3.1±0.9 | 3.1±0.8 | .548 | |
| Health-related QoL | 2.5±1.0 | 2.5±1.0 | 2.8±1.0 | <.001 | 2013-2005; 2013-2008 |
| Note. Data presented as mean±SD. Post Hoc analyses show pairs of studies with statistically significant difference. | | | | | |

*[Table 2. Quality of life among PLHIV in Estonia using WHOQoL-HIV Bref]*

**Conclusions:** We observed significant shifts in QoL of PLHIV in Estonia in 8 years: environmental, physical and health-related QoL were rated higher but independence-related and psychological QoL lower in 2013 vs. 2005. Differences in studies' sample characteristics indicate to an ageing cohort. Our results illustrate the necessity to monitor routinely actual needs of a changing HIV population and adjust services accordingly to promote best possible QoL. Currently, more attention is needed on actions to improve psychological well-being and manageability of everyday activities among PLHIV in Estonia.

## TUPED253

### EFFECTIVENESS OF SUPPORTIVE COUNSELLING FOR CLIENTS RECEIVING ART IN PUBLIC HEALTH FACILITIES IN BOTSWANA

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**Background:** About 320,000 people are living with HIV in Botswana; 24.8% being adults aged 15-49. In 1999 the Government of Botswana expanded its response to HIV/AIDS by providing comprehensive care including provision of free antiretroviral treatment (ART). By 2013; approximately 69% of adults were receiving ART and supportive counselling. The study focused on clients' perception on the quality and scope of supportive counselling services received.
**Methods:** The study employed a mixed method of qualitative and quantitative survey. A three part survey was designed to assess client satisfaction with counselling. A total of 328 clients on ART receiving supportive counselling were interviewed from 10 randomly selected sites that included hospitals and clinics with IDCC services. Supportive counselling components surveyed included: a) personal support system b) goal setting c) HIV educational materials d) benefits of counselling e)disclosure f)quality of life g) perception of counselling relationship h)access to counselling and supportive services i) dealing with stigma. Principal Component Analysis was used to arrive at component-based scores which were further explored using correlation and analysis of variance (ANOVA) procedures.
**Results:** Participants were positive about the benefits of counselling with 74% agreeing or strongly agreeing. However 71% and 67% reported that counselling was unhelpful in dealing with work and financial issues. A significant proportion (30%) reported limited access to counsellors during crisis. The majority of participants were satisfied with family and friends as support system. On disclosure of HIV status, most participants (66%) could not talk to their employers about their positive status and 12% could not disclose to their spouses. On perception of social stigma 38% feel ashamed of their status while 21% believe people treat them differently when they know their status.
Female participants had a positive outlook on life and higher ratings of acceptance by family and friends than did males.
**Conclusions:** With the exception of social stigma, participants perceived counselling as effective. They were particularly positive about the HIV educational materials received, their current quality of life and the support received from family and friends. However additional resources and client focused interventions are needed to adequately meet the supportive counselling gaps.

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## TUPED254

### QUALITY OF LIFE IN HIV+ PATIENTS: RESULTS FROM THE HIV HEART COHORT STUDY

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**Background:** The HIV-infection has changed from an acute life-threatening disease to a chronic infection and affects quality of life. The purpose of this analysis was to evaluate health-related quality of life (HRQoL) in the patient sample of the German HIV HEART study.
**Methods:** The HIV HEART cohort study is a prospective observational study that investigates the frequency and clinical course of cardiac disorders in HIV+ outpatients. HRQoL was assessed by the SF-36. We analysed patients who completed the SF-36 at baseline and at the 7.5-year follow up in order to identify factors that influence HRQoL by linear regression models.
**Results:** Of 1.496 HIV-positive patients 298 fulfilled the SF-36 at baseline and at the 7.5 years follow-up. At baseline, the average age was 43.7±9.1 years, 88.9% were men, 29.2% in CDC stage C, and 44.6% in the immunological stage III. Mean HRQoL according to the physical health summary (PHS) was 49.0±9.2 (baseline) and 47.1±10.3 (7.5years, p=0.022). Results for the mental health summary (MHS) indicate increases (43.9±11.8; 45.4±12.0, p=0.16). Age was a negative predictor for PHS (-1.7,p=0.01) and a higher education level a positive. Depression (-5.0,p=0.007) was a negative determinant for MHS, smoking and hepatitis tend to be negative, while age and HIV-duration were marginally positive. The subscales indicate living alone as a negative and a HIV-RNA below the detection-limit as a positive predictor.
**Conclusions:** HRQoL in patients with HIV may be significantly affected by age, HIV-specific measurements, sociodemographic factors (education-level) and lifestyle factors (smoking). Coinfection with hepatitis or depression decreases HRQoL.

## TUPED255

### RESILIENCE AMONG ADOLESCENTS INFECTED AND AFFECTED BY HIV: DIFFERENCES IN BEHAVIORAL AND PSYCHOLOGICAL OUTCOMES

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**Background:** Psychological and behavioral outcomes among adolescents infected and affected by HIV have been primarily studied using risk-focused frameworks. Yet, adolescents living with HIV, affected by familial HIV, and who have been orphaned by AIDS exhibit remarkable resilience in the context of difficult circumstances. Current research provides little evidence on how resilience relates to psychological and behavioral outcomes of adolescents infected and affected by HIV. We need to build our scientific understanding of how potentially vulnerable adolescents thrive in the context of risk.
**Methods:** We recruited N=195 adolescents 13-15 years through systematic house-to-house sampling for a cross-sectional survey in Khayelitsha, South Africa to determine the relationship between resilience, and psychological and behavioral outcomes. Data were collected from participants via smartphones with audio computer-assisted self-interviewing and included sociodemographic, behavioral, and psychological measures. Behavioral and psychological outcomes were measured using the Strengths and Difficulties Questionnaire (SDQ), Center for Epidemiological Studies Depression Scale for Children, and Revised Children's Manifest Anxiety Scale. Resilience was measured using the Connor-Davidson Resilience Scale. Adolescents living with HIV, residing with parents or caregivers living with HIV, or orphaned were defined as potentially vulnerable. Differences in behavioral and psychosocial outcomes based on median-split resilience scores were evaluated using SPSS Statistics 22 software.
**Results:** Of the 195 adolescents surveyed, 82 were identified as potentially vulnerable. Among these adolescents, those with higher resilience scores reported significantly lower behavioral problems using the total SDQ score (p< 0.009) with a mean score difference of 2.76 (SE: 1.02). On SDQ sub-scales, vulnerable but resilient adolescents reported less conduct problems (p< 0.006), less hyperactivity/inattention (p< 0.022), and less peer relationship problems (p< 0.03). There were no significant differences on depression, anxiety, or emotional symptoms. While the 113 adolescents identified as non-vulnerable presented significant differences between those with high and low resilience scores on total SDQ scores (p< 0.038), none of the SDQ sub-scales were significantly different.
**Conclusions:** The differences in psychosocial outcomes based on levels of resiliency can provide guidance into new approaches for HIV prevention, care, and support. Findings indicate promising directions for resilience-focused adolescent interventions to strengthen psychosocial well-being among adolescents infected and affected by HIV.

## TUPED256

### ABILITY AND WILLINGNESS TO CARE FOR CHILDREN IN A MATURE HIV EPIDEMIC: STREET-INVOLVED CHILDREN, FOSTERING ATTITUDES AND THE CONSEQUENCES OF HIV AMONG KENYAN FAMILIES

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**Background:** Within Kenya, an estimated quarter of a million children live on the streets, and 1.8 million children are orphaned. In this study, we analyze how HIV contributes to the phenomenon of child-homelessness, and ask whether mothers in HIV-affected households are willing to provide care for children in need of a caretaker.
**Methods:** We interviewed a random community-sample of caregiving women (n=1974) in Meru County, Kenya using a structured questionnaire in summer 2015. Items included reported HIV prevalence of respondent and her partner, family functioning, social support, overall health and three outcomes - whether the respondent's has a child currently living on the streets, and whether the respondent was very willing to foster two designations of children - those biologically-related and those currently living on the streets.
**Results:** Controlling for alcohol use, education, wealth, age and household size, we found a positive graded association between the number of partners reported HIV+ and the probability that a child lives on the street, and an inverse graded association between number of reported HIV+ partners and willingness to foster children in need. Social support and overall health mediated only 10% of the association between living in an HIV-affected household and children migrating to the streets. Support, overall health and family functioning mediated 30% to 50% of the association between HIV-affected households and willingness to foster.
**Conclusions:** Reported child homelessness is strongly associated with household HIV, but the small percentage of mediated effect presents a greater need to focus on interactions between household and community factors in the context of HIV. HIV+ women are willing to foster, identifying them as potential assets in efforts to protect children - even more so with better social support, overall health and family functioning.

## TUPED257

### YOUNG PEOPLE LEAD ALL THE WAY: EVIDENCED-BASED ADVOCACY IS THE WAY!

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**Background:** With support from Stop AIDS NOW and GNP+, Uganda Network of People Living with HIV/AIDS (UNYPA) and Uganda Young Positives (UYP) undertook a 3-year Access, Service and Knowledge (ASK) Project for Young People Living with HIV (YPLHIV). We were supported to conduct PHDP research and use the results to improve knowledge, policies and programmes of YPLHIV.
The aim of the programme was to implement an evidence based advocacy programme that focused on Improving meaningful participation of YPLHIV in policy

development and HIV response by increasing awareness, knowledge and capacity, increasing respect of human rights, reducing stigma and discrimination and improving SRH services.
**Methods:** A qualitative approach was applied to this research, 275 youth, were interviewed, using a structured questionnaire. The youth were selected using non-random sampling techniques from the districts of Gulu and Iganga. The results of the data collected from the PHDP research were used to better advocate for SRH services. YPLHIV were at the center of the program from development to evaluation. Advocacy tools such as position papers, social media etc were used. Routine data was collected for health facilities to measure progress.
**Results:** Organized advocacy meetings with parliamentarians and youth groups, used the platform to share advocacy messages developed by the young people. Organized campaigns to promote affordability, availability and accessibility of quality SRH services targeting service providers and policy makers and on Ending through a beauty pageant. Training of YPLHIV on policies, laws, type of rights for YPLHIV, human rights violations and protection, and access to human rights and legal services in Partnership with UGANET. Supported young people to hold their leaders accountable through training, mentorship and strategic advice. Worked with local health facilities in 3 districts in promoting and strengthening YFS services.
**Conclusions:** When advocacy is guided by evidence, it becomes a simple-walk-through, a venture difficult to challenge and people being targeted with the advocacy messages indeed see seriousness in the whole process. Through our PHDP research we have been able to advocate based on evidence and see results from our work.

## TUPED258

### MIXED-METHODS RANDOMISED CONTROLLED TRIAL OF AN INTERVENTION TO IMPROVE THE PATIENT-CENTREDNESS OF CARE FOR PEOPLE ON ART IN SOUTH AFRICA: PATIENT-REPORTED OUTCOMES AND IMPLICATIONS FOR METHODS AND ROUTINE PRACTICE

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**Background:** People living with HIV in Africa self-report their greatest burden is for psychosocial and information needs. 20x20x20 policy requires greater numbers of individuals to be maintained in care, and evidence is needed of simple models to meet needs.
**Methods:** An RCT aimed to determine the effectiveness of a brief intervention of training (2 week duration) of ART primary care clinic staff in person-centred assessment and a simple care plan, compared to standard care. Data were collected at 5monthly timepoints on three validated measures: POS (multidimensional measure of social, psychological, physical and spiritual problems), GHQ (psychiatric morbidity) and MOS-HIV (mental and physical quality of life). Data were analysed using GLAMM for multilevel modelling of ordinal longitudinal data. Qualitative data were collected.
**Results:** N=124 randomised, analysis conducted on n=59 control and n=57 intervention patients. Within-group significant improvements were found for all outcomes. Patients reported significant improvements on the POS in the intervention compared to control group (0.78, 95% CI 0.36-1.21, p< 0.001). Item analysis revealed change was for "Help and advice to plan for the future". No significant difference found for other measures. In qualitative data, control condition participants reported "*Being in the study has helped me a lot....That money goes a long way. Also talking to you helps.... you were listening.*" Another control patient said "*That is what I needed. I needed a friendly smile, a friendly person, a family and you were friendly, you were open, you were free.*"
**Conclusions:** This trial offers important data to inform routine care and future trial design. Firstly, simple training of existing ART nurses achieved improvement in patient-reported help and advice to plan. Second, the teaching of simple communication skills (especially listening) to staff may achieve important and meaningful outcomes for patients. Third, for future trial design to evaluate non-medical self-report outcomes our novel evidence indicates that:
a) Even modest participation expenses can provide important psychosocial improvements;
b) in the context of discrimination and social isolation associated with HIV, the impact of patient-reported outcome measures can be significant;
c) in high volume clinic settings, time taken to express problems can be extremely beneficial.

## TUPED259

### SOCIAL-SUPPORT FOR ADOLESCENTS LIVING WITH HIV IN SOUTH AFRICA: IMPROVING ACCESS AND GAINING INSIGHTS INTO NEEDS AND BEST PRACTICES

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**Background:** Social-support is recognised as a critical component in addressing the HIV/AIDS crisis in adolescents. Adequate social-support is associated with better health outcomes and treatment compliance. However, adolescents living with HIV/AIDS (ALWHA) often have fragmented family-structures and fail to access treatment because of pragmatic challenges and fears of stigma. Social-support helps reduce stigma, but stigma hampers access to support when it is available. Also, to be effective, social-support must respond to recipients' needs.
**Description:** Project Khuluma aims to enhance access to psychosocial-support for ALWHA in South Africa. Peer-led support to groups of 10-15 ALWHA are run via text-message for 3 months at a time. To date, 99 ALWHAs have participated in Khuluma. Pre-and post levels of social-support were measured using the Multidimensional Measure of Perceived Social-Support. Text-message conversations were thematically analysed to gain further insights into social-support needs.
**Lessons learned:** Preliminary evaluation indicates a significant increase in perceived levels of social-support after participation and a significant decrease in internalised stigma. Allowing adolescents to shape the support they receive through peer-to-peer conversations provides unique insight into challenges and best practices in support access and delivery. There need for ongoing social-support is huge. Most of the 40000 text-messages sent were social-support related. Many described feelings of loneliness and isolation. Through Khuluma adolescents accessed and offered one-another informational and emotional-support. Participants discussed challenges navigating relationships with others, and concerns about disclosure. But described feeling a 'sense-of-belonging' through participating in a group, where they could talk candidly about their condition. Text-message-based communication is a preference among adolescents, and this likely contributed to high uptake.
**Conclusions/Next steps:** Khuluma helps ALWHAs build stronger networks of social-support with others facing similar struggles, and overcomes many barriers to accessing and providing social-support. Findings are positive and we aim to scale-up. Insights into the support needs of ALWHAs could also be valuable to policy-makers and programme-designers.

## TUPED260

### PSYCHOLOGICAL AND SOCIAL SUPPORT OF MSM LIVING WITH HIV, IN A HOSTILE ENVIRONMENT: RELEVANCE AND CHALLENGES

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**Background:** Since 2008, the Access Centre of Douala in Cameroon strives to offer to MSM living with HIV, health care free of any stigma. These people face several obstacles related to the double stigma of which they are victims, in a context that is particularly hostile to them. It therefore seemed clear from the start that the only medical care and follow-up would not be enough.
**Description:** The Access Centre is well structured into four autonomous yet interdependent Units : Human Rights Unit, Prevention Unit, Medical Unit and Psychological and Social Unit. The latter has developed activities related to the well-being of the beneficiaries of the Centre, including counseling, psychological consultations, positive life workshops, support groups, and vulnerability assessment. A diversified staff has been set up including psychosocial counselors, a social worker, psychologist, and therapeutic education specialists.
**Lessons learned:** The need of psycho-social support among MSM is more and more strong, more so than for medical consultations. In 2015, 400 medical consultations were given, against 1850 psycho-social support sessions. From around 30 beneficiaries of psycho-social support in 2008, we got 650 beneficiaries in 2015, including 313 HIV-positive MSM. Psycho-social support has opened the Center to other people and other problems out of HIV. This helped helped to de-stigmatize the Centre. There were 121 people from other population who received support in 2015, among which 67 HIV-positive.
Psycho-social support helps improve the state of the MSM living with HIV. The median CD4 count of patients followed MSM has been increasing. In 2011, it was 386/ $mm^3$ , 388 in 2012, 401 in 2013, and 433 in 2014.
The differentiation of the Units at Access Centre has helped the Psychological and social Unit to unfold fully, while integrating care has allowed beneficiaries to get a global and efficient care. Many view psycho-social personnel as their last resort in a homophobic environment.

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**Conclusions/Next steps:** Since the need of psychosocial support among MSM is increasingly strong, it is necessary to strengthen the staff and skills, and gradually make the staff professional. In this sense it is necessary to look for certified training, and better organize the body of psychosocial support professionals.

## ADAPTATION TO LIVING WITH HIV FOR INDIVIDUALS, FAMILIES AND COMMUNITIES

### TUPED261

### FACILITATORS OF AND BARRIERS TO HIV SELF-MANAGEMENT: PERSPECTIVES OF HIV-POSITIVE WOMEN IN CHINA

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**Background:** In China, heterosexual sex is currently the most common transmission route for HIV. Many infected women belong to the high-risk category of commercial sex workers, but a significant number are housewives or career women who have been infected by their husbands. At least one third of sexually active men who have sex with men in China are married, so a woman might be married to a high-risk partner without realizing the need to take precautions against HIV/AIDS. China currently faces an HIV/AIDS crisis in which increasing numbers of HIV-positive individuals will need antiretroviral therapy and psychosocial support to cope with the diagnosis and ongoing treatment. Little is known about self-management among HIV-positive Chinese women in China. Understanding the experiences of this population is needed to promote self-management. This study aim is to explore perceived facilitators of and barriers to HIV self-management for HIV-positive Chinese women.
**Methods:** 27 in-depth interviews with HIV-positive women were conducted in Beijing and Shanghai. We recruited women who were diagnosed with HIV aged 18 years and above without significant cognitive problems who were receiving care at one the two hospitals above, either inpatient or outpatient. To be eligible for the study, the women had to be willing to share their personal experiences with us.
**Results:** Facilitators included families being supportive after disclosure, patients learning how to live with HIV, antiretroviral therapy (ART) adherence, and rediscovering the meaning of life. Several barriers were also identified, including lack of support, stigma, fatigue, and financial difficulty. HIV disclosure is essential to obtaining necessary support. Ironically, disclosing to family members who stigmatize the disease may invite unwelcome responses. Helping HIV-positive women to decrease self-stigma and develop an effective way to disclose, if they choose to, is important.
**Conclusions:** To break the isolation of HIV-positive women in China, future interventions should focus on disclosure strategies, tailoring them to enhance social support and decrease self-stigma. This study provides valuable information for the development of HIV-related self-management interventions in China, especially for HIV-positive women. The study also has implications for programs that are tailored to populations in similar sociocultural circumstances.

### TUPED262

### INTERVENTION FOR SERVICE PROVIDERS TO SUPPORT MATERNAL HIV DISCLOSURE IN THAILAND

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**Background:** With the advent of antiretroviral therapy, Mothers Living with HIV (MLH) in Thailand are living longer. One of the main challenges facing MLH is on their decisions on whether, why, and how they disclose their HIV status to their HIV-negative children. Service providers in Thailand can play a critical role in supporting MLH around their disclosure decisions.
The goal of this study was to develop and implement an intervention for service providers to assist MLH with their HIV disclosure to children in Northeastern Thailand.
**Methods:** In Phase 1, we explored the barriers around HIV disclosure to children through in-depth interviews with 10 service providers and 30 MLH. In Phase 2, we developed the intervention for service providers via focus groups with 20 MLH and 10 service providers. In Phase 3, we implemented the intervention with 40 service providers over 3 weeks.
**Results:** Phase 1 in-depth interviews revealed various factors influencing MLH's HIV disclosure to children, including fear of privacy breach, self-blame, communication difficulties, fear of rejection. In Phase 2, for each of the barriers identified from Phase 1, the intervention content consisted of the following components: assessment of readiness for HIV disclosure, examination of the risks and benefits of HIV disclosure, and skills-building sessions to assist PLH with step by step behavioral practice around HIV disclosure. In the Phase 3 intervention pilot, 40 service providers participated in the 3-week intervention. At their 3-month follow-up meeting, service providers reported interacting with 106 MLH. Service providers reported having improved confidence and skills to better assist their MLH patients around HIV disclosure to their children. Service providers reported about 60% of MLH disclosed their HIV status (62 MLH) to their children aged 7-17 years. The majority of MLH reported improved interaction with their children after disclosure, 97% reporting having no regrets about disclosing their status to children.
**Conclusions:** Our intervention pilot provided evidence for the next research phase of scaling up the intervention for service providers to better assist MLH around their HIV disclosure to children. We are currently developing strategies to integrate the intervention into the existing practice in the district hospitals.

### TUPED263

### A DESCRIPTIVE PROFILE OF PRIMARY CAREGIVERS OF HIV-INFECTED CHILDREN IN THE WESTERN CAPE, SOUTH AFRICA

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**Background:** Antiretroviral therapy rollout in South Africa allows HIV+ people to live significantly longer. The growing number of HIV+ children increases the burden on society to provide primary caregivers, who have a demanding and time-consuming responsibility to provide quality care to these children. The purpose of the study was to create a descriptive profile of primary caregivers of HIV+ children in the Western Cape.
**Methods:** This cross-sectional study utilised data from a Caregiver Health Questionnaire (CHQ) completed by medical doctors during consultation with primary caregivers of 7-year-old HIV+ children. The CHQ provides background information and insight into the caregiver's mental and physical health status, financial and social support, and any influence on the child's adherence to ARVs. These children were on a follow-on study of the Children with HIV early antiretroviral (CHER) trial in the Family Clinical Research Unit, Tygerberg Hospital, South Africa. An adherence counsellor assisted with translations where necessary. Descriptive statistics were used to generate a profile of the caregivers. The biopsychosocial model served as the theoretical framework.
**Results:** The 79 caregivers in the study were all female, mean age of 35.1 years (range 23-55). The majority were Black Africans (84.8%), biological mothers (82.3%) and unemployed (59.5%). Only 26 (32.9%) biological fathers were living with the child. The HIV-infected children's average age was 7.45 years, 54.4% were girls. The children's WHO HIV disease stage was stage 4 in 49.4% and stage 3 in 40.5%. Information on the caregivers is summarised in Table 1.
**Conclusions:** The caregivers are generally young, Black African females and the biological mothers of the HIV-infected children. The majority were HIV+, unemployed and lacked financial stability. The fathers were primarily absent and not supportive. Our data suggest a need for support on several levels to assist the caregivers in performing their caring role of HIV+ children.

| Characteristic | Frequency (%) | Characteristic | Frequency (%) |
|---|---|---|---|
| Female | 79 (100%) | Other physical illness present | 21 (26,6%) |
| Black African | 67 (84,8%) | Education grade 10 or less | 64 (81,0%) |
| Biological mother of HIV+ child | 65 (82,3%) | Employed | 32 (40,5%) |
| HIV-positive | 70 (88,6%) | Monthly household income <R2000 | 39 (49,4%) |
| HIV status disclosed to family | 73 (92,4%) | Sense of sufficient social support | 40 (50,6%) |

*[Characteristics of caregivers (N = 79)]*

## TUPED264

### ALLEVIATING STRESS AND IMPROVING FAMILY FUNCTIONING: RESULTS FROM A PRELIMINARY RCT OF A COUNSELING INTERVENTION FOR PARENTAL HIV DISCLOSURE IN CHINA

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**Background:** One of the greatest challenges for parents who are living with HIV/AIDS is the decision-making process of whether, when, and how to disclose their HIV status to their children. Parents around the world report significant disclosure related distress such as fear of stigma, discrimination and possible rejection, uncertainty about how to disclose, and anxiety about negative psychological consequences for the child. HIV-positive parents in China have a particularly difficult time navigating this decision, as it is a setting with acute HIV stigma, limited mental health resources, as well as strong prescribed familial roles and responsibilities. Research is needed on interventions to support parents through this difficult process.
**Methods:** 40 HIV-positive outpatients with at least one child (13-25 years old) who was unaware of the parent's HIV diagnosis were enrolled in this trial at Shanghai Public Health Clinical Center. Participants were randomized to intervention or treatment-as-usual (TAU) arms with blind assessment. The intervention condition received three, hour-long, individual sessions over 4 weeks, which covered assessment, discussion of advantages and disadvantages to disclosure, psychoeducation about developmental appropriateness for children, psychoeducation about a continuum of disclosure behaviors ranging from no disclosure to full disclosure and open communication about HIV, and disclosure planning and practicing via role-plays.
**Results:** Primary disclosure related outcomes for intervention versus TAU were self-reported disclosure distress, self-efficacy, and disclosure behaviors. Secondary outcomes were parent child communication and family functioning. Cross-sectional (Wald tests) and longitudinal (general estimating equations) analyses at post intervention (4 weeks) and follow-up (13 weeks) demonstrated effects in the hypothesized directions of improved efficacy, behaviors, communication, and functioning, as well as decreased sitress.
**Conclusions:** Our results suggest that nurses are able to deliver a counseling intervention for parents living with HIV in China, with the potential to alleviate parental distress related to HIV disclosure to their children as well as improve family functioning. These promising results for a brief intervention integrated into a primary HIV care clinic setting warrants future trials powered for efficacy.

## TUPED265

### FAMILIES AFFECTED BY HIV/AIDS: CAREGIVERS' AND CHILDREN'S RESILIENCE AND CHILDREN'S DAILY CORTISOL OUTPUT

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**Background:** Caregivers (with or without HIV infection) for children affected by HIV/AIDS may have to face various challenges during their parenting practice. They may have to cope with their own or other adult family members' disease issues, as well as with psychological problems such as emotional difficulties or concerns towards the future of children. However, some of them show capacities (i.e. resilience) to adapt in the face of trauma and stress and even assist other family members to achieve better adjustments. This study's objective was to examine the effect of caregivers' resilience on children's health-relevant biomarker (daily cortisol output), as well as the mediating role of children's own resilience in such an effect.
**Methods:** Using a structured survey, quantitative data were collected from a total of 645 (8-15 years old) children affected by HIV and their primary caregivers (parental or non-parental) in a rural county of central China. Children also provided multiple saliva samples daily (waking, 30 minutes after waking, late afternoon and bedtime) for three consecutive days to assess their total cortisol output over the days. Caregivers' and children's resilience was assessed via self-report using adapted Connor-Davidson Resilience Scale (CD-RISC).
**Results:** Children with higher resilience showed higher cortisol levels at awakening and higher total cortisol output over the day (area under the curve with respect to ground, $AUC_G$). Caregivers' resilience was positively associated with children's cortisol levels at awakening and total cortisol output. Beside the direct effect, we also found evidence for an indirect effect of caregivers' resilience on children's wakeup cortisol level and daytime total cortisol output through higher children's resilience.
**Conclusions:** This work has implications for studying physiological functions among children affected by HIV/AIDS, and also suggests a pathway by which caregivers' resilience influences children's physiological functions and physical health. The capacities to adapt in the face of trauma and stress in HIV-affected families may be developed among both caregivers and their children.

# EXPERIENCES AND IMPACTS OF ANTIRETROVIRAL THERAPY

## TUPED266

### BARRIERS TO AND FACILITATORS OF ANTIRETROVIRAL THERAPY (ART) ENGAGEMENT AMONG ADULT GHANAIAN MEN WHO HAVE SEX WITH MEN (MSM) LIVING WITH HIV

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**Background:** Antiretroviral therapy (ART) is highly effective for reducing HIV viral load, thereby allowing people living with HIV to live longer and reduce their risk of transmitting the virus. In Ghana, men who have sex with men (MSM) have HIV prevalence that is more than triple that of the general population. However, no research exists on factors that influence engagement in ART in this group. Consequently, this qualitative study examined the barriers and facilitators to ART engagement among adult Ghanaian MSM living with HIV.
**Methods:** In-depth, face-to-face interviews were conducted with 30 Ghanaian MSM living with HIV between May and July 2015.Participants were recruited through key informants and snowball sampling. All interviews were conducted in a private office at a local community based organization. Verbatim transcripts of the recorded sessions were read several times prior to developing a coding scheme.
All interviews were coded utilizing qualitative analysis software (NVIVO 10). Emergent barriers and facilitators were discussed with other authors and disagreements were discussed until consensus was reached.
**Results:** The average age of participants was 29.1 years (S.D. = 7.7) and more than half (N=16, 53%) self-identified as gay/homosexual. Participants described financial burden as the primary barrier to engagement in HIV medication regimen. They reported not having sufficient money to afford ART, food to take medicines with, transportation to health center, and other lab procedures (CD4 count and viral load) required for ART prescription. Other barriers that emerged included prior adverse side effects from ART, shortage of ART at pharmacies and uneasiness with being seen at an HIV-related health facility. Facilitators of ART engagement included perceived effectiveness and benefits of ART, fear of public manifestations of HIV symptoms, and social support from friends and family.
**Conclusions:** This study identified financial difficulties as the most common barrier to ART engagement. This finding highlights the need for more cost-effective strategies to make ART and other auxiliary expenses such as food and transportation to medical facilities affordable for Ghanaian MSM. This might help prolong the lives of those affected by HIV and reduce their risk of infecting others.

## TUPED267

### "I TOLD HER THIS IS YOUR LIFE": HOW PRIMARY PARTNERS HELP OVERCOME BARRIERS RELATED TO ART ADHERENCE IN SOUTH AFRICA

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**Background:** While South Africa's ART program is one of the largest in the world, many structural and psychosocial factors prevent HIV-positive individuals from achieving optimal adherence. Social relationships can help HIV-positive individuals overcome barriers to HIV care and treatment; however, little is known about the ways in which primary partners may affect each other's adherence to ART in South Africa. We qualitatively explored how relationship factors and partner support influence adherence to ART within heterosexual couples from rural KwaZulu-Natal, South Africa.
**Methods:** Twenty-four adult heterosexual couples (48 individuals) with at least one HIV-positive partner were recruited from local healthcare sites using maximum variation sampling. HIV-positive partners were sampled based by gender and length

of time on ART. Semi-structured interviews were conducted separately, but simultaneously, with each partner between November 2014 and March 2015. Topics discussed included: relationship history and future aspirations, relationship dynamics, intimate partner violence, experiences with HIV care and treatment (i.e., adherence, barriers to care and treatment), and HIV-related social support. Data were analyzed using an iterative thematic approach in Dedoose.

**Results:** The majority of couples were concordant HIV-positive (92%) and both on ART (63%). Barriers to ART adherence included: lack of transport and money to travel to clinics, limited nutritious food options, incarceration, alcohol consumption, inability to pick up ARTs because of work or travel, and service delivery issues at ART clinics. Participants described how primary partners helped them overcome these barriers through the provision of instrumental, informational, and emotional support. Forms of instrumental support included: providing transport or money to travel to the clinic, money for food, assistance preparing and purchasing healthy food; reminding a partner to take pills and attend appointments; and picking up pills. Informational support included: encouraging partners to stop drinking alcohol, eat healthy food, and adhere to medication. Emotional support included: providing love, comfort, and reassurance of one's commitment to the relationship.

**Conclusions:** Findings reveal that primary partners are important pillars of support for ART adherence, especially in a context of high unemployment and poverty. Future interventions that encourage and leverage these supportive relationships could improve ART adherence among heterosexual couples in similar settings.

## TUPED268

### The crucial role of the family context: family functioning and depression in HIV patients on public-sector ART in South Africa

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**Background:** As a chronic illness, HIV/AIDS requires life-long treatment adherence and retention - and thus sufficient attention to the psychosocial dimensions of chronic disease care in order to produce favourable antiretroviral treatment (ART) outcomes in a sustainable manner. Given the high prevalence of depression in chronic HIV patients, there is a clear need for further research into the determinants of depression in this population. In order to comprehensively study the predictors of depressive symptoms in HIV patients on ART, the socio-ecological theory postulates to not only incorporate the dominant individual-level and the more recent community-level approaches, but also incorporate the intermediate, but crucial family-level approach.

**Methods:** The present study aims to extend the current literature by simultaneously investigating the impact of a wide range individual-level, family-level and community-level determinants of depression in a sample of 435 patients enrolled in the Free State Province of South Africa public-sector ART program. Structural equation modeling is used to explore the relationships between both latent and manifest variables at two time points.

**Results:** Besides a number of individual-level correlates - namely education, internalized and external stigma, and avoidant and seeking social support coping styles - of depressive symptoms in HIV patients on ART, the study also revealed the important role of family functioning in predicting depression. While family attachment emerged as the only factor to continuously and negatively impact depression at both time points, the second dimension of family functioning, changeability, was the only factor to produce a negative cross-lagged effect on depression.

**Conclusions:** The immediate and long-term impact of family functioning on depression draws attention to the role of family dynamics in the mental health of people living with HIV/AIDS. In addition to individual-level and community-based factors, future research activities should also incorporate the role of the family context in research into the mental health of HIV patients, as our results demonstrate that the familial context in which a person with HIV on ART resides is inextricably interconnected with his/her health outcomes.

## TUPED269

### Comparison of different self-reported ART adherence measures: a quantitative study in China

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**Background:** Antiretroviral treatment (ART) benefits HIV-infected persons by controlling virtual replications and reducing the likelihood of opportunistic infections. To obtain full benefits of ART, maintaining optimal levels of adherence is crucial for people living with HIV/AIDS (PLWH). Most studies have used subjective measures to assess adherence based on self-report of dosage in a certain time window. Various self-reported measures have been used but unclear how they are good in predicting clinical outcomes (CD4 counts, viral load). The current study aims to compare several self-reported ART adherence measures in terms of their associations with HIV clinical outcomes.

**Methods:** A total of 2,987 PLWH was recruited from 12 cities/counties in Guangxi, China to participate in a cross-sectional survey on health condition. Participants who received ART (n=2,050) were asked about medicine adherence issues. The ART adherence measures include dosages missed in past 3 days, days of taking medicine as prescribed in past 1 month, days of not taking medicine as prescribed in past 1 month; whether or not miss a dosage, the frequency of missing a dosage, and whether or not miss a dosage in past weekend. Correlation test and linear regression models were used for continuous adherence measures and one-way ANOVA and GLM were employed for categorical measures.

**Results:** Controlling basic demographics, CD4 counts were significantly associated with dosage missed in past 3 days (aβ=-.092, p< .0001), days of taking ART as prescribed in past 1 month (aβ=.084, p< .0001), and days of not taking ART as prescribed in past 1 month (aβ=-.046, p=.041). GLM results suggest that CD4 counts was significantly associated with whether or not miss a dosage (F=4.544, p=.033), frequency of missing a dosage (F=4.399, p=.013), and whether or not miss a dosage in past weekend (F=3.259, p=.039). Only dosage missed in past 3 days was significantly related to virus loading level (F=7.761, p< .0001).

**Conclusions:** Self-reported measure is useful to assess ART adherence because of its significant association with clinical outcomes among PLWH. However, measures with various recall windows and expressions differ in magnitude of the relations to clinical outcomes, which should be fully considered in selecting measurement in future.

## TUPED270

### Results of the Sepo II study: experiences of HIV-related episodic disability among women and men on ART in Lusaka, Zambia

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**Background:** The concept of "episodic disability" (i.e., fluctuations of wellness, illness and disablement) was developed in Canada to describe the experience of people living long-term with HIV since the advent of ART in the 2000's. Framing challenges in terms of "episodic disability" contributed to health care and employment policies in Canada. However, HIV-related episodic disability has not been explored in Sub-Saharan Africa despite increased access to ART in the region in the last decade. The objective of this study was to explore experiences of HIV-related episodic disability among women and men on ART in Lusaka, Zambia.

**Methods:** "Sepo II" is a qualitative longitudinal study involving three in-depth, semi-structured interviews approximately 6 months apart with participants from public and private health clinics in Lusaka, Zambia. Thirty-five participants were purposively recruited for variability by gender (17 men, 18 women), time on treatment (1-13 years), and socio-economic status. Interpretivist analysis was conducted on 98 in-depth interviews using the collaborative "DEPICT" method (Flicker & Nixon, 2013). The study was guided by the WHO "International Classification of Functioning, Disability and Health" (ICF), and O'Brien's "Episodic Disability Framework".

**Results:** Participants described diverse experiences of episodic disability across the three interview rounds. Greatest fluctuations were described in terms of "impairments" (e.g., fatigue, pain, memory challenges) and "participant restrictions" (e.g., shifting social roles), which are disablement concepts in the WHO ICF. Participants

frequently described multiple co-existing forms of disablement, of varying degrees of severity (from bothersome to extremely limiting), and which were improving, resolving or worsening in unique patterns. Despite these narratives of disablement, participants also consistently emphasized their gratitude for life-saving ART and, paradoxically, often described themselves as doing well.
**Conclusions:** This is the first study to describe the experience of episodic disability among women and men living with HIV in a Sub-Saharan African context. Findings point to the need for health and social service providers to consider the diverse challenges beyond the medical model that are faced by people on ART who may report "doing well". "Rehabilitation" and "disability" frameworks can help illuminate the episodic health- and life-related impacts of living longer with HIV.

## TUPED271

### Adherence with combination antiretroviral therapy (cART): do challenges still persist?

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**Background:** The primary goals of cART are to maximally suppress viral load, restore and preserve immune function, reduce morbidity and mortality, improve quality of life, and prevent HIV transmission. Adherence to cART continues to be a challenge in the treatment of HIV. Partial adherence can result in failure to maintain virologic suppression and permit the development of ARV resistance through viral mutation. This study focuses on the factors that drive adherence to cART and to determining their importance in choosing an cART regimen among patients and physicians.
**Methods:** In mid-2014, two cross-sectional Internet-based surveys were conducted in the US with 400 patients on cART and with 200 physicians who treat HIV. The online surveys were pretested with respondents prior to administration. The patient survey included assessments of quality of life, HIV treatment experience, medication side effects, adherence behaviors, treatment satisfaction, and interaction with health care providers. The physician survey addressed similar topics to allow for comparisons between HIV patients and physicians.
**Results:** The patient sample consisted of predominantly males (79.3%) with an average age of 41.1 (SD = 13.2) years. Sixty-one percent reported being homosexual, while 28.1% reported heterosexual, and 11.1% bisexual. The physician sample consisted of 119 primary care and 81 infectious disease specialists. Based on the adapted Morisky Medication Adherence Scale, 68.8% percent of participants self-reported as being adherent (score < 3) with their HIV medications. Physicians were more likely that patients (64.5% vs 13.7%) to cite side-effects as a reason for non-adherence. Availability and forgetting to take medication, feeling depressed and side effects were most commonly cited reasons by both groups (table 1).

| Top Reasons for Not Taking HIV Medications as Prescribed (Ranked by Patients) | Patients (%) | Physicians (%) |
|---|---|---|
| Forgetting to take | 36.2% | 67.5% |
| Not having pills available (e.g., away from home, on vacation) | 17.7% | 39.5% |
| Felt ill or sick | 15.9% | 45.5% |
| Change in daily schedule | 15.3% | 24.5% |
| Busy with other things | 14.9% | 34.5% |
| Feeling depressed/overwhelmed | 14.6% | 61.0% |
| Experienced side effects | 13.7% | 64.5% |
| Had difficulty taking medications at specific times | 13.2% | 33.0% |
| Did not want others to notice me taking my medication(s) | 12.9% | 26.0% |

*[Table 1. Comparison of Reasons for Non-Adherence According to HIV Patients and Physicians]*

**Conclusions:** Adherence challenges persist with cART for both physician and patients. HIV and its treatment has a substantial impact on patients' lives and many factors come into play in decision-making by both the patient and the physician.

## TUPED272

### "Sometimes you feel like you have no choice but to bear with it all": how much do we understand side-effects of ARVs on lives of women living with HIV?

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**Background:** WHO promotes far-reaching ARV coverage for prevention and treatment of HIV, yet little is known about long-term adherence to ARVs and their effects in relation to physical, sexual, psychological or other dimensions of women's lives. The aim of this study was to examine ARV side-effects in women living with HIV.
**Methods:** A global online values and preferences survey was commissioned by WHO. It was informed and shaped by a Global Reference Group of 14 women living with HIV and included an optional section on HIV treatment and side-effects . The survey contained a mix of closed questions (quantitative analysis) and free text responses (qualitative analysis).
**Results:** Of 832 women aged 15-72 from 94 countries who completed the online survey, 434 (52%) responded to the optional treatment section. Of these, 88% were on treatment. Only 11.9% reported no side-effects.
The mean number of different reported ARV side-effects was four including fatigue (64.8%), mood changes (47.1%), headaches (40.6%), body dysmorphia (40.2%), loss of libido (37.5%), strange dreams (29.9%), and menstrual disorders (24.1%). These affected women's ability to enjoy a healthy and satisfying sex life; to work; and to enjoy social activities. Singly or collectively, side-effects put strains on relationships, led to financial insecurity or poverty, and contributed to mental ill-health, including loneliness, isolation, stress, anxiety, and depression. Respondents reported limited information about side-effects, especially at treatment initiation, and felt that health providers did not take side-effects seriously. Regarding an undetectable viral load, some women expressed potential or actual reduced ability to negotiate condom use, to protect against STIs or pregnancy.
**Conclusions:** These findings have implications for treatment roll-out, warranting attention from policy makers and providers alike. Urgent research is required to understand: to what extent is it possible to adhere to medication which reduces quality of life, especially if women start ARVs when feeling well; how women's concerns about STIs and unplanned pregnancy can be addressed in the context of treatment *as* prevention; whether and how coercion and potential gender-based violence can be avoided in relation to ARV uptake; and the risks, benefits and safety of long-term medication use.

## TUPED273

### Eddies, backflows and stagnancy: qualitative research findings from Eastern and Southern Africa on the HIV treatment cascade and its 'goodness of fit'

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**Background:** The HIV treatment cascade has become a guiding model for delivering medical HIV services, focusing on sequential steps, from the initial diagnosis of HIV through to viral suppression. Although commentators have recently argued that it fails to resonate with the complex and lived realities of people living with HIV, no previous multi-country qualitative study has interrogated the use-value of the HIV treatment cascade model - from the perspective of users and providers themselves - to develop recommendations for a second generation of HIV care continua frameworks.
**Methods:** Data is drawn from a multi-country study examining how people living with HIV (PLHIV), and their sociality, interact with the HIV treatment cascade. Studies took place in Uganda, South Africa, Tanzania, Kenya, Malawi and Zimbabwe and involved in-depth interviews with 180 HIV service users, 36 HIV service providers and 36 relatives of people known to have died from AIDS. Ethical clearance was obtained in each country. Data were coded in NVivo10 using inductive and deductive approaches to identify emerging themes.
**Results:** Findings reveal a mismatch between how PLHIV experience and engage with HIV care and the linearity assumed by the treatment cascade framework. PLHIV - across all sites - were observed to step in and out of HIV services in multiple and unpredictable ways, and levels of engagement were variable. This led to different forms of disruption to progression along the cascade, influenced by three

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factors: i) contextual influences, including partner, family, and community relations, cultural norms and socio-economic circumstances; ii) quality of health services, including patient-provider relations and trust; and iii) individual agency, with some PLHIV being fed-up with taking drugs, and others seeking alternative services and starting over.
**Conclusions:** Biomedical HIV treatment trajectories do not resonate with the frequently unpredictable ways in which PLHIV interact with HIV services. 90-90-90 targets place an even narrower emphasis on the cascade and may inadvertently result in lost opportunities to support PLHIV who do not readily align their care-seeking to restrictive pathways. Second generation HIV care continua frameworks are needed that are more flexible and patient-centered, and recognize how sociality and agency interface with individual HIV care trajectories.

## TUPED274

### LOOKING AT ADHERENCE THROUGH A DISABILITY LENS

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**Background:** Antiretroviral therapy (ART) has changed the lives and expectations of millions of people living with HIV. However, maintaining an undetectable viral load requires strict adherence to treatment. As current programmes targeting adherence begin to lose speed, the effects of co-morbidities and disabilities on adherence are increasingly being considered. While the effects of many co-morbidities have received substantial research interest, the impact of functional limitations/disabilities is seldom explored.
**Methods:** This paper draws on baseline cohort data of 1042 people on ART in a public healthcare setting in KwaZulu-Natal, South Africa. The study examined functional limitations/disability (WHODAS-2.0), depressive symptoms (CES-D10), HIV-related health symptoms, adherence (CASE index), livelihood (social, financial, physical/natural, and human capital), food security (U.S. Household Food Security Survey Module: Six-Item Short Form), and biomarkers such as CD4 and BMI. The analysis explored associations with missed treatment and included descriptive statistics, bivariate, and multivariate analyses.
**Results:** 83% of participants scored with perfect adherence (no missed/delayed treatments) and only 7% scored below the threshold for adequate adherence. Depressive symptoms and mobility limitations were experienced by 26% and 22% of participants respectively, and both were associated with worse adherence. 13% of participants experiencing mobility limitations were not adequately adherent, as compared to 6% in the rest of the population. Similarly, 13% of participants experiencing depressive symptoms were not adequately adherent, as compared to 5% in the rest of the population. Multivariate analyses controlling for age, gender, ARV duration, and exposure to shocks found that depressive symptoms and mobility impairments were the most significant predictors of inadequate adherence.
**Conclusions:** Given the current focus on treatment adherence within the Fast-Track strategy and the 90-90-90 goals, it is important to identify drivers of non-adherence. While mental health has previously been highlighted, this study suggests that disabilities may be just as important in achieving adherence. Given this finding, there is a need for further inclusion of rehabilitation services in the continuum of HIV care. Additionally, more rigorous research is needed to better understand the role of disability as a barrier to adherence and how rehabilitation can be used to mitigate this risk.

## TUPED275

### ARE HIV ANTIRETROVIRAL THERAPY PROGRAMMES POSITIVELY AFFECTING RISKY BEHAVIOUR AMONGST PATIENTS? A REVIEW OF THE SOUTH AFRICAN HIV INCIDENCE PROVINCIAL SURVEILLANCE SYSTEM (HIPSS) DATA

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**Background:** South Africa has the largest HIV treatment programme with >3,000,000 people accessing antiretroviral treatment (ART). Studies show that patients on ART present a lower risk of transmitting HIV to sexual partners. However, few studies have investigated the impact of exposure to HIV services, specifically, HIV counselling and testing and accessing health facilities, have on the risk behaviour of clients on ART.
**Methods:** The HIV Incidence Provincial Surveillance System (HIPSS) collected data in 2014-2015 from randomly selected individuals aged 15 to 49 years in 9554 households in the uMgungundlovu District in KwaZulu-Natal, South Africa. Adjusted odds ratios (aOR) were calculated by means of a logistic regression.
**Results:** In total, 3855 (40%) HIV positive participants were categorized into individuals on ART (40%); those who knew their status but were not on treatment (19%) and; those who did not know their status and were not on treatment (41%). The majority of respondents were female (75%) with the mean age of 33 years (SD = 8). Participants unaware of their status were more likely to use condoms inconsistently in the previous 12 months (83.1%) than those who knew their status but were not on ARVs (74.5%) and those who were on treatment (65.4%, $p < .001$), additionally, they were more likely to have more recent sexual partners ($p < .001$) than persons aware of their HIV positive status. After controlling for sex, age, marital status and socioeconomic status, HIV positive individuals on treatment were more than twice as likely than those unaware of their status to use condoms consistently: in the previous 12 months (aOR=2.642, $p < .001$), with their most recent partner (aOR=2.875, $p = .003$) and after consuming alcohol (aOR = 2.196, $p < .001$). Moreover, individuals on treatment were less likely to have consumed alcohol than those individuals who were not on treatment but knew their status (aOR= .522, $p < .001$).
**Conclusions:** The results highlight less risky sex and behaviour among persons on ART than those who are not. This could suggest that exposure to HIV services reduces risky behaviour and further affirms the importance of expanding testing and treatment coverage.

# GROWING UP WITH HIV: SPECIFIC NEEDS AND INTERVENTIONS FOR CHILDREN, ADOLESCENTS AND YOUTH

## TUPED276

### "BECAUSE THEY CARE": UNDERSTANDING PATHWAYS TO CLASSROOM CONCENTRATION PROBLEMS AMONG HIV-AFFECTED CHILDREN IN WESTERN KENYA

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**Background:** Children and young people living in households affected by HIV are experiencing poorer educational outcomes compared to their peers. A number of interwoven factors - including patterns of parental loss, mental health, household poverty and young caregiving - have been identified as key influences on their educational attainment. This article explores how these forms of marginalisation interface and manifest themselves in classroom concentration problems, undermining their education.
**Methods:** This mixed qualitative methods study was conducted with teachers and pupils from three primary and three secondary schools in the Siaya county of Western Kenya. Specifically, it involved 18 teachers through individual interviews and 57 HIV-affected children and youth through an assessment questionnaire (n=57), individual interviews (n=47) and Photovoice (n=51). Verbatim transcripts were imported into NVivo 10 for thematic indexing and analysis.
**Results:** The analysis revealed three pathways to classroom concentration problems amongst HIV-affected pupils. One, in the context of household poverty and illness, a general 'lack of care' and neglect meant that many of the participating pupils went to school hungry, unable to follow classes. Others, through looking visibly poor, were teased by peers, and felt anxious when in school. Two, many participating pupils had their minds at home ('caring about'). They were concerned about sick or frail household members, thinking about their next meal and care needs. Some even worried about returning home to find their loved one deceased. Three, some HIV-affected pupils play a key role in keeping their household afloat, generating food and income as well as providing practical support. 'Caregiving' pupils often reported coming to school exhausted, with limited physical and mental energy left for learning.
**Conclusions:** Care, household poverty and familial HIV emerged as central to understanding the classroom concentration problems of HIV-affected pupils. Pupils' ethics of care, whether through 'caring about' or 'caregiving', not only demonstrate their profound sense of empathy and responsibility, but can, in a deprived context, have severe consequences for their education. These findings suggest that keeping HIV-affected children in school is only part of the solution. To ensure they learn, education initiatives must simultaneously alleviate household poverty and other challenges pertaining to familial HIV.

## TUPED277

### BUILDING BRIDGES BETWEEN COMMUNITIES, HOUSEHOLDS AND HEALTH FACILITIES TO ADDRESS BARRIERS TO PEDIATRIC HIV TREATMENT AND CARE

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**Background:** Uganda hasan estimated 123,754 pregnant women living with HIV. Approximately 23% of themare not in HIV care and nor are their babies**.** Despite progress made against HIV, the treatment coverage for the 193, 500 children under 14is 31%. There is need to accelerate PMTCT to reduce the number of new HIV infections among infants and increase the number of HIV-positive children on treatment.
There is still ignorance around pediatric HIV, coupled with stigma and discrimination in communities, health facilities and households. Spouses are not disclosing their status to each other, fearing separation or domestic violence; this hinders early testing and ART initiation for children. Economic situations can also hinder them from accessing clinics.
**Description:** The TAFU project (Towards an AIDS Free Generation in Uganda) aims at reducing new HIV infections among infants and increasing the number of children on treatment in 2 districts in Uganda. The project builds bridges between communities, and health facilities, mobilizing communities to access HCT, treatment and adherence support, and creating awareness around pediatric HIV treatment and care for children.
The program has encouraged community ownership at district and community level; creating linkages and referrals from households to health facilities; forming child, peer and church support groups for adherence support. Implementation is through 45 Village health teams (VHTs) trained and mentored in pediatric HIV TAFU project achievements October- December 2015;
-366 children and pregnant women identified, referred and enrolled into ART care from216 household visits by VHTs;
-24 religious leaders trained on pediatric HIV to promote couple communication and fight stigma and discrimination in communities;
-100 households with children living with HIV linked to village loans and savings scheme for economic empowerment.
**Lessons learned:** Involvement of religious and local leaders in mobilization, community dialogues and open couple dialogues has reduced stigma and discrimination and increased uptake for pediatric HIV care and treatment.
**Conclusions/Next steps:** Access to pediatric HIV treatment requires a holistic approach from household to community and health facility. This will increase uptake of to treatment for children living with HIV.

## TUPED278

### HOW DO YOUNG PEOPLE LIVING WITH HIV FEEL ON ANTIRETROVIRAL THERAPY?: THE NEED TO ADDRESS SIDE-EFFECTS AND TREATMENT DISENGAGEMENT

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**Background:** Poor adherence and treatment disengagement are of great concern, especially among adolescents. Recent research with young people (YP) highlights a scarcity of opportunities to share their perspectives on the impact of HIV and antiretroviral therapy (ART) on their lives. In addition, their time in clinical care and on treatment significantly shape the meanings they attach to both HIV and ART. Yet there remains limited research about the psychosocial effects of treatment- and HIV- related symptoms on YP's health, well-being and adherence behaviours.
**Methods:** A longitudinal qualitative study embedded within a randomised controlled trial (BREATHER) testing the safety of a treatment interruption intervention (Short Cycle Therapy (SCT)). We repeatedly interviewed 43 YP throughout the trial (38% total YP; age 11-22 years, who knew their HIV diagnosis and gave additional consent) in UK/Ireland (7), USA (10) and Uganda (26).
Focus groups with 25 trial participants and interviews with 16 of their caregivers were also held in the Ugandan site at the end of the trial. The qualitative study explored YP's experiences of the BREATHER trial as well as broader issues of ART adherence.
**Results:** Treatment side-effects and physical symptoms were not a specific focus of our study, yet they emerge as central to how participants spoke about their condition. Views about pills and toxicity, fear of future illness (particularly from non-adherence), neuro-cognitive difficulties, anxiety and hunger, were all notable features of participants' narratives. Interviews with caregivers further suggest the centrality of the physical dimension of HIV and ART for the YP in their care (e.g. specific diets, weight gain or loss, drug toxicity, issues with concentration) and the way in which feelings about ART might affect YP's adherence.
**Conclusions:** The physical dimension of HIV and ART for YP living with HIV and particularly for adolescents, remains poorly understood. Further evidence, including our study findings, can help us illuminate how clinical understandings of HIV and ART interplay with community and personal narratives and how these might shape health and adherence behaviours. In the future, this may inform ways to engage and support YP in relation to how they feel about their health and bodies.

## TUPED279

### AN EVALUATION OF AN INTENSIVE RESIDENTIAL SUPPORT CAMP INTERVENTION FOR 12-16 YEAR OLDS LIVING WITH HIV IN THE UK

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**Background:** Offering residential interventions for young people with HIV has the potential for enhancing well-being and increasing HIV-related knowledge. There is limited literature on evaluating residential interventions for young people living with HIV, with only qualitative methods used. This study evaluated a week-long intensive peer engagement residential support camp for 77 12-16 year olds living with HIV. The intervention consisted of individual emotional support provided by professional staff; participatory HIV knowledge and understanding workshops; and creative and performing arts workshops encouraging expression of experiences of growing up with HIV. Peer support was provided by older peers with HIV. The study evaluated whether there were any quantitative changes in psychological outcomes from pre to post-intervention.
**Methods:** A quantitative single group repeated measures design was used, with 67 participants
(87% response rate; 39 (58%) female; median age 15, IQR 13-15). Multi item self-report measures of HIV knowledge, antiretroviral (ART) adherence cognitions, HIV disclosure cognitions and affect, HIV communication cognitions and affect, HIV stigma, Quality of Life, general health and self-perception were administered immediately before and after the intervention.
**Results:** There were improvements in pro HIV disclosure cognitions and affect from pre-intervention (total scale score mean 56.60, sd 9.37) to post-intervention (mean 61.67, sd 9.17)(p< 0.001) and in pro HIV communication beliefs from pre-intervention (mean 25.63, sd 4.66) to post-intervention (mean 26.85, sd 4.92) (p=0.05). Positive changes were also seen in self-perception from pre-intervention (mean 18.50, sd 5.04) to post-intervention (mean 19.90, sd 4.09)(p=0.01) and HIV knowledge from pre-intervention (median 14, IQR 11-15.27) to post-intervention (median 15, IQR 13-17)(p< 0.001). There was little evidence of change in HIV stigma (p=0.79), Quality of Life (p=0.12), general health (p=0.79) or ART adherence cognitions (p=0.15).
**Conclusions:** Positive changes in important psychological outcomes were seen after a brief residential intervention. Changes in HIV disclosure cognitions and affect, and in HIV communication cognition and affect, in particular, have rarely been reported in the literature on psychosocial interventions in any HIV-positive populations. These outcomes are important in their own right but may also be mediators of change of behavioural outcomes such as increased HIV disclosure rates and reduced sexual risk behaviour.

## TUPED280

### UNDERSTANDING DISCLOSURE PROCESS AND NEED FOR PROGRAMMATIC INTERVENTIONS FOR ADOLESCENT LIVING WITH HIV IN GOA, INDIA

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**Background:** With the increasing number of adolescents beginning to understand and cope with HIV through self-care, the disclosure process gains importance in the care and support programmes. Disclosure needs to be driven in a timely and correct manner, so as to help adolescents living with HIV to understand dating sexual relationships, paving way for an informed and healthy lifestyle.

**Methods:** In 2015, Human Touch initiated a qualitative study among adolescents aged 12-19 living with HIV in Goa, India, and with their parents and care providers. The study employed interviews and focus group discussions basically focusing on the disclosure of HIV status to ALHIV, their disclosure of status to their friends and partners and the impact of being disclosed and disclosure to others.

**Results:** Six main barriers were identified through the study: sex, still being considered a taboo, hinders parents from communicating with their children; fear of being stigmatized in school and community setting; parents not able to gauge the appropriate time to disclose and post disclosure concerns including well-being and treatment nonadherence.

With regard to disclosure of status to their partners and friends, fear of rejection and status being known to many, leading to more stigma were the main barriers identified. In some cases, programmes by NGOs offering psychosocial support helped adolescents come to terms with HIV diagnosis.

Common findings of disclosure identified were anxiety, depression, self-blame, fear of not being able to get married, have a family, not being able to pursue career ambitions, and not being accepted for higher education in professional courses. But some adolescents exposed to psychosocial support programmes of organizations shared of increased access to treatment and adherence and support in forming healthy relationships.

**Conclusions:** There is a need for specific interventions in the public health programmes for the government. The personnel need to be trained in handling this emerging challenge. Parents, teachers and care givers need to be trained to assess and understand the capacity and maturity of their adolescents and to determine the appropriate time for disclosure. Post disclosure, there should be access to ongoing support to prevent disclosure from negatively affecting their psychological and sexual wellbeing.

## TUPED281

### EFFECTIVE ROLE SHARING FOR HEALTHY BODY MASS INDEX STATUS AMONG HIV-POSITIVE CHILDREN AND CAREGIVERS

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**Background:** Poor development is one of the most urgent and critical problems among HIV-positive children. Many studies have been conducted to identify barriers to healthy growth. Recently, the positive deviance approach has been advocated as a unique strategy in the field of child nutrition, which focuses on positive individual behaviors, rather than barriers. In this study, we analyzed HIV-positive children with healthy body mass index (BMI) status and identified the associated factors.

**Methods:** A cross-sectional study was conducted in Kigali, Rwanda. To obtain each HIV-positive child's BMI (< 5 years old), we measured their height and weight. We also carried out face-to-face interviews with their caregivers using a semi-structured questionnaire. BMI-for-age z-score in the normal range (+1>SD>-2) was considered as healthy BMI.

**Results:** In total, data from 596 pairs of HIV-positive children and their caregivers were included in the analysis. The mean BMI-for-age z-score was -0.62 (SD 1.30). In all, 79.9% of the children had a healthy BMI status. A multiple logistic regression analysis indicated that children whose caregivers took an initiative for their child's care arrangements were more likely to have healthy BMI status when compared to the child's initiative only (AOR 3.86, 95% CI: 1.16-12.85). However, the children whose caregivers took an initiative to ensure that the child's intake was adequate were less likely to have healthy BMI status than those who took part in maintaining their own calorie intake (AOR 0.04, 95% CI: 0.02-0.90).

**Conclusions:** Caregiver involvement was suggested as a positive element for the child's healthy BMI. Alternatively, both the child and the caregiver's participation would be necessary to ensure sufficient calorie intake for the child's BMI. To improve development among HIV-positive children, increased attention to role sharing of care and calorie intake among both caregivers and children is required.

## TUPED282

### ASSESSMENT OF THE UTILIZATION OF CULTURALLY-SENSITIVE DISCLOSURE COUNSELING TOOLS FOR HIV-INFECTED ADOLESCENTS AND CAREGIVERS IN WESTERN KENYA

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**Background:** Disclosure of HIV status to children is a key aspect of their disease management; however, structured counseling resources to support disclosure are limited. Our objective was to evaluate the usage of culturally adapted tools for disclosure counseling with children and caregivers in Kenya and identify critical themes in disclosure counseling.

**Methods:** We evaluated disclosure counseling sessions offered as part of a 2-year, clinic-based intervention to support HIV disclosure for Kenyan children aged 10-15 years and their caregivers within the Academic Model Providing Access to Healthcare (AMPATH). Child, caregiver, and family counseling were offered at four HIV clinics. Disclosure counselors created individualized counseling plans for participants and documented disclosure status and psychosocial issues on a structured counseling encounter form. Counselors had access to culturally adapted resources (e.g. disclosure video narratives, HIV educational pamphlets) created from previous qualitative work with this cohort. To evaluate implementation of these resources and identify critical themes related to disclosure and child behavioral outcomes, we used thematic analysis of the counseling encounter notes, with progressive coding and constant comparison. Themes were coded and triangulated among multiple reviewers.

**Results:** Counselors documented 349 counseling encounters related to 122 children, using disclosure videos (127), HIV information books (128), and pamphlets (19). For caregivers of non-disclosed participants, common themes included disclosure preparedness and adherence management. Videos were most often used with caregivers to overcome disclosure barriers (e.g. child not ready, fear child's reaction) and initiate the disclosure process, particularly for children suspecting their status. Two themes arose related to post-disclosure in children: positive functioning (e.g. mild demeanor, accepting of HIV status) and poor functioning (e.g. worsened adherence, personalized HIV stigma). For "poor functioning" children, counselors used HIV information books and videos, encouraging children to understand and accept their HIV status. Counselors noted improved child adherence and psychosocial issues (e.g. stigma reduction, acceptance of status) after using the tools.

**Conclusions:** Culturally-adapted disclosure tools were used by disclosure counselors to mitigate disclosure barriers with non-disclosed caregivers and improve post-disclosure functioning. Understanding the content of typical disclosure counseling sessions provides input for the design of future disclosure counseling interventions and for counseling implementation.

## TUPED283

### PEDIATRIC HIV DISCLOSURE INTERVENTION IMPROVES KNOWLEDGE AND CLINICAL OUTCOMES IN HIV-INFECTED CHILDREN AND ADOLESCENTS IN NAMIBIA

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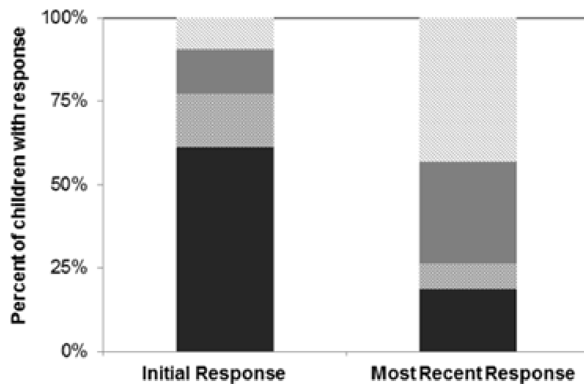
**Background:** In 2010, Namibia's Ministry of Health and Social Services (MOHSS) developed and implemented a structured intervention to assist healthcare workers and parents/caregivers with HIV disclosure to children and adolescents.

We conducted an evaluation of HIV-infected children and adolescents enrolled in care to assess impact of the intervention on child health outcomes and knowledge.

**Methods:** Data was abstracted from electronic medical record databases and patient charts for HIV-infected children aged 7-15 years across 4 high-volume pediatric HIV clinics in Namibia. Disclosure rates, time to disclosure, and HIV knowledge in 314 children documented as participating in the disclosure intervention were described. Logistic regression was used to identify correlates of partial vs. complete disclosure. Paired t-tests were used to compare mean adherence percent and viral load before versus after enrollment among children who initiated the intervention in 2011.

**Results:** Among 314 children with documented participation in the disclosure intervention, 11% knew their HIV status at enrollment and 38% reached complete disclosure following enrollment. The average time to complete disclosure was 2.5 years (IQR: 1.2 - 2 years). Among children who reported no or incorrect knowledge of why they take their medicine, 83% showed improved understanding after the intervention, defined as knowledge of HIV status or adopting intervention-specific language to discuss their medication use.




| Category | Example Responses |
|---|---|
| Complete or accurate knowledge of HIV | "Because I am HIV positive" "For HIV and my body to be strong" |
| Adopts language from the intervention | "To keep the bad guys sleeping" "To make my soldiers strong" |
| Uses basic sickness or health descriptions | "To stay healthy and be strong" "To not be sick" |
| No or incorrect knowledge of HIV | "To cure pimples in my body" "I have a cough" |

*[Figure: Changes in HIV knowledge between enrollment and the time of data abstraction]*

Children who achieved complete disclosure were more likely to be older, have lower viral loads, and have been on ART longer. In comparisons before vs. 12-24 months after participating in the disclosure intervention, viral load decreased by 0.5 log copies/ml (N=53, p-value=0.006) while mean adherence scores increased by 7 percentage points (N=73, p-value=0.019) in children who had been on ART >18 months at enrollment and had pre and post enrollment measurements collected.

**Conclusions:** This HIV disclosure intervention was associated with improved disclosure rates, HIV knowledge, and clinical outcomes in HIV-infected children and adolescents.

## TUPED284

### TARGETING SERVICES ADOLESCENT GIRLS AND YOUNG WOMEN LIVING WITH HIV: SIMPLE MAY BE BETTER

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**Background:** The growing numbers of adolescent girls and young women (AGYW) living with HIV in sub-Saharan Africa face myriad challenges. SHAZ! (Shaping the Health of Adolescents in Zimbabwe) is a combination intervention designed to improve access and treatment adherence among AGYW living with HIV in Zimbabwe

**Methods:** 710 participants enrolled in an RCT of SHAZ! (life skills and livelihoods training, comprehensive SRH/HIV care and treatment) vs a control condition of clinical care and treatment support alone. Intent treat analysis assessed differences in outcomes across four domains: economic resources; treatment adherence and CD4; relationship power; and HIV risk behaviors.

**Results:** At enrolment, median age was 18, and CD4 count was 343 (200, 526). 30% had primary education or less; and 70% had not used a condom at last sex. At 18 months, study retention was 84%. Those reporting being in school or engaging in paid work increased from 34% to 61% in the intervention group compared to from 38% to 33% in the control group (p< 0.001). No changes were reported on measures of mental health or social support; however, high relationship power- as measured by the sexual relationship power scale -increased from 28% to 45% in the intervention group only. Overall, ART uptake increased from 48% to 74%, with an average 41 point increase in CD4 count and over 50% achieving CD4 counts of over 500. Reported adherence at 18 months was 98%. Experience of intimate partner violence decreased from 17% to 5%. While all of these improvements represented statistically significant changes from baseline to endline ( p< 0.01 or less), there were no statistically significant differences between study arms on these factors. No changes were observed from baseline to endline in condom use, or other risk behaviors such as transaction sex.

**Conclusions:** This analysis showed effects of SHAZ! on economic status and relationship power, but not on risk behaviour. The significant and meaningful shifts among ALL participants on treatment uptake and clinical outcomes suggest that targeted SRH/HIV services and treatment support - without necessarily overlaying additional complex interventions - has great potential to improve scale-up of treatment and adherence for this population.

## TUPED285

### IS DIFFERENTIATED CARE TRULY DIFFERENTIATED FOR ADOLESCENTS LIVING WITH HIV? QUALITATIVE FINDINGS FROM ZIMBABWE AND SOUTH AFRICA

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**Background:** To achieve the goal of '**Treat All',** the WHO has endorsed the **differentiated care model** - whereby service delivery models are targeted to specific requirements of each population. For adolescents, an emphasis of differentiated care is defined by the WHO as: equitable, acceptable, appropriate, accessible and effective. Employing differentiated care may be particularly important for adolescents living with HIV. Given that AIDS is the second leading cause of deaths for all adolescents, improving quality and effectiveness of HIV treatment is of paramount importance. This study reports on the differential SRH support needs between adolescents living with perinatally acquired HIV versus those with horizontally acquired HIV.

**Methods:** YPLWH (n=8) were trained as peer researchers to undertake qualitative interviews with their peers (aged 16-25) recruited from support groups in Zimbabwe (n=24) and from clinics in South Africa (n=24). There were equal numbers of young men and women. Discussions focused on disclosure, and access to SRH information and services. English language transcripts were thematically analysed.

**Results:** Key differences emerged between adolescents who acquired HIV-perinatally versus adolescents who acquired HIV horizontally. Adolescents living with HIV who acquired it horizontally displayed greater internalised stigma than those who had acquired HIV perinatally; this was reflected through more frequent use of words like "being diseased" and attributing acquisition to 'having behaved badly.' All participants faced HIV disclosure challenges; adolescents living with HIV acquired vertically highlighted frustrations in learning about their HIV-status long after their caregivers knew and being left out of treatment decisions. Lack of social support was more common in those who acquired HIV-horizontally. There were important similarities, in particular all young people's desire to receive appropriately-tailored services that respond to their specific needs and that enable them to take control of their health and wellbeing. Young people were also concerned with protecting others, through receiving timely ART care and support and comprehensive SRH services.

**Conclusions:** Adolescents living with vertically-acquired HIV have different SRH care and support needs to adolescents living with horizontally-acquired HIV. HIV and SRH services need to be tailored to support the differentiated YLHIV needs in order to promote optimal health outcomes.

## TUPED286

### FINDINGS FROM PROJECT KHULUMA: A MOBILE PHONE SUPPORT GROUP INTERVENTION FOR HIV-POSITIVE ADOLESCENTS IN SOUTH AFRICA TO ADDRESS THEIR MENTAL HEALTH AND WELLBEING NEEDS

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**Background:** Owing to a conglomeration of psychosocial risk factors including the lack of social support, adolescents living with HIV/AIDS (ALWHA) are at increased risk of mental health problems leading to poor health outcomes. There is a need to develop models that provide regular psychosocial support to ALWHA that are immediate and accessible. With this challenge in mind the SHM Foundation designed and implemented the Khuluma model, providing support via mobile phone to groups of 10-15 ALWHA's from clinics in Pretoria and Cape Town. Khuluma is based on the

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principle that support groups are an effective way of providing support, but there are barriers to attending them. Because it provides access to support whenever, wherever, and allows for anonymous communication, Khuluma breaks down some barriers (including worries about stigma and discrimination; lack of transport funds or time ) to adolescents' attendance. The model assists clinics as there no need for trained staff onsite or a designated space.. An evaluation of Khuluma was conducted based on pre-post data from 99 participants who participated between December 2013 and February 2015. The information-motivation-behavioural skills (IMB) model informed the assessment of changes to participants' perceptions of stigma, social support, knowledge of HIV and adherence to medication.
**Description:** Khuluma provides facilitated and interactive support to groups of 10-15 peers via text-message . Groups run for three months, participants can communicate amongst themselves and with a facilitator.. Guest speakers are invited to run discussions on topics such as nutrition or sexual health. Baseline and exit questionnaires are conducted. Text-messages are analysed for content.
**Lessons learned:** Participants clearly have a need/ desire to communicate openly with their peers, over 40,000 text-messages were sent between 99 participants - each participant sends 6 SMSs daily. Results from the evaluation show a significant increase in feelings of social support, a significant decrease in internalised stigma and some important insights into the complexities of medical adherence. Khuluma provides an effective way for making support accessible to ALWHA
**Conclusions/Next steps:** Khuluma has the potential to be expanded through clinics as a way of providing social support to ALWHAs using trained facilitators who do not have to be physically onsite.

## TUPED287

### *THIS IS ME*. A DOCUMENTARY HIGHLIGHTING EVERYDAY LIFE OF A HIV-POSITIVE ADOLESCENT IN SOUTH AFRICA GOING THROUGH THE JOYS AND CHALLENGES OF ADOLESCENCE

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**Background:** Adolescence can be a beautiful time of life but at the same time this age brings a lot of challenges. These challenges are even more significant for adolescents living with HIV. In South Africa, over 15% of young women and 5% of young men aged 15-24 are infected with HIV (UNAIDS, 2010). Despite efforts to raise national awareness of HIV/AIDS and advance treatment options, there is still a lot of work to be done to address mental health challenges of these adolescents to make the general public aware of these challenges. There is a need to pay more attention to the mental health and psychological well being of young people living with HIV and create opportunities where young people can freely express how they feel. The SHM Foundation is creating a documentary *This is me* which takes an innovative and positive approach to highlighting the importance of addressing the mental health needs of HIV positive adolescents.
**Description:** *This is me* is a 15 minute documentary, the documentary will show the everyday life of a 16 year old boy who is HIV positive, who has a positive attitude to life and who, just like any other boy in his age, is going through the joys and challenges of adolescence. The film will follow him over two weeks, filming his every day life and the conflicts and challenges he faces at home, school and with friends due to being an adolescent living with HIV.
**Lessons learned:** Co-creation of the documentary with HIV positive adolescents is essential in order to get the messaging and tone right. It is critical that there are more opportunities to show what it is like for an HIV positive adolescent in South Africa to navigate through life with the condition and to become accepted and understood by our society, because only then they can live fulfilled and active lives.
**Conclusions/Next steps:** We plan that *This is me* will go on tour around South Africa, with showings taking place in schools as well as at international film festivals.

## TUPED288

### "WALKING TOGETHER": CULTURAL ADAPTATION OF AN EVIDENCE INFORMED PSYCHOSOCIAL INTERVENTION TO ADDRESS THE NEEDS OF PHIV+ YOUTH IN THAILAND

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**Background:** Pediatric HIV has become an epidemic focused on adolescents, most of whom live in low resource countries with unmet psychosocial needs. Thailand has the highest HIV prevalence in Asia with more than 14,000 children with HIV. There is an acute need for evidence based interventions targeting mental health of perinatally infected HIV+ youth to improve adherence, reduce risky behaviors and decrease mortality rates.
**Description:** The Collaborative HIV Prevention and Adolescent Mental Health Program + (CHAMP+) is an evidence informed, family based HIV prevention and mental health promotion program developed specifically for pHIV+ early adolescents and their families, that has been pilot-tested in the U.S.A., Argentina and South Africa. Thai and US research teams used community-based participatory research (CBPR) methods to adapt CHAMP+ to the Thai cultural context. Formative research with pHIV+ youth, adult caregivers and health providers informed program changes to address language; cultural beliefs /concepts and Thai family life. "Walking Together" (Thai CHAMP+) consists of 11 sessions using a cartoon format and delivered via multiple family groups. Sessions focus on family communication, coping strategies, disclosure, stigma, social support, and HIV education. A small scale RCT pilot of the intervention is concluding this year with 88 pHIV+ youth participants.
**Lessons learned:** Culturally informed adaptations can be made while maintaining the core components responsible for program effect. The cartoon format (originally used in CHAMP+ South Africa) was selected by Thai stakeholders since it enabled reflective dialogue about key issues for HIV+ youth, made content available to those with limited literacy skills, and facilitated discussion of culturally "taboo' topics. Original cartoon story line was changed to reflect Thai culture and family life.
**Conclusions/Next steps:** Preliminary results of the current pilot indicate that the cultural adaption of CHAMP+ was critical to engagement and acceptability of the intervention within the Thai context. Feasibility and acceptability data plus feedback from participants will inform further adaptations to ensure intervention efficacy and effectiveness.

## TUPED289

### HIGH RISK FOR LOSS TO FOLLOW-UP AMONG ADOLESCENTS LIVING WITH HIV IN PUNE, INDIA

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**Background:** Access to HIV care in paediatric population has increased substantially in developing countries through national programs. Existing data suggest that children are more likely associated to loss to follow-up due to vulnerability and multifaceted social challenges. We aimed to assess the rate of loss to follow up (LTFU) and risk factors associated among children visiting Sassoon General Hospital's ART centre in Pune, India.
**Methods:** We conducted a prospective cohort analysis of children (0-19 years) registered for care between 2000 and 2014. The cohort was divided into two age groups ≤12 years and >12 years. Multivariable Poisson regression was used to explore the association between age, gender, CD4 count, WHO staging and LTFU.
**Results:** 6156 children were registered for care during the study period. Of these, majority were male (60%), had a baseline CD4 count <350 cells/cu mm (67%) and were on ART (98%). 292 (4.7%) were lost to follow up. Total loss to follow up among children ≤12 years was 7/1000 person years (PY) as compared to 16/1000 PY in those >12 years (p<0.001). In multivariable analysis, children >12 years were at a higher risk of being lost to follow up [adjusted incident relative risk(aIRR) 1.95, 95% Confidence Interval (CI) 1.5 - 2.5] as compared to children ≤12 years. Lower CD4 counts (<200 cells/cu mm) was associated with higher risk of being lost to follow up (aIRR: 1.6, 95% CI: 1.1-2.1) as compared to those with CD4 counts >350 cells/cu mm.

Children who presented clinically in WHO stage IV disease were at higher risk (aIRR: 2.4, 95% CI: 1.7-3.2) of lost to follow up as compared to those in stage I disease.
**Conclusions:** Adolescents with HIV (>12years of age) have almost 2-fold higher risk for LTFU. Future studies should seek to understand barriers to retention in care among adolescents and consider interventions that include counselling, psychosocial support including peer support groups to reduce the risk of LTFU and improve the health, and quality of life.

## TUPED290

### PANGAEA GLOBAL AIDS & THE CLINTON HEALTH ACCESS INITIATIVE (CHAI) BEST PRACTICES CASE STUDY SERIES: ZVANDIRI CATS MODEL: SUPPORTING HIV+ ADOLESCENTS

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**Background:** Pangaea Global AIDS, in partnership with the Clinton Health Access Initiative (CHAI), produced a series of case studies documenting and costing effective approaches to HIV service delivery in Sub-Saharan Africa. In Zimbabwe HIV-positive children and adolescents face challenges with adherence, retention and their overall psychosocial well-being. Africaid, an NGO based in Harare launched the Zvandiri program, which provides psychosocial and clinical support to HIV+ children and adolescents.
**Description:** Zvandiri interventions are led by Community Adolescent Treatment Supporters (CATS), HIV+ adolescents that play a central role in identifying and addressing barriers to adherence and retention through home visits, SMS messages and tablets to capture client data and adherence, and adolescent corners within clinics. Other CATS services include strengthening the capacity of health care providers to meet the needs of HIV-positive children and adolescents through trainings and mentorship.
**Lessons learned:** From August 2009 to December 2014, CATS conducted a total of 18,115 home visits in eight districts of Harare province; 12,248 were primarily for adherence support. In 2014, the CATS program in Harare province served more than 3,800 clients and registered over 1,100 clients in three additional provinces. By November 2014, a total of 1,476 health workers had been trained in providing adolescent friendly services for HIV-positive youth. In 2014, Zvandiri reported a 90 percent retention rate among clients served by CATS. Self-reported adherence by age was 90%, 72% and 81% for ages 5-9, 10-14 and 15-19 respectively. The cost of the CATS model in 2014 was $52.39 per client per year in Harare, however modeling suggests that with further roll-out through the government, the program could be maintained at a cost of $22.53 per client per year.
**Conclusions/Next steps:** The utilization of CATS at both facility and community levels strengthened the identification and support for individuals at risk for poor adherence and lost to follow up. Its approach includes facilitating an enabling social environment that has demonstrated improvements in the overall health and psychosocial well-being of their clients. This model - which is being scaled up nationally - can inform other countries that face similar challenges in reaching children and adolescents.

## TUPED291

### INSIGHTS ON THE COMPLEXITIES OF MEDICAL ADHERENCE AMONGST HIV-POSITIVE ADOLESCENTS IN SOUTH AFRICA

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**Background:** Adherence to medication for any chronic illness is difficult, but HIV/AIDS-treatment can be particularly challenging, especially for adolescents living with HIV/AIDS (ALWHA). Adherence needs to be near perfect for ART to be effective. However, adherence is not just remembering to take medication as prescribed. There is strong evidence that various social, emotional and psychological factors can have a significant impact on adherence. Although there is increasing awareness of the factors that affect ART adherence, it remains difficult to accurately assess. Understanding and improving treatment adherence among adolescents requires attention.
**Methods:** The Khuluma Project provides psychosocial support to ALWHA in peer groups run via text-message. Participants complete a treatment adherence checklist at enrolment and after participation in Khuluma. Over three months, participants can communicate openly with one another along with a facilitator. With 99 participants having participated to date, there is rich conversation data that can be further analysed (over 40,000 text messages). To explore some of the complexities associated with adolescent ART adherence, the Khuluma team extracted text-message conversations related to the subject. These conversations were coded and thematically analysed using a flexible framework developed from relevant literature.
**Results:** At enrolment most participants reported, in the checklist questionnaire, that they had few problems with medical adherence. However, in Khuluma they began to talk openly about sometimes missing medication doses. In their own words participants were able to discuss the range of practical and emotional reasons that they might default on treatment, including disrupted routine, a lack of social support, feelings of anger, fear of stigma and trouble managing side-effects. There was no one reason why they missed their medication and their reasons in some cases varied over time. Participants encouraged one another to take their medication and discussed strategies for integrating treatment into their daily lives.
**Conclusions:** Understanding and improving medical adherence among ALWHA requires ongoing engagement and dialogue, and is better understood through conversation than check-list questions. The messages sent by the participants to each other about medication may be a valuable resource for designing health promotion campaigns or improving communication between health practitioners and patients.

## TUPED292

### DIAGNOSIS DISCLOSURE AMONG CHILDREN LIVING WITH HIV IN A RESOURCE LIMITED SETTING: AN OBSERVATIONAL STUDY FROM NORTH INDIA

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**Background:** With better understanding of HIV pathogenesis and availability of antiretroviral therapy, more children are growing and entering in teen age group, making informing children about their HIV status an important aspect of long-term disease management. There is little evidence on perception of caregivers on how and when this type of disclosure should take place in resource-limited setting.
**Methods:** A cross-sectional study was conducted during 2010-12 among a dyad of 156 children and their caregivers, attending pediatric clinic at a tertiary care hospital in Delhi, India. Study protocol was approved by the Institute Ethics Committee of AIIMS. After taking written informed consent; pretested structured questionnaire was administered to caregivers during routine clinic visits. Information regarding socio-demographic characteristics, awareness of their HIV status among children and caregiver's perception regarding disclosure was collected. Mean and proportions were calculated and chi-square and logistic regression test were applied.
**Results:** The mean age of children was 8.4 ±3.5 years. Among them, 73.7% were male and 39.1% were orphan. Among 156 enrolled children, 74.4% (n=116) were of ≥ 6 years and were assessed for disclosure. Only 18.1% (n=21) children had been informed of their HIV status. Of those under 9 years, 6.4% knew their status, whereas 18.4% of 9-11 years and 35.5% of 12-14 years children knew that they had HIV infection. Awareness among males (23.3%) was higher than females (3.3%). Both age and sex of child were significantly ($p < 0.01$) associated with disclosure status. Other factors favoring disclosure were orphan-hood, non-perinatal mode of transmission (OR = 4.32; 95% CI 1.01-7.12), ART initiation (OR = 4.21; 95% CI 1.03-6.98), and caregiver educated beyond primary level (OR = 1.89; 95% CI 1.03-3.26). Repeated enquiry regarding the visit to clinic was the most common reason (66.6%) for disclosure. In 52.4% children disclosure was done with the involvement of other family members. 82.5% caregivers felt the age of > 10 years is appropriate for disclosing the HIV infection status to the child.
**Conclusions:** Detailed guidelines on disclosure are required for children of school-going age with perinatal infection who are not on ART and with caregivers of low educational status.

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## TUPED293

### EXPLORING THE POTENTIAL OF A FAMILY-BASED PREVENTION INTERVENTION TO REDUCE ALCOHOL USE AND VIOLENCE AND PROMOTE CHILD MENTAL HEALTH WITHIN HIV-AFFECTED FAMILIES IN RWANDA

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**Background:** Family-based interventions hold promise for promoting child mental-health and wellbeing for families affected by HIV in low- and middle-income countries (LMIC). HIV-affected families report higher rates of alcohol-use, intimate partner violence (IPV) and family conflict, which can have detrimental effects on children. Few evidence-based interventions exist to address these complex issues in Sub-Saharan Africa.
**Methods:** Quantitative and qualitative data from an 82-family pilot randomized controlled trial of a family-based intervention adapted and tested for use in HIV-affected Rwandan families, are explored here using a mixed methods approach to integrate findings. Family inclusion criteria were at least one adult HIV-positive caregiver with at least one school-aged child (7-17 years). Mean scores of self-reported caregiver alcohol, IPV and child mental health at baseline, post-intervention and after three months of follow-up among families assigned to the intervention, were examined and compared to those receiving treatment as usual. Individual semi-structured interviews were conducted with children and caregivers at baseline, post-intervention, and follow-up. Qualitative data from 35 intervention families' clinical notes and interview transcripts from 11 families identified as experiencing issues with conflict and alcohol-use were analyzed.
**Results:** Of the 61 caregivers in intervention families, most were female (n=42; 68.9%), HIV-positive (n=52; 85.3%), with a mean age of 41. Of 93 children in intervention families, most attended school (n=87, 96.7%). Alcohol was reported as a problem for many families in the intervention. Of participants reporting alcohol-use at baseline, those assigned to family-intervention reported less alcohol-use over time, compared to those receiving usual treatment. Nearly three-fourths (73%) of caregivers married or living with a partner reported an experience of IPV at baseline. Mean scores indicate reduced IPV among intervention participants over time compared to those receiving usual treatment. Reductions in alcohol use and IPV among caregivers are supported by qualitative reports of improved family functioning, lower levels of violence and problem drinking as well as improved child mental-health, among the intervention group.
**Conclusions:** Family home-visiting interventions merit exploration for their potential to reduce problematic caregiver behavior related to alcohol, IPV and family-conflict and promote child mental-health for families affected by caregiver HIV in Rwanda.

## TUPED294

### FAMILY-BASED PROMOTION OF MENTAL HEALTH IN CHILDREN AFFECTED BY HIV: A PILOT RANDOMIZED CONTROLLED TRIAL

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**Background:** Children affected by HIV are at risk for poor mental health. We conducted a pilot randomized controlled trial (RCT) of the Family Strengthening Intervention (FSI), a family home-visiting intervention to promote mental health, improve parent-child relationships, provide HIV psychoeducation, and reduce conflict affecting children in families with caregivers living with HIV. We hypothesized that child and family outcomes would be superior to usual care social work services.
**Methods:** 82 families (N=170 children, 48.8% female; N=123 caregivers, 68.3% female) with at least one HIV-positive caregiver (n=103, 83.74%) and school-aged child (ages 7-17) (HIV+ n=21, 12.35%) were randomized to receive FSI or treatment-as-usual (TAU), stratified by single- or dual-caregiver families. Local research assistants blind to treatment conducted assessments of child mental health, parenting practices, and family functioning at baseline, post-intervention, and at 3- month follow-up. Multilevel modeling assessed effects of FSI on outcomes across three time points.
**Results:** At 3-month follow-up, children in FSI reported fewer symptoms of depression (β=-.221; p=.043) compared to TAU. FSI was differentially effective depending on family structure. Post-intervention, single caregivers in FSI reported more social support than those in TAU (β=.678; p=.005). Immediately post-intervention, children in FSI reported fewer indicators of good parenting compared to TAU (β=-.316, p=.048), but this difference was not maintained at 3-month follow-up (β=-.053, p=.749) likely reflecting the process of HIV disclosure in families. Qualitative findings support potential reductions in problematic alcohol-use and violence within FSI families.
**Conclusions:** Children and families affected by HIV merit special attention by policy-makers, health workers, and researchers. HIV-related stressors, family functioning, and child mental health are inextricably linked and can be addressed via family-based preventive interventions. Family-based prevention holds particular promise for reducing child mental health problems linked to caregiver HIV. Future research on FSI should further investigate the effects of family structure and potential for reductions in problematic alcohol-use and family violence. Future trials should examine the effects of FSI over time in trials powered to examine family configuration.

## TUPED295

### THE PASSAGES PROJECT: INITIAL OBSERVATIONS FROM A MULTI-COUNTRY INVESTIGATION INTO FACTORS THAT IMPACT TRANSITION FROM ADOLESCENT TO ADULT HIV CARE

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**Background:** Globally, the average age of perinatally HIV infected youth attending paediatric subspecialty programmes approaches the mid-teen years. With the concurrent swell of behaviourally infected adolescents, clinicians are faced with large populations of teenagers and young adults who require transition to adult settings. During this period of referral, many young patients become lost to care resulting in a population of drug experienced adolescents who are difficult to trace. To mitigate this, it becomes necessary to interrogate gaps in the existing frameworks designed to maintain youth populations in care, informed by adolescents themselves.
**Methods:** The Passages Project was conceived in response to empirical evidence across multiple sites that showed increases in non-compliance in the early-to-late teen years, which coincides with the age of transition to adult clinics. Geographically distant sites were selected based upon country profiles and HIV incidence/prevalence. Brazil, Ireland, Jamaica, Romania, South Africa, Thailand and the United Kingdom were selected to determine if challenges to successful transition were similar across sites. If so, an intervention that has far-reaching impacts could result from this investigation that involved in-depth interviews with adolescents, their caregivers and health care professionals (n=420). Topics included barriers to adherence, mental health, religiosity and social protection, to name a few. Data from the "complaint to care" cohort in the 5 low income countries (n=73, 46 male) were analysed using novel algorithms to create a concourse of themes.
**Results:** The analysis showed no significant difference between male and female respondents, and further suggested no significant differences across countries. The exceptions to this related to reasons for missed appointments and anxiety-related indicators. This, in conjunction with relatively low sample sizes, suggests that collapsing across additional locations could yield a more valid set of results.
**Conclusions:** The data suggest that
(1) a healthy sample was captured and analyzed and
(2) the analysis potentially produced the general findings needed to effectively inform a follow on study.
This, in combination with processing speeds of < 1 minute for the entire data set, suggests that further research into the viability of this approach is warranted.

# Ageing with HIV: evolving and additional needs and responses

## TUPED296

### How social work can support people living with HIV and changes in cognition: results of a mixed-methods, community-based research study

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**Background:** It is estimated that 50% of the 75,500 people living with HIV in Canada will be affected by at least an asymptomatic form of HIV-Associated Neurocognitive Disorder (HAND) (CATIE, 2015; St. Michael's Hospital, 2014). As the number of people living with HIV over the age of fifty increases, social workers and other helping professionals need to adapt to meet people's changing needs.
**Methods:** Using a Participatory Action Research (PAR) framework a research team comprised of social workers and people living with HIV developed an explanatory sequential mixed-methods study to understand the support service needs of people over the age of 50 who are living with HIV and concerned about HAND. Purposive and snowball sampling were combined to recruit research participants into a survey and interviews offered in English and French from April to November 2015 in Toronto, Canada. An iterative data analysis process was employed whereby three independent coders used NVivo to separately identify key themes. The peer researchers were presented with these analyses and the research team collaboratively determined the project's findings.
**Results:** 108 survey respondents identified:
a) their concerns about living with HIV and changes in cognition;
b) their knowledge and experience of social work; and
c) what gaps they identify in current HIV-related programs and services related to cognitive health.
66% of survey participants were aged 50-59 and 88% identified as male. 54% were diagnosed with HIV prior to the introduction of Highly Active Antiretroviral Therapy (HAART) in 1996. 20 survey participants, 25% of which identified as female, participated in interviews based on the survey responses. Interviewees detailed:
a) how the Social Determinants of Health have impacted their lives;
b) experiences with HAND screening/testing; and
c) how social workers and grassroots community-based HIV organizations can improve their work with older adults living with HIV.
**Conclusions:** Based on a sample of people living with HIV who are concerned about their cognitive health in an urban Canadian city, these findings have implications for the shape and content of programs and services for people aging with HIV as we work towards improved health outcomes for people living with and affected by HIV/AIDS.

## TUPED297

### Exploring experiences of older African-American males aging with HIV in the rural south-eastern United States

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**Background:** It is estimated that 50% of adults living with HIV in the U.S. are 50 years of age and older. A disproportionate number of men who are HIV+ are African-American. With medications extending life expectancy for decades, HIV+ men are dealing with the disease in the context of other age-related illnesses. However, there is limited data regarding the experiences of older HIV+ African-American men. The purpose of this study was to explore the experiences of older African-American men living in rural areas in the southeastern U.S. who may be especially vulnerable due to limited resources.
**Methods:** In Spring 2015, data were collected through face-to-face interviews with 35 HIV+ African-American men living in 5 communities in the southern U.S. Inclusion criteria were: HIV+ for 5 years or greater, identifying as African-American, 50 years of age or older, and providing informed consent. The guiding interview question was "Can you tell me what it is like aging with HIV in a rural community?" Demographic data were also collected. Verbatim transcripts of the audio-recorded interviews were analyzed using content analysis.
**Results:** The men in the study ranged from 49 to 66 years of age ($x$ = 55.6), and had lived with HIV for a mean of 20.9 years. Nine men had less than a high school education with 16 having completed technical school or at least some college. Nineteen men reported an income of less than $10,000/year. Twenty-seven men currently live alone. Five men had been diagnosed with AIDS. The qualitative analysis of study transcripts revealed 6 overlapping themes and 21 sub-themes. Primary themes included: *Stigma, Doing Fine, Family Support, Self Care Behaviors, Access to Resources, and Dealing with Age Related Diseases and HIV.*
**Conclusions:** The majority of men reported they have what they needed and remained positive. Men acknowledged facing stigma, but their family support is strong. Some men reported their belief that HIV has changed their lives for the better. This study provides new insight into the lives of rural African-American men, and expands our understanding of how these men are dealing with HIV and why many return or remain in rural communities.

## TUPED298

### Positive aging: Indigenous peoples aging with HIV/AIDS

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**Background:** Largely due to treatment advances, the number of older people living with HIV is growing. For Indigenous peoples in Canada this is an important area of concern given over-representation in the HIV epidemic. This research contributes a novel focus on positive aging experiences of older HIV-positive Indigenous peoples within Indigenous contexts.
**Methods:** Using community-based research informed by Indigenous methodologies, we conducted four sharing circle sessions and four in-depth interviews (n=34) with participants attending the Canadian Aboriginal AIDS Network's Wise Practices Conference. Separate sessions were held for HIV-positive men and women. One session explored the perspectives of community/health service providers. All participants self-identified as First Nations, Inuit or Métis with participants ranging in age from 32 to 63 and HIV-positive for 5 to 29 years. Thematic analysis was used to extrapolate themes.
**Results:** Several interconnected themes (dimensions of health) emerged in our analysis as important in the context of successful aging (SA) for Indigenous people living with HIV and facilitating holistic health: spiritual (connection to land, ceremonies); social engagement (connections with families, community, tribal nation); physical (e.g., diet, exercise, managing co-morbidities, adherence and abstinence from substance use); emotional (e.g., cultivating self-love and acceptance); and mental (confronting stigma, cultivating self-esteem, achieving self-acceptance). The way in which individuals find their own balance between the five dimensions manifests in a nonlinear way. Recognition of the interconnectedness of the five dimensions means that individuals can move freely from one dimension to the next, and back again, until the individual finds the right balance necessary to actualize SA.
**Conclusions:** Based on the need for research identified in this project we are working towards building a larger exploratory study to examine ways in which Indigenous peoples experience growing older living with HIV. Our goal is to identify culturally resonate approaches to care for this population to support emerging practice implications that suggest the need for community and health services to conceptualize and deliver social/health care from within an Indigenous holistic worldview. It is essential that such research be developed in ways which are congruent with Indigenous culturally-defined notions of health.

## TUPED299

### "You're suffering all these things and you keep going backwards and forwards": experiences of the menopause among women living with HIV in the United Kingdom

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**Background:** Improvements in survival due to antiretroviral therapy (ART) have led to a shift in the age distribution of people living with HIV, with increasing numbers of women living with HIV (WLWH) reaching menopausal age. We present results from a qualitative study exploring experiences of the menopause among WLWH in the UK.
**Methods:** In collaboration with an HIV charity and two peer researchers, we conducted three focus group discussions (FGDs) in 2015 with 24 WLWH aged 43-62. All FGDs were transcribed verbatim and analysed thematically in NVivo 10.0. This work is part of the PRIME study, a mixed-methods observational study exploring the impact of the menopause on WLWH's health and wellbeing.

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**Results:** Women described a lack of prior knowledge, leaving them under-prepared for menopausal symptoms. For women born in Sub-Saharan Africa (n=16), this was exacerbated by cultural taboos around discussing menopause, and loss of kinship networks during migration.
Menopause in the context of HIV brought particular challenges. Participants were concerned that menopause could be precipitated by HIV-infection or ART, whilst some were reluctant to take further medication such as hormone replacement therapy when already on ART. Common symptoms such as hot flushes, mood changes and poor sleep, sometimes impacted on ability to adhere to ART. Many participants did not recognise their menopausal symptoms, instead attributing them to ART side-effects or HIV. Furthermore, they found themselves "going backwards and forwards" between primary healthcare providers (HCPs) and HIV-physicians when seeking advice and clinical care, often leading to frustrating delays.
Participants highlighted the importance of supportive HCPs and accessible information on HIV and the menopause, and the need for ongoing peer-support, many describing their participation in the FGDs, often their first opportunity to discuss menopause with other WLWH, as "empowering".
**Conclusions:** This is one of the first qualitative studies to explore experiences of the menopause in WLWH. Participants encountered particular challenges in the recognition and management of the menopause as a result of also being HIV-positive. Increasing awareness among patients and HCPs, developing HIV-specific patient resources, and peer-support networks may help support WLWH at this stage in their lives and limit negative impacts on their HIV care.

## TUPED300

### SOCIAL NETWORK AND SUPPORTS AMONG OLDER GAY AND BISEXUAL MEN: THE IMPACT OF HIV

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**Background:** As of 2015, half of those with HIV in the U.S. are age 50 and older, and 60% are gay/bisexual men (CDC, 2013). Older gay/bisexual men tend to have friend-centered social networks, regardless of HIV status. HIV-positive older adults are at high risk for multimorbidity, leading to increased needs for caregiving and support. Perceptions of social support sufficiency have been identified as critical resources in coping with illness. We examined the impact of HIV-infection on the social network configuration, dynamics and support needs of gay/bisexual men 50 and older.
**Methods:** Data was derived from a convenience sample of 146 men age 50 and older who self-identified as gay/bisexual at an LGBT community center; 46% reported being HIV-positive. The HIV-positive group were younger than the HIV-negative group (55.4 vs. 63.4 years). Two-thirds of HIV-positive group identified as Black or Hispanic, while in the HIV-negative group 16% were racial/ethnic minorities. Bivariate analysis of group differences on social support resources employed chi-square tests and one-way ANOVAS. Perceptions of instrumental and emotional support sufficiency indices were regressed on HIV status and demographic, health, and social support variables to examine the impact of HIV on perceived social support.
**Results:** Older gay/bisexual men with HIV reported lower income adequacy, and greater multimorbidity compared with their peers. HIV-positive men received more assistance from family, but were also more likely to perceive instrumental and emotional support as insufficient. Regression models on instrumental and emotional support sufficiency indices found demographic, health, and social support factors as significant covariates ($R^2$ = .35 and .37, respectively), but HIV status was not significant when controlling for other factors.
**Conclusions:** HIV-positive older gay/bisexual men have greater needs compared with their non-infected counterparts, as evidenced by inadequate incomes and greater multimorbidity. The high levels of unmet need for informal social support leads to the conclusion that HIV-positive sexual minority men will increasingly turn to community-based sources for needed support. It is vital that policies are in place to strengthen the social resources of older gay/bisexual men with HIV, and assuring that community-based providers have the competency and resources necessary to serve this population.

## TUPED301

### DIFFERENCES IN SOCIAL SUPPORT RESOURCES AMONG OLDER ADULTS WITH HIV IN SOUTH AFRICA AND UGANDA: FINDINGS FROM THE RESEARCH ON OLDER ADULTS WITH HIV (ROAH) AFRICA PROJECT

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**Background:** The population of adults 50 and older with HIV is growing in sub-Saharan Africa as antiretrovirals become more widely available, and is currently estimated at over 3,000,000. Research finds this group suffer high rates of comorbid diseases in addition to HIV, suggesting they will require increasing assistance from their informal social networks. But there is little data on the social network dynamics of these HIV-positive older adults.
**Methods:** Data were obtained from ROAH Africa sites in Uganda (UG) and South Africa (SA) on adults 50 and older with HIV from 2013 to 2015. In UG (N = 101), 58% were women and the average age was 61 years. In SA (N = 108), 72% were women and the average age was 58 years. Questions on social support resources were adapted from the ROAH U.S. study (Brennan, Karpiak et al., 2009), and significant differences were examined using Fisher's Exact Tests.
**Results:** SA adults were more likely to report that they lived alone (22%) compared to their UG counterparts (9%). UG adults were more likely to report having children and great-grandchildren in their households (64% and 65%, respectively), compared to SA (32% and 31%, respectively). Except for keeping house/preparing meals, SA adults were significantly more likely to report instrumental help and emotional support from family members, and were significantly more likely to report all types of assistance/support from friends, compared to older adults with HIV in UG. SA adults were more likely to perceive that they had received all the instrumental help needed compared with UG (67% and 32%, respectively). Although UG older adult were more likely to report that emotional support was always available compared to SA (64% and 9%, respectively), they were significantly less likely to indicate the emotional support they received was adequate (45% and 67%, respectively).
**Conclusions:** Despite high levels of informal support in both countries, sizeable proportions felt that support from family and friends was insufficient to meet their needs. Given the significant differences between samples, research is needed to better understand the cultural/societal factors affecting social care among older adults with HIV in sub-Saharan Africa.

## TUPED302

### LONG-TERM SURVIVORS: KICKING AIDS SURVIVOR SYNDROME

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**Background:** There are 1.2 million persons with HIV (PWH) in the U.S., and 50% are over age 50; a proportion that will rise to 70% by 2020. Older PWH are living longer due to effective antiretroviral therapy. There is a unique distinction to be made between HIV/AIDS Longterm survivors and those who have been recently infected and diagnosed with HIV. The two groups have distinctly different psychosocial and clinical needs. Longterm survivors are defined as those who were infected with HIV prior to the development of Protease Inhibitor drugs in the mid1990s. Longterm survivors experience multimorbidity as well as AIDS Survivor Syndrome.
**Methods:** In San Francisco, ACRIA and Lets Kick ASS have worked together to train HIV and Aging providers to create appropriate community based responses for Longterm survivors dealing with AIDS Survivor Syndrome, defined as the collection of signs & symptoms affecting longterm survivors, including: depression, survivors guilt, lack of future orientation, personality changes, anger, anxiety, low self-esteem, insomnia, social withdrawal & isolation, hopelessness, substance abuse, sexual risk-taking; and/or emotional numbness stemming from post-traumatic stress. Let's Kick ASS has disseminated the "Longterm Survivors Declaration" to build awareness about AIDS Survivor Syndrome and also to focus on survivors' resiliencies from decades of living with HIV. The provider trainings were based on the NOAH model, including community assessment, comprehensive training, follow-up, and NYC based mentorship for select training participants.
**Results:** There were many lessons learned, including the need for HIV providers to be trained on specific clinical and psychosocial needs associated with Longterm sur-

vivors. There is also low knowledge and preparedness among aging providers (i.e. senior center staff, and Gerontology) to assess and adequately respond to Longterm survivors within their caseload who disclose their HIV status.
**Conclusions:** Ongoing training for both HIV and Aging providers in San Francisco in order to equip them with information needed to adequately respond to the needs of Longterm survivors with AIDS Survivor Syndrome. Also, mobilization of local key stakeholders to advocate for continued provider education with a focus on resiliency and coping for Longterm survivors with AIDS Survivor Syndrome.

## TUPED303

### INTIMATE PARTNER VIOLENCE AMONG OLDER WOMEN WITH HIV

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**Background:** There is increasing evidence of bidirectional links between HIV and intimate partner violence (IPV), particularly for women in sub-Saharan Africa. Much of the literature is focused on adolescent women; however the growing ageing HIV-infected population requires an assessment of IPV among older women.
**Methods:** We conducted interviews between late 2014 and early 2015 with patients aged 50 years and older attending a HIV treatment facility for routine monitoring visits in Johannesburg. Patients were approached in the waiting room, consented and interviewed in a private consulting room. Data were entered into Stata SE 13 and analyzed descriptively. We report on data from female participants and their IPV experience documented by the WHO intimate partner violence scale.
**Results:** 108 people participated in the survey, of which two-thirds were female (n=78). Mean age of female participants was 57.9 years with over 70% being single (either widowed, divorced/separated or never married). At the time of the interview two-thirds reported not having a partner and not being sexually active in the past 12 months. Approximately one-quarter of women reported ever experiencing partner violence more than 6 months ago. Almost 20% reported having been threatened into coercive sex. 20% also reported a partner using physical force (hit, held down or threatened with a weapon) to coerce sex. Other reports of violence included being choked, threatened with a knife or gun (21%); beaten up, burned or scalded 26%; pushed, grabbed or slapped (30%) or; had their hair or arm twisted or an object thrown at them (31%). Given that women were overwhelmingly single, reports of partner violence in the past 6 months were low (under 2%).
**Conclusions:** This cohort of older women with HIV report more lifetime IPV than has previously been documented in partnered South African women aged 15-49 years. These findings suggest that HIV seropositive older women's experience of violence might have directly or indirectly contributed to their HIV transmission and could impact on their autonomy in accessing and remaining in care. Routine IPV screening of these older women is warranted.

## TUPED304

### THE HEALTH CARE EXPERIENCES OF ADULTS AGED 50 YEARS AND OLDER LIVING WITH HIV IN BOTSWANA

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**Background:** HIV has been transformed from a death sentence to a chronic illness due to the advancement of antiretroviral treatment. Nevertheless, in Botswana, older adults living with HIV remain profoundly marginalised. According to the Botswana AIDS Impact Survey, the percentage of older people living with HIV has risen over time. This study aimed to examine how older people cope with living with HIV in Botswana.
**Methods:** This was a qualitative study in which 50 in-depth semi-structured face-to-face interviews were conducted with adults aged 50 years and above living with HIV. Recruitment was through healthcare facilities. Questions focused on socio-demographic characteristics as well as information on HIV diagnosis and probable acquisition, transmission, relationships, aging and co-morbidities. Thematic content analysis was used in the analysis, interpretation, and validation of the qualitative data.
**Results:** Most interviewees regarded themselves as long-time survivors who now struggle with both the challenges of aging with HIV as well as institutionalized ageism, stigma and social isolation. Other interviewees stated that they were newly infected and bemoaned the lack of prevention campaigns aimed at older people. Stigma and discrimination related to HIV and aging, the challenge of co-morbidities, and a general lack of age-appropriate service provision and support from practitioners across various fields hinders access to care. Interviewees stated that most health providers mistakenly assume that older people are not sexually active.
**Conclusions:** HIV presents a formidable challenge in Botswana, as older people living with HIV must confront issues relating to not only their health but also issues of morality and sexual expression. Even though Botswana's management seem to recognize HIV as a public health challenge, it's focused intervention seem to put greater emphasis on HIV in the context of a sexual transmitted infection rather than a chronic lifelong infection hence the need to increase the visibility and policy priority of aging and HIV in Botswana to unravel the complexity of managing HIV versus treatment effects versus aging versus concurrent disease.

## TUPED305

### ACCESSIBILITY OF ELDERLY ADULTS TO HIV SCREENING SERVICES IN CAMEROON

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**Background:** Older persons are believed to lack access to even basic healthcare and, crucially, to have less access to services than do younger age-groups, suggesting an element of age-related exclusion (UN, 2002;African Union, 2003; Lloyd-Sherlock P et al, 2010) . The UNAIDS update for 2009 stated that "even though the largest share of new infections in many African countries occurs among older heterosexual couples, relatively few prevention programmes have specifically focused on older adults" (UN, 2009).
**Methods:** We administered structured questionnaires on 321 elderly adults aged ≥55 years, selected through an incidental sampling techniques in two Cameroon communities. Data were analysed using Epi-Info 7. Descriptive and analytic statistics was used to measure access. Chi-Squared test was used to test for association between socio-demographic characteristics and access to HIV screening. Accessibility to HIV screening was defined as having done at least an HIV screening test at least once over a lifetime.
**Results:** The median age of the participants was 59years. The sex distribution for males and females was 54.5% and 45.5% respectively. 99/321(30.1%) had never done an HIV test in their entire life. Amongst those who had done an HIV test, only 136/233(58.4%) had done it within the past one year. Just 132/321(41.1%) reported that a doctor or nurse ever requested an HIV test for them in their entire life. Factors associated with access ($P < 0.05$) included; occupation, average monthly income, level of education and living with a chronic disease.
**Conclusions:** These results suggest that elderly people have limited access to HIV/AIDS services. There is need for appropriate measures especially from the dimension of health care providers to improve access to health care services amongst these elderly adults.

## TUPED306

### RESEARCH ON OLDER ADULTS WITH HIV IN UGANDA RESEARCH ON OLDER ADULTS WITH HIV IN UGANDA: A FEASIBILITY STUDY OF A SURVEY TOOL

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**Background:** HIV is having an impact on those aged 50 years and older. In sub-Saharan Africa, there are over 3 million older PLHIV representing more than 13% of the region's PLHIV. Emerging evidence has suggested that even in resource-limited settings, almost normal life expectancy, including that of older people can be expected once on ART.
The study sought to examine social support, sexual behaviour and overall health status among older PLHIV in Uganda and determine their unmet social and service needs in order to improve their quality of life and access to healthcare.
**Methods:** Both quantitative and qualitative data collection methods were used with 101 older PLHIV being interviewed on issues around their health, social behavior and well-being. The quantitative component was conducted through face-to-face one-on-one interviews. The survey included selected items from standardised and validated measures to allow for comparison to other extant research. Eleven in-depth interviews were conducted at the rural site and four at the peri-urban site. A framework involving developing a thematic structure for interpretation was used for the qualitative analysis.
**Results:** Levels of emotional support were seen as adequate by the majority of respondents but instrumental support, including financial support, help around the

house, assistance with daily living, was needed by most. Transport to health facilities was challenging for many and had the potential to hamper adherence to treatment and maintenance of health status. There were significant differences between men and women in sexual behavior. About half of older men were sexually active compared to only 14% of older women. Over half of respondents reported not using a condom with their spouse and the vast majority had disclosed to their partner.
**Conclusions:** The study serves as a basis for future work that could highlight challenges and opportunities to respond to HIV among older adults. It provides a clear pathway to strengthening the evidence based on older PLHIV in Uganda and subsequently in other parts of Africa, clearly demonstrates the feasibility and acceptability of the research and serves as a springboard for future work that could highlight challenges and opportunities to respond to HIV among older adults.

## TUPED307

### "WELL, THEY JUST GAVE UP": OTHERING AS PART OF THE SURVIVAL EXPERIENCE OF OLDER MEN WITH HIV IN NEW YORK CITY

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**Background:** At present, half of those living with HIV in New York City are over 50 and many of these individuals are long-term survivors, reflecting the transformation of HIV from a life-threatening illness to a chronic disease. However, the distinctive lived experiences of older long-term survivors with HIV/AIDS have gone relatively understudied. While the use of moral narratives as a form of differentiation and internalized stigma have just began to be explored among this population, one aspect that has yet to be studied is the use of othering. This paper fills this gap.
**Methods:** Twenty in-depth open-ended interviews were conducted with older (ages 50 to 76) men who were long-term survivors of HIV/AIDS (time since diagnosis, years 15 to 30). The sample is predominantly Black/African American (70% Black/African American, 15% Hispanic Latino, 10% Bi-racial/Other, 5% White), gay (65% gay, 20% bisexual, 15% heterosexual), unemployed (80% unemployed) and educated (40% completed some or all college and 50% completed high school or GED program). Participants were recruited via posted fliers at a food and nutritional program for people living with HIV/AIDS in New York City. Interviews elicited participants lived and survival experience. Interviews were transcribed verbatim, and coded using ATLAS.ti, guided by the principles of Colaizzi's (1978) descriptive phenomenological method.
**Results:** All participants described how HIV/AIDS had led to multiple losses in their lives, this was particularly pronounced in those who identified as gay. Participants described losses through stigma, for example abandonment by friends and families as well as through death, for example death of a friend or partner from HIV. They described viewing these deaths, first through with fear and subsequently from an exclusionary othering lens. Whereby, participants reported feeling dominance over those who had died, ascribing those who had died with characteristics relating to weakness and defeatism. Moreover, the participants reported that othering those who had died imbued them a sense of personal empowerment.
**Conclusions:** Findings highlight the importance of othering as part of the survival process among long-term male survivors with HIV/AIDS.

## TUPED308

### TELLING IT LIKE IT IS: THE MULTIPLE LOSS JOURNEY WITH A SPANISH SOUL

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**Background:** There are an increasing number of PHAs who have immigrated to Toronto from Latin-American countries. In addition to the stigma of being associated with marginalized communities and living with HIV, these individuals often come with stories of war-related violence. Latinos PositivosToronto (LPT) requested support for creating a culturally-relevant dialogue tool to assist members of this community in openly talking about their complex multiple loss histories. Spanish Interpreters from LPT reached out to the AIDS Bereavement and Resiliency Project of Ontario (ABRPO) who had developed a program on Multiple Loss and Community Devastation: *Survive to Thrive*.
**Methods:** As part of *Survive to Thrive*, ABRPO created a "Multiple Loss Journey" (MLJ)- a large visual tool that supported community awareness and dialogue related to the issues and task associated with accommodating the challenges of ongoing loss. Through a community needs assessment, the members of LPT decided that the direct translation of this MLJ was insufficient. As a result, ABRPO sat for 3 days with 15 members of LPT from 5 Latin American countries, to adapt it to a Spanish version of the MLJ. Each concept on the map was carefully deconstructed and elaborated upon to identify Spanish concepts and words appropriate to this ethno-racial community.
ABRPO supported LPT by producing a colourful 6 foot wall map of this Spanish "Sendero de Pérdidas Múltiples".
**Results:** Direct translations of AIDS-related materials and tools are not culturally appropriate for non -English speaking PHAs. By developing a partnership between experts and community, a stronger tool was developed that will not only be highly relevant for Spanish-speaking multiple loss survivors, but will be a significant resource for ABRPO.
**Conclusions:** With this dialogue tool in place, Latinos Positivos Toronto is better able to partner with ABRPO to train a core-group of PHAs to deliver a Spanish version of the "Survive to Thrive "program that accompanies this Multiple Loss Journey.

# PREVENTION INTERVENTIONS AND THEIR EFFECTS ON THE LIVES AND RELATIONSHIPS OF PEOPLE LIVING WITH HIV

## TUPED309

### GENDER INEQUALITIES INFLUENCE HIV-SEROSTATUS DISCLOSURE: QUALITATIVE STUDY AMONG HIV-POSITIVE WOMEN AND MEN REPORTING SERO-DISCORDANT PARTNERSHIPS IN DURBAN, SOUTH AFRICA

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**Background:** This qualitative study investigated the dynamics of HIV-serostatus disclosure with a focus on gender inequities among HIV-positive men and women reporting sero-discordant partnerships in Durban, South Africa. HIV-serodiscordance contributes to high HIV incidence in southern Africa, yet disclosure rates remain low among men and women in sero-discordant partnerships. Gender power inequality within relationships can increase HIV infection risks for women, requiring greater attention towards addressing gender relations and HIV disclosure.
**Methods:** Thirty-five in-depth interviews were conducted with 15 HIV-infected men and 20 HIV-infected women (not couples) reporting uninfected or unknown-serostatus partners and enrolled in HIV care, from four public sector clinics near Durban, as part of a study exploring participant experiences with safer conception counseling. Themes were identified using a structured coding scheme, permitting investigation of men's and women's attitudes and behaviors toward HIV-serostatus disclosure, and the process and experience of sharing (or not sharing) HIV-serostatus with a partner. Promoters and barriers of HIV-serostatus disclosure emerged as important themes affecting periconception HIV-risk behavior. Data analysis explored narratives of HIV-serostatus disclosure through the lens of gender inequality, focusing on reasons for non-disclosure and links to sociocultural gender dynamics.
**Results:** Socio-demographic characteristics were: median age 33 years (men) and 30 years (women); average time since HIV-diagnosis 1 year (men) and 1.5 years (women). Four major themes related to gender inequality emerged:
(1) Men and women fear disclosing HIV-serostatus to partners due to concerns about stigma and relationship dissolution,
(2) Suspicions and mistrust underlie lack of disclosure,
(3) Unequal gender dynamics in relationships influence women's disclosure patterns and result in differential uptake of disclosure among men and women, and
(4) Partial or incomplete disclosure is a strategy to navigate disclosure challenges. Findings illustrate HIV-serostatus disclosure as a complex process evolving over time, sometimes many years, rather than a one-time event.
**Conclusions:** HIV-serostatus disclosure is a critical component of effective HIV prevention. Yet partner communication about HIV-serostatus is infrequent and complicated, with gender inequalities contributing to fear, mistrust and partial or implicit disclosure. Relationship and gender dynamics powerfully impact HIV-serostatus disclosure. Interventions to reduce barriers to effective communication and trust for HIV-serodiscordant couples are needed.

## TUPED310

### #UNDETECTABLE: HIV-POSITIVE. NOT INFECTIOUS

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**Background:** People living with HIV stop being infectious if they have been taking effective ART for a certain period. This fact has been widely known since the statement made by the Federal Commission for Aids Issues (EKAF) in 2008. As the “Swiss Statement” it was eagerly discussed at the International Aids Conference in Mexico. Despite this, time and again the debate becomes heated when it is proposed that this message should be incorporated into prevention campaigns. With the #undetectable-campaign, the Swiss Aids Federation, in cooperation with and funded by the Federal Office of Public Health, implements its message into the prevention system of the MSM-population.

**Methods:** The message spread by the campaign reads as follows: “For you as someone with HIV and your partners #undetectable means, that if your viral load has remained below the detectable threshold for at least six months, you take your ART regularly and your doctor also monitors your viral load regularly, you are no longer infectious. #undetectable is a safer sex strategy and is as safe as using a condom. You no longer have to disclose your HIV status if you do not want to. This is an important step toward reducing stigma and discrimination.

**Results:** Eight years after the “Swiss Statement”, the campaign is still causing concerns and bringing up heated discussions among physicians, prevention workers but also PLWHA. By providing training, information and face-to-face discussions, there is a good chance for finally acquiring this shift within the prevention message.

**Conclusions:** #undetectable is one of two big campaigns 2016 targeting the key population of MSM in Switzerland. Ads and informations in print, on social media sites (Facebook, Twitter, Gayromeo, Grindr) and on our website drgay.ch have been published. Peer-to-peer-education, public appearences (at prides, gay venues etc) and lobbying activities targeting the medical system will follow.

## TUPED311

### STRENGTHENED SEXUAL RELATIONSHIPS THROUGH PREP USE BY SERODISCORDANT COUPLES MAY STIMULATE DEMAND FOR PREP IN SUB-SAHARAN AFRICA: QUALITATIVE RESEARCH FROM THE PARTNERS DEMONSTRATION PROJECT

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**Background:** Plans for rollout of antiretrovirals as pre-exposure prophylaxis (PrEP) are now underway in some sub-Saharan African countries.Demand from populations which stand to benefit from PrEP can fuel the roll-out process. As many as half of new HIV infections in Africa take place in serodiscordant couples. Understanding couples’ experiences of PrEP use can help in developing messages and generating demand for PrEP by HIV serodiscordant couples. Using qualitative data from the Partners Demonstration Project in Kampala, Uganda, we describe serodiscordant couples’ experiences of PrEP use.

**Methods:** We conducted in-depth interviews with 48 serodiscordant couples taking part in the Partners Demonstration Project. Interview topics included: the story of HIV testing and joining the study,experiences of serodiscordance, sexual behavior before and while using PrEP, adherence to PrEP, feelings about PrEP, fertility intentions, and experiences of discontinuing PrEP. Interviews were inductively analyzed to identify themes reflecting couples’ experiences of and responses to PrEP use. Data were classified into categories corresponding to the themes. Together, the categories revealed an important benefit of PrEP use.

**Results:** Learning about HIV serodiscordance creates fear of HIV transmission in couples, who respond by taking steps to manage infection risk - using condoms, reducing sexual frequency and/ or abstaining from sexual relations altogether. These steps make couples feel safer, but also negatively impact their sexual relationship, eroding the quality of sex and interfering with plans to have children. Intimacy and emotional ties between partners are weakened as a result. PrEP is experienced by couples as “added protection” against HIV transmission, creating a safer environment in which to fulfill sexual relationship and reproductive goals. This sense of added protection further reduces fear and offsets damage to sexual relationships caused by other prevention methods.

**Conclusions:** PrEP reduces HIV risk in serodiscordant couples without undermining sexual intimacy and childbearing plans. PrEP’s capacity to prevent HIV transmission without threatening couple’s sexual relationships has the potential to meet needs and stimulate demand for PrEP by serodiscordant couples in sub-Saharan Africa.

## TUPED312

### REACHING AT HARD-TO-REACH POPULATION: AN EFFECTIVE MOBILIZATION OF KEY POPULATION IN NEPAL

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**Background:** PLHIV mortality rate to some extent declined with the availability of ART services in Nepal. However, the delay in early diagnosis of Tuberculosis among PLHIV have dramatically contributed to shorting the pre-ART stage on PLHIV; and increase of TB associated death among PLHIV. The HIV prevalence among TB patients is studied, but TB prevalence among PLHIV is still unknown due to rare PLHIV focused TB intervention.

**Description:** Naya Goreto in support of United Nation Office for Project Support (UNOPS) conducted 18 months intensified TB case finding among PLHIV in 10 high HIV prevalence districts of Nepal. Ex-PLHIV/TB co-infected patients were mobilized in project sites for early TB screening, testing and treatment of hard to reach population especially PLHIV, drug users, sex workers and migrant workers. We reached among 8110 (aged 15-64) for early TB diagnosis during the project period including the family members of index cases (TBHIV co-infected). Both active case finding and contact tracing approaches were used primarily, mobilizing PLHIV volunteers with mobile technology to reach hard-to-reach population.

**Lessons learned:** Despite a massive earthquake, project volunteers screened 8110 and found 287 TB cases in hard to reach population; and able to develop a link with key population with health facilities for early access to TB care and support. The mobilization of key population as volunteer is the key reason for extremely satisfied results in short project span. The existing data shows that the present TB prevalence among PLHIV in Nepal is around 4.74.

**Conclusions/Next steps:** The expansion of PLHIV and other vulnerable group focused TB program has had a large and pervasive effect on PLHIV mortality. Improvement in intervention strategies mainly peer groups mobilisation has contributed in early diagnosis of TB among hard to reach population. Only the early TB screening among PLHIV often attributed to timely TB treatment, reducing TB associated death and prolonging pre-ART stage on PLHIV. Therefore, this project has not only provided a baseline data for further operation research; but also forwarded a new approach of meaningful involvement of the key populations in TB Programme of Nepal Government.

# SEXUAL AND REPRODUCTIVE HEALTH, FERTILITY, FAMILY PLANNING AND ABORTION

## TUPED313

### UPSCALING SEXUAL AND REPRODUCTIVE HEALTH AND RIGHTS (SRHR) AMONG YOUNG PEOPLE AND ADOLESCENTS

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**Background:** Since the global community is making progress towards 90 90 90 fast track targets by 2020, there is a challenge of ensuring that young people and adolescents receive SRHR quality knowledge and services. In developing countries including rural Zimbabwe, young people and adolescents generally lack sufficient SRHR knowledge and access to services. Restless Development Zimbabwe through the ICS programme in rural areas continues to work on upscaling access to quality SRHR services as well as improved knowledge. The main objectives of the programme were to examine the upscaling of SRHR among young people and adolescents, to increase awareness of SRHR services and information and removing barriers which institutionalise SRHR in order to scale services and ensure full access.

**Methods:** The ICS programme was implemented by both Team Leaders and volunteers who had been recruited in the ICS Programme with the help of Restless Development management. This programme was conducted with 20 000 key populations

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which comprised of young people and adolescents who received SRHR knowledge and access to services between August 2015 to November 2015 in rural Zimbabwe, Bulilima District. Well planned SRHR and HIV/AIDS education interventions were implemented. A rights based approach was adopted as it specifically centred on the health and well being of young people and adolescents. The programme also conducted full stakeholders' involvement of community leaders and other stakeholders working towards the same scope of Restless Development.
**Results:** SRHR education interventions have been found to increase knowledge as well as develop life skills in order to change risky behaviours. Of the 20,000 key populations, 90 % reported behaviour change and also reported to have both received SRHR knowledge and services in clinics and schools whilst the remaining 10% received SRHR services and quality information. Full stakeholders' involvement was also active through participation of community leadership in caucus meetings and campaigns.
**Conclusions:** Upscaling of SRHR results in high behaviour change communications, it also lessens levels of teenage pregnancy as well as reducing HIV infections and deaths among young people and adolescents. Great improvements have been achieved although vast efforts are still needed such that 2020 Fast Track Targets are met.

## TUPED314

### CHILDBEARING INTENTIONS AND FAMILY PLANNING UPTAKE IN HIV+ WOMEN ON ANTIRETROVIRAL THERAPY (ART) IN THE POSTPARTUM PERIOD

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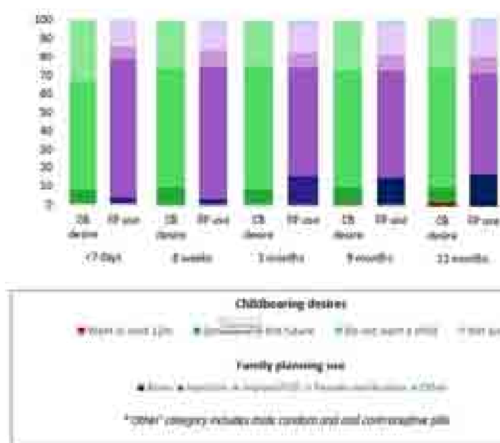
**Background:** There are growing concerns about the childbearing intentions and family planning (FP) needs of women on ART, yet little is known about these issues in HIV+ women during the postpartum period. We examined childbearing intentions and FP uptake among HIV+ women during the first year postpartum in Cape Town, South Africa.
**Methods:** We followed 471 women on ART from delivery through 12 months postpartum between June 2013-June 2015. In up to 5 interviews conducted separately from routine health services, women reported on FP use and childbearing intentions; the latter was recorded using a 4-point scale measuring perceived future desires, categorised as
(i) unsure,
(ii) definitely do not want to become pregnant in the future,
(iii) may want to become pregnant in the future,
(iv) definitely do want to become pregnant in the next 12 months.
**Results:** In this population (median age, 29; 42% married/cohabiting), childbearing intentions remained stable throughout the postpartum period: across visits, 90-92% of women were unsure or definitely did not want to become pregnant in the future (Figure 1). Desire to become pregnant in the next 12 months was reported in < 2% of women consistently over time. In contrast, the proportion of women not using FP increased, from 4% to 17% by 12 months postpartum; these increases were driven by discontinuation of injectables. Use of implants and intrauterine devices (IUDs) increased over time (14-19%). Among women at 12 months postpartum who were unsure or definitely did not want to become pregnant in the future, 18% were not using FP.




*[Figure 1: Childbearing desires and family planning method use by post-partum duration]*

**Conclusions:** Non-use of FP increases over the postpartum period among HIV+ women. Discontinuation of injectables contributes to non-use. While further research into the determinants of childbearing intentions and FP use are needed in this population, long-acting methods suitable for women using ART, such as the IUD require ongoing programmatic support.

## TUPED315

### CONTRACEPTIVE USE AMONG WOMEN LIVING WITH HIV AND AIDS RECEIVING CARE AT SECONDARY AND TERTIARY HEALTH FACILITIES IN IBADAN NIGERIA

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**Background:** Contraceptive use is a form of family planning and it is one practice among the most important health decisions that many people including women living with HIV and AIDS. Inadequate information on available contraceptive methods and restriction of choices are major constraints for contraceptive users to obtain a method that suits their unmet need. Hence, this study was designed to assess the contraceptives use among HIV positive women receiving care at secondary and tertiary health facilities in Ibadan. Nigeria
**Methods:** A cross-sectional study using systematic random sampling technique was conducted to select 350 consenting women among HIV positive women receiving care in two health facilities in Ibadan. A pre-tested interviewer-administered questionnaire which contained respondents' Socio-demographic characteristics, unmet need of contraceptive use, family planning method used and their effectiveness, experience and level of satisfaction of modern contraceptive use was adopted.
**Results:** Age of the respondents was 37.0$\pm$8.5, 87.0% were married and 68.0% were in monogamous marriage. Respondents with Junior and Senior Secondary School certificates were 41.1% and 34.3% rates respectively. Analysis by unmet need revealed that about 97.0% of the women had had at least one birth, 46.0% of the women had 4-6 previous pregnancies, 44.0% had 1-3 pregnancies while 7% had more than 6 previous pregnancies. Current method of contraception was influenced by joint agreement with their spouses (33.0%), Condom was the commonest choice (54.8%) followed by Oral pills (20.1%) while Injectables (16.1%) IUCD (10.5%) and Implants (9.5%) were the least common choices respectively. Of the women that encountered problems, 54.0% indicated they would seek solution from providers, 15.0% would adopt traditional methods, 12.0% would change method while about 4.0% don't know what to do. Factors influencing continuation of chosen method included (39.7%), availability (24.1), Affordability (14.1%) and effectiveness (13.1%). A major reason for being satisfied with chosen method was adequate information before choice (94.5%).
**Conclusions:** High level of education and previous use of contraceptives supported by spouses are factors influencing modern contraceptive choices. Family planning programme should be incorporated as a component part of care for women living with HIV and AIDS.

## TUPED316

### A COMPARISON OF SEXUAL BEHAVIOR AMONG OLDER ADULTS WITH HIV FROM SOUTH AFRICA AND UGANDA: FINDINGS FROM THE RESEARCH ON OLDER ADULTS WITH HIV (ROAH) AFRICA PROJECT

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**Background:** As antiretrovirals become more widely available in sub-Saharan Africa, the population of adults 50 and older with HIV will continue to grow and is currently estimated at over 3,000,000. We know little about this burgeoning group, including levels of sexual activity and risk behaviors that could inform HIV prevention efforts. Such data are needed as research finds adults remain sexually active into old age, providing a vector for HIV and other STI transmission.
**Methods:** Data were obtained from ROAH Africa sites in Uganda (UG) and South Africa (SA) on adults 50 and older with HIV from 2013 to 2015. In UG (N = 101), 58% were women and the average age was 61 years. In SA (N = 108), 72% were women

and the average age was 58 years. Questions on sexual activity were adapted from the National Social Heath and Aging Project (Lindau et al., 2007), and significant differences were examined using Fisher's Exact Tests.
**Results:** SA older adults were significantly more likely to report sexually activity in the past year (51%) compared to UG (31%), and men were the most active in both countries. SA older adults were more likely to report becoming HIV-infected from a spouse (57%) vs. a casual partner (31%), but in UG these vectors were nearly equivalent (43% and 41%, respectively). HIV disclosure between partners in UG was significantly greater compared with SA (ranges 93-96% and 70-80%, respectively), and greater in UG compared with extant research on younger samples. However, SA older adults were significantly more likely to report condom use usually/always with spouses and casual partners (92% and 93%, respectively) compared to UG (33% and 50%, respectively).
**Conclusions:** Older adults with HIV in both UG and SA remain sexually active, underscoring the need for secondary HIV prevention efforts directed at the older population. Data on differences in condom use suggest such efforts could be successful in regions where condom uptake could be improved. Differences between SA and UG older adults in sexual activity suggest that cultural and social influences preclude making broad generalizations about older adults with HIV on the African continent.

## TUPED317

### MISSED OPPORTUNITIES FOR SEXUAL AND REPRODUCTIVE HEALTH COUNSELING FOLLOWING HIV DIAGNOSIS IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Post-diagnosis counseling presents a key opportunity for providers to help newly-diagnosed HIV+ individuals adjust to their diagnosis and promote their health and well-being. Integrating sexual and reproductive health information into HIV-related counseling sessions is recommended in South Africa's national guidelines, but few have examined whether such messages are included, or how they are received.
**Methods:** We conducted serial semi-structured interviews over an eight-month period in 2012-2013 with a targeted subsample of 13 women and 13 men from *Pathways to Care*, a prospective cohort study of newly-diagnosed HIV+ adults recruited from three public primary care clinics in KwaZulu-Natal. At each interview, participants were asked what counseling messages they had received about leading a healthy lifestyle, sexual behavior, contraception, safe conception, and pregnancy termination options. Audio-recorded interviews were translated, transcribed, and analyzed thematically in NVivo 10.0.
**Results:** All participants reported receiving sexual risk reduction messaging at some point during post-diagnosis counseling. Dominant counseling messages included discouraging concurrent sexual partnerships, and encouraging consistent condom use and having less sex overall. However, some participants misunderstood or were misinformed about reasons for condom use; a minority believed that engaging in condomless intercourse could directly lower their CD4+ count or increase viral load. Half of the participants had not received any counseling regarding family planning options beyond condoms, or about safe conception options if they desired children in the future. No participants reported receiving counseling regarding how to terminate an unwanted pregnancy.
**Conclusions:** Sexual and reproductive health counseling appeared to be incomplete and inconsistent in our sample of newly-diagnosed HIV+ men and women. This indicates a missed opportunity to enhance the quality of life for persons living with HIV, and underscores the need to allocate additional resources so that HIV counselors are sufficiently trained and supported to provide basic sexual and reproductive health information and relevant referrals to their clients.

## TUPED318

### TRENDS AND PREDICTORS OF LIVE-BIRTH AND ABORTION RATES AMONG HIV-INFECTED AND -UNINFECTED WOMEN ENROLLED IN THE WOMEN'S INTERAGENCY HIV STUDY (WIHS): 1994-2012

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**Background:** Little is known about fertility choices and pregnancy outcome rates among HIV-infected women in the current combination ART era. We describe trends and predictors of live-birth and abortion rates between 1994 and 2012 in women enrolled in the WIHS.
**Methods:** We analyzed longitudinal data collected from October 1st 1994 to September 30th 2012 through WIHS, a multicenter prospective cohort study of HIV-infected and HIV-uninfected women in the U.S. Rates per 100 person-years for self-reported induced abortions and live-births were determined over 4 time periods, with standardized time interval adjustment for age by sero-status. Adjusted incidence rate ratios for live-births and abortions with 95% confidence intervals were obtained using a Poisson mixed effects model to evaluate multivariate associations including variables significant for either HIV sero-status by univariate association (< 0.10).
**Results:** There were 1,356 pregnancies among 2,414 women included in this analysis. Among HIV-infected women, the age-adjusted rates of live-birth increased from 1994-1997 to 2006-2012 (2.85/100PY to 7.27/100PY), while age-adjusted rates of abortion remained stable (4.03/100PY to 4.29/100PY). Significantly lower live-birth rates occurred among HIV-infected compared to uninfected women in 1994-1997 and 1997-2001, however rates were similar for later time intervals of 2002-2005 and 2006-2012. Among HIV-infected women, older age (>35 vs < 25 IRR 0.14 (0.08-0.23)), CD4+ counts < 350 cells/mm$^3$ (IRR 0.72 (0.53, 0.97)), any condom use during prior 6 months (IRR 0.73 (0.56-0.97)) and alcohol use (>=7 drinks/week IRR 0.47 (0.22, 0.97)) was associated with reduced live-birth rates. There was a trend towards increased live-birth rates among ART users (IRR 1.35 (0.99, 1.83)). Abortion rates were lower among older women and those with prior sexually transmitted infections, and higher among those from the Brooklyn site, condom users, with higher parity, and prior abortion. Use of ART, CD4+ count, and viral load were not associated with abortion rates. Contraceptive use was not associated with either outcome.
**Conclusions:** Unlike earlier periods when pregnancy and live-birth rates were low among HIV-infected women, rates are now similar to uninfected women in the WIHS, potentially due to improved health status with ART. However, abortion rates are unchanged indicating an ongoing opportunity to improve family planning services.

## TUPED319

### PUBLIC INTEREST LITIGATION TO CHALLENGE THE FORCED AND/OR COERCED STERILIZATION OF WOMEN LIVING WITH HIV

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**Background:** In many African contexts, motherhood informs social constructions of womanhood and femininity. Forced and/or coerced sterilization of women living with HIV (WLHIV) robs women their right to choose to have children. Sterilized

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women face extreme stigma, gender-based violence, abuse from their communities, and a loss of their status as "whole" women. International bodies have convened to strategize on the relationship between such human rights abuses and the key legal questions pertaining to the global AIDS response. In this vein, UNDP coordinated a strategy meeting in 2015 to discuss the findings of the Global Commission on HIV and the Law's regarding young women and adolescent girls. Contributing to the advancement of these recommendations, the Kenya Legal and Ethical Issues Network on HIV & AIDS (KELIN) is engaged in facilitating access to justice through the legal representation of women who have been forced or coerced into sterilization.

**Description:** With a view toward the full enjoyment of health-related rights, KELIN provides legal services and influences policy that promotes evidence-based change. Through public interest litigation, KELIN advocates for the enjoyment of health on a more far-reaching scale than with individual cases. With the support of partners, KELIN is challenging the sterilization of women living with HIV - representative of a larger cohort of victims - in two currently ongoing court cases initiated in 2014.

**Lessons learned:** Women's narratives have revealed that illegitimate consent and a lack of awareness of rights are at the core of sterilization, revealing a discrepancy between laws/policies and actual practices. Other lessons include the important impacts of community-led documentation and sensitization, alliance building, and lobbying at a high-level, policy level.

**Conclusions/Next steps:** Education and empowerment on reproductive health rights will be instrumental in tackling misinformation by healthcare providers. Key next steps include continuous training of WLHIV, their families, and healthcare providers. The public interest litigation itself has the potential to set a legal precedent in Kenya and hold the government accountable in the long term.

## TUPED320

### UNDERSTANDING CONTRACEPTIVE USE AND PRACTICES AMONG FEMALE SEX WORKERS LIVING WITH HIV IN THE DOMINICAN REPUBLIC

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**Background:** Female sex workers (FSW) living with HIV are at increased risk for unintended pregnancy, abortion, pregnancy complications and other negative health outcomes, yet little is know about the contraceptive practices of this population.

**Methods:** Data was analyzed on 268 current FSW living with HIV in the Dominican Republic. Descriptive analysis was conducted to understand varied methods of contraceptive use and practices in this population.

**Results:** About 95% of participants reported at least one pregnancy (mean: 4.2; range: About 80% (216/268) of participants reported using at least one form of contraceptive method (barrier or non-barrier) in the last 6 months. Consistent condom use was about 73% (197/268) on average with all clients, however condoms are used more consistently with new (190/214; 88.79%) and regular clients (217/248; 87.50%) as compared to steady partners (152/228; 66.67%). For those using non-barrier contraceptive methods, most (134/267; 50%) reported a permanent procedure with the high majority reporting a tubal ligation (47.39%) as compared to hysterectomy (3.73%). The average age of the permanent contraceptive procedure was 28 with a broad age range (15 to 45 years). Just under a third (36/127; 28.34%) of participants reported having the procedure within 3 years of their HIV diagnosis. About a third or participants who have had a permanent procedure reported that they would like more children. Of those who reported not using any method to prevent pregnancy (barrier or non-barrier) in the last 6 months (18.90%), about 66% of those participants also indicated not wanting more children.

**Conclusions:** The results of this analysis highlights the importance of further research on contraceptive use and FSW living with HIV. For a population facing barriers to care and at high risk for unintended pregnancy, STI, and transmission of HIV, integrated care and a better understanding of both HIV and reproductive health needs is important. Further research is needed to understand dynamics surrounding contraceptive decision-making and health provider communication surrounding family planning and pregnancy.

## TUPED321

### FACTORS ASSOCIATED WITH THE DESIRE FOR FUTURE CHILDREN AMONG HIV-POSITIVE WOMEN AND MEN IN MALAWI

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**Background:** The objective of this analysis was to identify factors related to the desire to have children in the future among HIV-positive patients in Malawi and to describe the contraceptive methods used among those desiring no future children.

**Methods:** We conducted a cross-sectional questionnaire of reproductive health knowledge, attitudes and practices among patients receiving care at two large public HIV clinics in Lilongwe, Malawi between September and December 2013. Our primary outcome was the desire to have children in the future. We used descriptive statistics to describe contraceptive pattern use and Poisson regression to estimate adjusted prevalence ratios (aPRs) for factors associated with the desire to have children in the future.

**Results:** Among 308 female and 250 male participants, most received antiretroviral therapy, were in long-term relationships, and had at least one living child. One-third of participants desired future pregnancy. Approximately 80% of participants who did not want children in the future reported using contraception at last intercourse; the most frequently used methods were depot medroxyprogesterone acetate (28.2% of women; 17.8% of men) and condoms (19.8% of women; 43.9% of men). Long-acting reversible contraceptive methods (LARC: intrauterine contraception and implants) were infrequently used. Among men, factors associated with desiring future children were having a partner who wanted children (aPR 4.60, 95% CI 2.94-7.18) and having four or more children compared to zero to one child (aPR 0.41, 95% CI 0.24-0.70). Among women, factors associated with the desiring future children were having a partner who wanted children (aPR 4.17, 95% CI 2.69-6.47), lower parity (aPR 0.45, 95% CI 0.26-0.77, four or more children compared to zero to one child), and believing pregnancy was healthy for her (aPR 1.65, 95% CI 1.24-2.18).

**Conclusions:** Many HIV-positive men and women desire future children, and targeted counseling on safe conception can optimize health outcomes for these individuals and their families. Our findings help guide counseling and show areas for improvement in reproductive life planning for HIV-positive patients in Malawi. Increasing use of the most effective methods, specifically LARC, for patients who do not want future children may reduce unintended pregnancies in this population.

## HIV AND THE WORKPLACE: DISCRIMINATION, UNEMPLOYMENT, RETURN TO WORK AND REHABILITATION

## TUPED322

### PROCESSES OF RESILIENCE AMONG PEOPLE LIVING WITH HIV/AIDS SEEKING VOCATIONAL REHABILITATION: A QUALITATIVE APPROACH

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**Background:** Vocational rehabilitation among people living with HIV/AIDS (PLWHA) remains an understudied subject. While research has shown that stressors related to unemployment negatively affect the quality of life of PLWHA, little has been done to understand and explain the nuances of this relationship. Although resilience has become a fixture in the field of HIV/AIDS in the past decade, its role tends to be limited to that of a protective psychological factor and/or as a buffer to traumatic experiences. This exploratory qualitative study sought to reframe resilience as a series of processes that could facilitate prosocial behaviors toward vocational rehabilitation, in particular among long-term HIV/AIDS survivors.

**Methods:** Our data was collected between 2011and 2012 in San Francisco, CA. These data originated from a cohort of 108 PLWHA who had recently accessed vocational rehabilitation services. We purposively sampled 22 participants based on time since HIV diagnosis and self-reported social standing. We employed a grounded theory approach to develop themes relevant to the study and utilized Atlas.ti to analyze transcripts of semi-structured qualitative interviews.

**Results:** Our sample's mean age is 43 (SD = 9.9), 55% are Caucasian and 68% are male. The data revealed eight major domains that exemplified processes related to resilience within this sample. When stratifying by age, the data showed thematic differences between participants over 40, and those under. Among those over 40, the data elucidated engagement in processes of resilience geared toward *Renegotiating Identities* and *Reframing Negative Events*, while those under 40 were more likely to endorse processes around *Accessing Networks* and *Managing Resources*. The resilient behaviors for participants over 40 seem to be cemented in manifestations of cultural capital, whereas their counterparts under 40 were more adept to invoke social capital and as a means to resilience. Both groups made reference to *Goal Setting* behaviors, which seems to have facilitated engagement in vocational rehabilitation.
**Conclusions:** These data underscore important issues related to identity formation, social networks and other markers of resilience relevant to the vocational rehabilitation efforts of PLWHA. Moreover, harnessing these features through a strengths-based framework could prove imperative to health-related efforts for this population.

## LIVING WITH HIV AND CO-INFECTIONS AND/OR CO-MORBIDITIES

### TUPED323

#### IDENTIFYING TB-HIV CO-INFECTION: A COMMUNITY-LED MODEL FOR TUBERCULOSIS SCREENING AMONG PLHIV: EXPERIENCE FROM THE VIHAAN PROGRAMME IN INDIA

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**Background:** The estimated number of people living with HIV in India is 2.1 million (NACO), of which 95,000 are co-infected with tuberculosis (TB). There is a huge coordination gap between the national HIV and TB programmes, and high mortality among those cases with HIV-TB co-infection. Chances of latent TB developing into active TB are high among PLHIV in India. The Global Fund-supported Vihaan programme, implemented by India HIV/ AIDS Alliance and partners, puts special emphasis on HIV-TB integration and care and support for the co-infected.
**Description:** Vihaan promotes treatment adherence as one of the major objectives of the 350 Care & Support Centres (CSCs) across India. 80% of CSCs are implemented by District Level Networks of PLHIV. Intensive Case Finding (ICF) of PLHIV also living with TB is an essential activity carried out by the CSCs, which is done following an assessment protocol. ICF is based on four major symptoms: cough for any duration, weight loss, fever and presence of night sweats. PLHIV found to have any of one of the common symptoms are referred to TB testing centres. Clients diagnosed with TB are then linked with TB treatment facilities. 55,582 PLHIV were screened for TB, of which 9,499 were referred for testing. Of them, 762 PLHIV were diagnosed with TB within the initial three-month period of ICF in 2015.
**Lessons learned:** Community-led model for screening TB through the use of ICF has proven to be effective. CSC outreach workers (ORWs) and peer counsellors are from the PLHIV community and are well suited to facilitate early diagnosis and linkages for TB testing and treatment, as well as support individual case management. ICF is convenient and easy-to-use for outreach workers, and enables identification of symptomatic clients.
**Conclusions/Next steps:** Integrating TB screening with HIV care & support services using the ICF strategy has resulted in an increase in the early diagnosis of co-infection, thus facilitating better health management among PLHIV. This strategy is being further scaled up to reach all 1.2 million PLHIV who will be registered under the Vihaan programme.

### TUPED324

#### EFFECTIVENESS OF SMOKING CESSATION PROGRAM FOR PRISONERS LIVE WITH HIV/AIDS

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**Background:** Cigarette smoking is a global public health problem. The prevalence of cigarette smoking is higher in HIV positive patients as compared to the general population. Moreover,smoking prevalence is high in prisoners. HIV-positive patients who smoke, have significantly increased mortality and morbidity compared to those who have neversmoked. In this regard, we evaluated effectiveness of smoking cessation program for prisoners live with HIV/AIDS.
**Methods:** The study was designed as a double-blind, randomized, controlled clinical trial, and it began in February 2014 and ended in February 2015. 36 prisoners met the inclusion criteria and were enrolled in the study. They were divided randomly into three groups, i.e., MI-based treatment, MI with NRT, and the control group, which didn't receive any therapy. The outcome measures were reported after intervention and at a 90-day follow-up, and changes in the CO levels in expired air and nicotine dependency were measured.
**Results:** The average age of the subjects was 32.59 ± 4.76, and their mean duration of imprisonment was 4.3 ± 1.90 years. They smoked an average of 22.84 ± 8.72 cigarettes per day. Analysis of the concentration of CO in expired air in the pre-test, post-test, and at the follow-up for the three groups showed that the variations in the mean CO concentrations in the MI group and the MI with NRT group at the pre-test and at the post-test were statistically significant ($p < 0.001$), but no significant changes occurred between the post-test and the follow-up ($p > 0.050$). In addition, the results indicated that CO concentration in expired air in the MI with NRT group was statistically significant, with better efficacy of smoking cessation, compared with control group and the MI group after the follow-up ($p = 0.02$).
**Conclusions:** Smoking cessation may be more difficult for people living with HIV because they are often also coping with mental health and substance use issues. As a result, less intensive interventions such as giving advice may not be enough. Some may benefit from more intensive interventions such as repeated counselling, nicotine replacement and psychiatric assistance.

## CONCEPTUALIZING SOCIAL AND STRUCTURAL FACTORS AND THEIR IMPACTS

### TUPED325

#### SOCIO-CULTURAL FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV PATIENTS IN A UNIVERSITY TEACHING HOSPITAL IN SOUTH-WEST NIGERIA

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**Background:** The objectives are to examine the perception of people living with HIV/AIDS of antiretroviral therapy in the study area, investigate the influence of socio-cultural factors on adherence to treatment regimen in the study area and assess the prevalence of adherence to ART among PLWHA in the study area.
**Methods:** A cross-sectional study design where both qualitative and quantitative research methods were adopted. Participants were HIV diagnosed patients attending clinic at the Hospitals Complex in Ile-Ife between the ages of 18 to 60 years. Three healthcare delivery personnel working in the clinic were interviewed. Using Fischer's formula 336 patients living with HIV were selected for the study. Participants had been on antiretroviral drugs for more than six months prior to the study . Two focus group discussion sessions comprising of 10 male and 10 female living with HIV and currently on ART were conducted. These groups were purposively selected based on their being on ART for more than one year. In-depth interviews were conducted among three purposively selected healthcare givers (an experienced nurse, a doctor and a pharmacist) working in this clinic. Data were collected using a structured questionnaire, an interview guide and tape-recorder. Quantitative data were analysed with descriptive and inferential statistics. Content analysis was used to analyse responses from IDI and FGD.
**Results:** The study revealed positive perception to ART among PLWHA of about 86.3% ,the level of adherence to ART was 89.0% . A strong relationship exists between social and family supports and the degree of adherence to ART . Nutrition, polygamy, difficulty in financing transportation fare to the clinic, unemployment, drug hawkers, religion, excuse duty from work and waking up very early were highlighted as barriers to adherence to ART. Fear of death, strong family support, religion belief, not seeking alternative treatment, absence of rituals and perceived improved health status were noted as facilitators to adherence.
**Conclusions:** It was concluded that to achieve optimal outcome in the management of HIV various social and cultural contexts should be taken into consideration . This study was able to ascertain the influence of these various factors militating and facilitating adherence to ART.

## TUPED326

### CONCEPTUALIZING "TRANSACTIONAL SEX" IN SUB-SAHARAN AFRICA: A REVIEW AND SYNTHESIS OF THE LITERATURE

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**Background:** In sub-Saharan Africa, young women ages 15 -24 have more than twice the risk of acquiring HIV as their male counterparts. A growing body of epidemiological evidence suggests that the practice of 'transactional sex' may contribute to this disparity. Over the last 15 years, the social sciences have contributed significantly to the understanding of the meaning and motivations for this practice. The findings from these studies are rich, but present conflicting narratives, rendering lessons difficult to navigate for intervention and further research.
**Methods:** We contribute a historically-grounded, comprehensive literature review on the nature and motivations for women's participation in transactional sex in sub-Saharan Africa. Using systematic review approaches, we found 310 studies that fit our search criteria. We identified 11 themes in a data extraction matrix that we used to code articles in qualitative research software (Atlas/ti 7). We then further distilled three dominant paradigms on transactional sex that we review toward presenting a unified conceptualization of the practice.
**Results:** The first paradigm "the vulnerable victim who practices sex for basic needs" positions women as victims in transactional sexual relationships, with implications for interventions that protect girls from exploitation. In direct contrast, the "sex for upward mobility" paradigm positions women as sexual agents who engage in transactional sex toward attaining a middle class status and lifestyle. Finally, a third paradigm "sex for material expressions of love," draws attention to the intimacy of love and money, and the central role of men as providers in relationships. We find important commonalities in the structural factors that shape the three paradigms on transactional sex including gender inequality and processes of economic change. We suggest that there are three continuums stretching across these paradigms: those of emotionality, agency and deprivation.
**Conclusions:** This review holds implications for research and interventions, and can serve as a basis for improved efforts to identify pathways through which transactional sex increases young women's risk of HIV. We discuss the consequences of drawing from too narrow an understanding of the practice, and the need to acknowledge continuums of agency and emotionality in intervention approaches.

## TUPED327

### MASCULINITY, INTERNALIZED HETEROSEXISM, AND OTHER PSYCHOSOCIAL HEALTH PROBLEMS: TOWARD A GENDERED MODEL OF HIV SEXUAL RISK PROCESSES IN GAY, BISEXUAL, AND OTHER MEN WHO HAVE SEX WITH MEN

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**Background:** *Internalized heterosexism* (IH) occurs when gay, bisexual, and other men who have sex with men (GBMSM) internalize negative societal attitudes toward their own sexuality. IH has often been used to explain why GBMSM are at increased risk of contracting HIV. However, meta-analysis has revealed that the association between IH and HIV sexual risk behavior in GBMSM is generally small and has decreased over time (Newcomb & Mustanski, 2011). Although these findings challenge the usefulness of IH in HIV research, theory and research from the psychology of men and masculinity may offer a context for IH's continued use. Furthermore, this context may warrant a new "gendered" model of HIV sexual risk processes in GBMSM.
**Description:** The goal of the current project was to provide a brief summary of the potential impact of masculinity on HIV sexual risk behavior in GBMSM to support the development of a multivariate model of HIV sexual risk processes in GBMSM based on The New Psychology of Men using The Gender Role Strain Paradigm as a framework. A comprehensive review of the literature using PsycInfo key terms including Masculinity, Gender Identity, Male Homosexuality, and HIV was conducted.
**Lessons learned:** The present review supports the model that IH may have both direct and indirect (through psychosocial health problems) effects on HIV sexual risk, but that these effects of IH on HIV sexual risk may be moderated by psychological concepts of masculinity. That is, the effects of IH on HIV sexual risk are conditional, depending on the degree of endorsement of psychological concepts of masculinity. There are three locations within the proposed model where psychological concepts of masculinity may serve as a moderator: the direct effect of IH on sexual risk, the effect of IH on psychosocial health problems, and the effect of psychosocial health problems on HIV sexual risk.
**Conclusions/Next steps:** The next step is to test the model using conditional process analysis. If findings support the model, a masculinity based HIV prevention intervention will then be designed and tested.

## TUPED328

### THE PANADO PROBLEM: MEDIATING HEALTH AND HIV SERVICE PROVISION IN THE COMMERCIAL AGRICULTURAL SECTOR - A STUDY OF EMPLOYER ATTITUDES AND PRACTICES IN TWO DISTRICTS IN SOUTH AFRICA

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**Background:** HIV prevalence amongst farmworkers in parts of Limpopo and Mpumalanga provinces in South Africa is twice that of the local district despite the provision of government clinic and mobile health services, and two well-functioning NGO health programmes targeted to farmworkers. This study examines the farm employers role in mediating the delivery of health and HIV services to farmworkers.
**Methods:** A mixed methods study (secondary quantitative and primary qualitative data) purposively sampled 20 commercial farms serviced by government and NGO health services. The sample was stratified to include farms with less than 100, between 100 and 500, and more than 500 workers. In-depth, semi-structured interviews were conducted with the employer at each site to explore attitudes and practices to HIV and related health services for farmworkers. Complementary information was collected about health service provision and the policy environment.
**Results:** The Panado Problem is a metaphor for the status quo amongst farm employers to HIV, health and wellness of their workers. Panado, a paracetamol based painkiller, was referenced by farm employers to describe both the promise and failure of heath services, highlighting a complex set of contradictions faced by the employer. These contradictions are found: In the policy environment: Policy prohibits the dispensing of medicine at workplaces, whilst employers illicitly dispense Panado as an act of care. In health service delivery: Farm employers dependent on public health services for productive workers cite the commonly dispensed Panado as inadequate medication for the health problems of farmworkers, including HIV. In workplace determined expression of worker rights to HIV care and support: Access to health care is time and productivity for the employer, which when pitted against workers' right to privacy, places employers in an ambivalent position regarding access to HIV and health services for workers.
**Conclusions:** Two models of NGO service provision ease the mediation of these persistent contradictions, but do not resolve these for either the employer or worker.

## TUPED329

### TECHNOLOGY-RELATED PREDICTORS OF SOCIAL ISOLATION AMONG YOUNG BLACK MSM

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**Background:** Young black men who have sex with men (YBMSM) are disproportionately affected by HIV. Social networking sites facilitate opportunities for YBMSM to meet sex partners, but may also create supportive communities and provide health information access.
**Methods:** healthMpowerment.org (HMP) is a mobile-phone-optimized, Internet-based intervention for YBMSM that provides information, resources, tailored feedback, and social networking platforms to offer and receive social support from peers. A randomized controlled trial of HMP enrolled 474 YBMSM in North Carolina between November 2013 and October 2015. Bivariate and multivariate analyses were conducted at baseline to identify technology-related predictors of social isolation measured by perceived social support received by family and friends using the Lubben Social Network Scale-6.
**Results:** The mean age was 24.3 years, 39.5% were HIV+. Men reported a mean of 7.35 hours of Internet use per day, 98.3% went online using a mobile device in the past month and 96.1% owned smartphones. Almost all (98.7%) had $\geq$1 account on a social networking site; the mean number of accounts was 3.62. Overall 36.4% of participants were socially isolated. Socially isolated YBMSM had fewer social networking accounts (3.16 versus 3.88; $p < 0.01$), and were less likely to use Twitter or Instagram compared to those who were not socially isolated. There was no differ-

ence in Facebook usage between the groups. Those who were socially isolated were less likely to search for sex partners online, though were more likely to search for partners using Craigslist (p< 0.01). Social isolation was associated with less health application (app) usage in the previous three months (30.8% vs. 40.5%, p=0.038). In multivariate analysis controlling for age, education, income and HIV status, a greater number of social network sites used (OR 0.87; CI 0.76-0.99) and health app usage (OR 0.64, CI 0.41-1.00) were associated with decreased social isolation.
**Conclusions:** Online social networks may help YBMSM find like others and reduce feelings of social isolation. This could be particularly important for those living in rural areas or who face stigma around their sexuality or HIV-status. A comprehensive understanding of YBMSM online behaviors, including usage patterns and specific sites used, can inform future prevention interventions.

## TUPED330

### YOUTH AND ALCOHOL: USING PHOTOVOICE PARTICIPATORY METHODS TO UNDERSTAND THE ROLE OF ALCOHOL AVAILABILITY, PROMOTION AND AFFORDABILITY ON YOUNG PEOPLE'S HIV RISK AND SAFETY IN SOUTH AFRICA

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**Background:** South Africa has one of the highest rates of heavy episodic drinking in the world and a strong link between alcohol misuse and HIV sexual risk behaviour has been found. This study aimed to quantify the availability of alcohol and document the lived reality of youth as they see alcohol advertisements and promotions in their everyday lives.
**Methods:** The study was conducted in a rural village and an urban township in South Africa. GPS mapping of alcohol outlets captured the density, distribution and proximity of venues to community resources i.e. schools. Alcohol adverts/promotions were captured at each venue. PhotoVoice methodology was used to understand young adults' perceptions of alcohol availability, pricing and promotions in their communities, and how these influenced sexual risk and safety. GPS coordinate data were analysed using QuantumGIS. Focus group discussions were analyzed thematically using ATLAS ti.
**Results:** Alcohol was widely available with 4 -5, and 8-10 alcohol outlets per main street in the rural site and urban site, respectively. Youth have easy access to alcohol due to weak implementation of regulations at retail points, and at community gatherings. Adults sending children to purchase alcohol on their behalf was a common experience. Alcohol advertising was attractive and often led youth to try different brands and beverages. Promotional activities including celebrity events and discounts *`happy hour' or `buy 1 get 1 free'* attract youth to taverns. Youth are exposed to gendered marketing strategies that attract women to drink ciders/alcopops and men to drink beer. While respondents cited some benefits for alcohol consumption including employment, decreased emotional distress, bravery and heightened fun, they mostly discussed the negative consequences including interpersonal violence, loss of employment, unsafe sexual intercourse and potential sexual assault.
**Conclusions:** Alcohol is a structural driver of HIV risk and is commonly overlooked by the HIV prevention field. Easy access and strong alcohol advertising campaigns increase youth vulnerability to harmful drinking and related sexual risk behaviour. There is a need to regulate alcohol availability in communities, while advocacy, public education and media literacy are required to shift norms that advertisers use to attract youth to consume alcohol.

## TUPED331

### EXPERIENCES OF POLICE VIOLENCE AMONG BEHAVIORALLY BISEXUAL AFRICAN AMERICAN MEN AND THEIR FEMALE PARTNERS: THE STRUCTURAL CONTEXT OF HIV

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**Background:** Police violence disproportionately targets African American men and women in the United States, and research increasingly demonstrates linkages between police violence and risk for HIV and STIs.
**Methods:** We developed the Experience of Police Violence Scale as a 26-question measure to assess direct and observed experiences of verbal, physical, and sexual violence by police officers, and to assess perceptions of law enforcement and the effects of these on HIV risk behaviors. Data are being collected in an ongoing mixed methods HIV prevention study with behaviorally bisexual African American men and their female partners in the San Francisco Bay Area.
**Results:** Analyses conducted with 46 interviews completed to date (30 male, 16 female) indicate high rates of lifetime, past year, and recent (six month) experiences of observed and direct police violence. Men reported higher rates than women of witnessing (73% of men, 56% women) and directly experiencing police harassment (57% of men, 44% women), and witnessing (47% of men, 38% of women) and experiencing police physical abuse in their lifetime (40% of men, 25% of women). Sexual abuse by police officers was less common. 57% of the men and 44% of women reported that they have chosen not to carry safer injection materials (syringes, cookers, etc.) for fear of being targeted by the police. The area in which women reported higher effects of police fear was in carrying condoms - almost one third (31%) of women reported choosing not to carry condoms for fear of being targeted by the police (compared with 21% of men). 100% of women agreed with both of the statements that "Police officers unfairly target Black Men" and "Police officers unfairly target Black women," while 83% and 80% of men agreed with those statements, respectively. Approximately two thirds of the sample reported that the police unfairly target LGBT people, and that they avoid asking the police for help when they need it.
**Conclusions:** These findings indicate the effects of police violence and fear of police violence on HIV risk among two populations disproportionately impacted by HIV, African Americans and sexual minorities. Further research is needed to examine these linkages longitudinally.

## TUPED332

### SAFE SPACE AND HIV: EXAMINING THE RELATIONSHIP BETWEEN THE PHYSICAL FEATURES OF SEX WORK VENUES, WOMEN'S SAFETY AND CONDOM USE NEGOTIATION IN TWO MEXICO/U.S. BORDER CITIES

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**Background:** The physical and geographical characteristics, as well as social meanings, related to 'place' are increasingly recognized as key factors driving individual and community health risks. This is especially true among marginalized populations, such as female sex workers (FSWs). Aside from research on types of venues where women work, little has been done to describe how the built environment and physical characteristics of these places contribute to HIV/STI among FSW. In this paper, we examine the association between FSW venue characteristics, perceived workplace safety, and women's ability to convince clients to use condoms in two Mexico/U.S. border cities.
**Methods:** This study includes 602 FSWs from Tijuana and Ciudad Juarez, Mexico, selected through time-location sampling within indoor and street venues. All participants completed a survey and biological testing for HIV/STI at baseline. Using logistic regression, we assessed whether perceived workplace safety and the ability to convince an unwilling client to use a condom varied by FSW venue characteristics (e.g. security, working conditions, law enforcement, presence of drugs/alcohol). Models controlled for education, income level, marital status, and city.
**Results:** Almost 76% of the sample were unmarried, 38% had completed at least secondary education, and the mean age was 34. FSW who witnessed a fight at their workplace (AOR (adjusted odds ratio)=0.55, p< 0.01) and those who worked near bars (AOR=0.64, p=0.05) felt less safe conducting sex work, while FSW working in venues with locked gates or security guards felt safer (AOR=1.745, p=0.05). Working in places that required FSW to use condoms (AOR=02.89, p=0.007), had alcohol for sale (AOR=2.03, p=0.01), and in areas with regular police patrols
(AOR=2.81, p< 0.01) was associated with greater condom use efficacy. FSW working close to bars had lower ability to convince clients to use condoms (AOR=0.49, p=0.05).
**Conclusions:** Examining how the physical features of FSW venues shape women's safety and risk behaviors is essential to understanding the structural drivers of HIV/STI. Future research should leverage information on venues in order to develop new approaches for HIV prevention and intervention in resource constrained areas.

## TUPED333

### SEX, HIV AND BUREAUCRACY: ACTIVISM IN THE ERA OF "-IZATIONS"

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**Background:** Studies have increasingly confirmed the fundamental role of structural and social drivers of HIV. Yet many analyses of the impact of social and political factors on the bureaucratic processes through which the epidemic is "administered" by activist organizations remain superficial. In Brazil, broad changes over the past decade in how HIV funding is dispersed have been aggravated by recent political setbacks in the arena of sexual rights, creating challenges for many NGOs. This research explored the relationship between sex worker rights organizations and state AIDS bureaucracies to understand how contextual factors influenced various bureaucratic "-ization" processes (ex. institutionalization, decentralization) during this time period.
**Methods:** Ethnographic fieldwork was conducted from November 2011 through October 2014 in three Brazilian cities. The research presented draws on participant observation with sex worker rights organizations, 21 oral histories with sex worker activists and 22 in-depth interviews with AIDS activists and AIDS program administrators at the state and municipal levels.
**Results:** Bureaucracy emerged in narratives as both a hurdle to activism and a scapegoat for State responsibility. Activists identified institutionalization as one of their main impediments to realizing their grassroots advocacy work. Organizations were overwhelmed by bureaucratic requirements for reporting and funding requests, emphasizing how consequences for not following the rules appeared to increase at the same rate that the political climate became more conservative. State officials also shared deep frustrations with the restrictions surrounding government funding for NGOs. A history of blurred and contested lines between government and non-governmental responsibilities added an important layer of complexity to the analysis. Sex worker organizations responded using cultural interventions to circumvent deleterious effects of bureaucracy.
**Conclusions:** Although generally portrayed as neutral, bureaucratic "-ization" processes are often contrary to activist goals, transforming power into something that comes from following the rules as opposed to questioning them. Many of the difficulties sex worker activists faced are related to a broader pattern of how the Brazilian State has historically structured its relationship to prostitution to align with current sexuality politics and neoliberal agendas. Understanding the social and political aspects of AIDS bureaucracy opens up avenues for creative intervention strategies to ameliorate its negative effects.

## TUPED334

### *"MOVING FROM VISIBLE TO VIRTUAL SPACES"* VISIBILITY, NETWORKING AND MOBILITY AMONG MEN WHO HAVE SEX WITH MEN FROM GOA STATE: DRAWINGS FROM A PRE-SURVEILLANCE ASSESSMENT

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**Background:** A Pre-surveillance assessment (PSA) was done to understand community concerns and develop strategies for conducting a large scale community based bio-behavioural surveillance in India. We analyzed data from this qualitative assessment conducted in the small state of Goa, Western India, a popular tourist destination.
**Methods:** PSA was conducted among MSM in both districts of Goa (South and North) during July-September 2013. Five group discussions (GD), (South Goa=2, North Goa=3) and 13 in-depth interviews (IDI) (South Goa=7, North Goa=6) were conducted with key stakeholders and community members. All the GDs and IDIs were taped after seeking consent. Emerging strands from the data, specifically on visibility, networking and mobility among MSM are presented here.
**Results:** Almost all respondents highlighted the reduced visibility of MSM in Goa. While effeminate appearance was quoted as maximally impacting MSM visibility, respondents suggested that their partners however, tended to blend into the society especially in the urban areas. Rural residence, socio-familial pressure and homophobia were reported as major factors for reduced visibility among MSM. A gradual but definite change in congregation and networking points from the public (hotspots) to non-conventional virtual spaces was reported. During summer and rainy seasons, intrastate mobility of MSM was observed while carnival, festive and tourist seasons saw influx of MSM from other Indian states.
**Conclusions:** Conventional interventions usually target the more visible, hotspot based MSM. However, in the current era, movement of MSM from conventional to virtual spaces is a challenge for HIV prevention interventions as well as community based surveys. There is an urgent need to identify and develop approaches for outreach to MSM with higher mobility and less visibility. Non-conventional interventions leveraging web-based and mhealth options for MSM should be a focus in India.

## TUPED335

### CONTEXTS OF VULNERABILITY TO HIV AMONG ELDERLY MEN WHO HAVE SEX WITH MEN IN ASUNCION, PARAGUAY: AN EXPLORATORY STUDY

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**Background:** The aim of the present study was to gain an in-depth understanding of the contexts of vulnerability to HIV infection at political, economic, social and individual levels among men aged 64 years or over who have sex with men (MSM) in Asunción, Paraguay.
**Methods:** we carried out an exploratory and descriptive qualitative study using a phenomenological approach. Semistructured interviews were administered to a theoretical sample of 16 MSM aged 64 years or over in Asunción, Paraguay, and we conducted thematic content analysis of the narrative text.
**Results:** Among the main results, we were able to identify various beliefs, attitudes and behaviors which could give rise to HIV vulnerability emerging from their individual, social and political contexts, but not their economic contexts. In the political context, we found a failure to identify with the gay community, or to participate in civil associations. At social level there was a notable perception of discrimination due to sexual orientation and age, and a weakening of their social networks. At the individual level, sexuality continues to be an important part of participants' lives, and while the frequency of relations declines, they obtain sexual gratification in saunas or through paying for sex. The fear of loneliness in old age and physical deterioration, added to a certain degree of internalized homophobia, has a considerable impact on their affective lives.
**Conclusions:** The majority did not identify with HIV prevention campaigns targeting the gay population and other MSM, and hence they do not perceive HIV as a potential threat. In conclusion, we may assume that the perceived risk is attributed to individual decisions and not to underlying social or political factors. The lack of empowerment and invisibility resulting from discrimination increases their [EV1] vulnerability to HIV. Finally, this study provides recommendations useful for health promotion and empowerment among elderly MSM.

## TUPED336

### THE CASE FOR CONSIDERING SOCIAL VENUE-BASED INTERVENTIONS AND RISKY GROUPS INTEGRATED HIV PREVENTION EFFORTS

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**Background:** Targeted interventions have been highly documented for their effectiveness in controlling the spread of HIV among persons most vulnerable to HIV. However, these interventions have not been extended to social venues like bars, hotels, and night clubs e.t.c. Socializing venues are a hub for different risky groups because of their male centric nature of activities.The purpose of this study was to characterize socializing sites in Uganda with an aim to expand HIV prevention services.
**Methods:** The data used in this study are part of a larger population-based survey conducted in Uganda between 2013 and 2014 using the PLACE methodology http://www.cpc.unc.edu/measure/resources/publications/ms-05-13. In short, 1) social sites where people meet new sexual partners were mapped and characterized and 2) assessed for availability and coverage of HIV prevention services such as condoms and IEC. The study included; a survey of 7,587 community informants; 2642 key informant interviews with venue informants (i.e. a person knowledgeable about the venue).
**Results:** A total of 7688 unique social sites were identified by 7,587 community informants in 30 districts. The most common types of venues visited were bars and lodges. Alcohol consumption was common (77.7%) to the venues. New sexual part-

nerships were reported among 69.9% of the venues verified. Commercial sex workers, MSM, and workers at these sites were among the key populations identified at the sites. Most sites were quite stable, with over 70% being in operation more than one year. There were gaps in HIV prevention programs at these sites. For example, 14.2%, 13.1% and 9.8% of the verified sites had any free condom distribution, any condoms for sale, and any safe sex education observed respectively. Willingness of site managers to have HIV prevention programs was high at over 65%.
**Conclusions:** The study findings suggest that social sites are a viable place for reaching key populations and are characterized with sex-related activities yet have sub-optimal HIV prevention services. Therefore targeted HIV interventions should be focused on finding these sites and use them as platforms for providing services in order to address the unmet need for prevention services and be able to interrupt transmission where it is concentrated.

## TUPED337

### BARRIERS TO PRE-EXPOSURE PROPHYLAXIS (PREP) ENGAGEMENT FOR BLACK MEN WHO HAVE SEX WITH MEN IN NEW YORK CITY: WHY PREVENTION LITERACY MATTERS

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**Background:** Black men who have sex with men (BMSM) have the highest HIV incidence rates in the US. New prevention methods such as pre-exposure prophylaxis (PrEP) provide strategies to address HIV-related vulnerabilities among BMSM, but there has been insufficient consideration of how community-level factors shape PrEP uptake. This ethnographic study assessed the approaches necessary to advance PrEP as a prevention strategy for BMSM in New York City (NYC).
**Methods:** BMSM in NYC (n=31) participated in three 90-minute in-depth interviews. We also interviewed seventeen community stakeholders. Interviews were taped, transcribed, and analyzed within and across cases to explore individuals' experiences with HIV prevention (specifically PrEP).
**Results:** Three key findings demonstrated the community-level challenges to PrEP adoption: (1) Men described feeling a lack of ownership over existing HIV prevention tools. Most reported HIV-related risk behaviors but were uncomfortable with, and even unaware of, prevention options aside from condoms. The few men who knew about PrEP felt that it was forced upon the community and expressed a desire for a wider range of prevention options. (2) Many BMSM expressed an intense distrust of the medical establishment and reported strong resistance to taking a pill simply because their doctor said they should, which could diminish the likelihood of BMSM adopting PrEP. (3) Participants felt disempowered by healthcare providers when they voiced their own healthcare-related needs and the prevention options that might best fit within them. BMSM' interactions with healthcare providers did not provide opportunities for them to take ownership over HIV prevention behaviors that would serve their unique needs.
**Conclusions:** For the promise of PrEP to be fulfilled for BMSM, it is vital to pair the provision of PrEP with community-based education approaches. Similar to how "treatment literacy" campaigns support treatment access, "prevention literacy" at the community level can be a critical strategy to facilitate genuine grassroots demand. Consciousness-raising and mobilization efforts are essential for BMSM to
(1) choose PrEP based on their prevention needs and not at the behest of a provider;
(2) understand how the medication works to facilitate adherence;
(3) comprehend medical results and outcomes, and
(4) feel comfortable discussing their sexual practices with providers.

## TUPED338

### RESEARCH ON SOCIAL CAPITAL AND HIV OUTCOMES IN THE UNITED STATES: RESULTS, CHALLENGES AND FUTURE DIRECTIONS

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**Background:** Social capital is broadly defined as the structure of networks and collective resources within a community that residents can benefit from. Social capital is a key determinant of HIV outcomes (e.g., HIV incidence and late HIV diagnosis) in the population. Research on social capital and HIV is limited in the United States setting. We therefore investigated the ecological links between social capital and HIV outcomes along the stages of HIV care. We discuss the state of the evidence globally and within the United States, present our empirical findings and close by highlighting challenges and future directions of the research.
**Methods:** We examined whether neighborhood social capital (social cohesion, social participation, and collective efficacy) in 2004-2006 is associated with lower 5-year average (2007-2011) prevalence of late HIV diagnosis and higher prevalence of persons linked to HIV and engaged in HIV care within Philadelphia, PA Census tracts (n=332). In a second study, we conduct ecological analyses (ZIP code, N=166) using negative binomial regression of gender-specific rates of late HIV diagnoses (an AIDS defining illness or a CD4 count ≤200 cell/μL within 12 months of a new HIV diagnosis) in 2005 and 2006 obtained from the New York City HIV Surveillance Registry, and social capital indicators (civic engagement, political participation, social cohesion, and informal social control) from the New York Social Indicators Survey, 2004.
**Results:** Higher social and political participation was associated with lower rates of late HIV diagnosis in New York City (NYC), but higher rates in Philadelphia. Social cohesion was associated with lower rates of late HIV among women in NYC but unrelated to the outcome in Philadelphia. Collective efficacy was associated with lower rates of late HIV diagnosis but conversely lower prevalence of engagement in HIV care in Philadelphia.
**Conclusions:** The associations between social capital and HIV outcomes vary across social capital indicators, gender, geographic level, and urban setting. Limitations include inability to determine causal inference, lack of subgroup stratified social capital or HIV data by transmission risk. Study strengths are population HIV surveillance and social capital data. Findings underscore the need for longitudinal and multilevel research on the topic.

# SOCIO-ECONOMIC DIFFERENCES: POVERTY, WEALTH AND INCOME INEQUALITIES

## TUPED339

### ASSESSING HOUSEHOLD ECONOMIC VULNERABILITY IN HIV-AFFECTED COMMUNITIES IN FIVE REGIONS OF CÔTE D'IVOIRE

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**Background:** Economic strengthening interventions are used in programming for vulnerable children to curb the effects of poverty on susceptibility to HIV and to mitigate the economic effects of HIV. Our objective was to identify and describe levels of household economic vulnerability in HIV-affected communities in Côte d'Ivoire to inform and target economic strengthening interventions for vulnerable households. Our approach was to identify sets of correlated vulnerabilities and derive a small number of composite scores to create an index or scorecard that could be used to target vulnerable populations with a standard package of interventions to reduce their vulnerability.
**Methods:** In March and April 2015, we conducted a cross-sectional survey of 3,749 households in 78 purposively selected villages or urban neighborhoods in five health regions of Côte d'Ivoire. In each region, households with current and potential beneficiaries of services provided by the United States Agency for International Development and the President's Emergency Plan for AIDS Relief (USAID/PEPFAR) were randomly selected using a stratified multistage sampling design. Sixty-five distinct measures of vulnerability were submitted to a principal component analysis (PCA). Using correlations, indices measuring other domains of vulnerability were compared to the components resulting from the PCA.
**Results:** Four components were retained and explained only 21% of the total variance in the measures. The component with the largest number of associated measures indicated a household's level of wealth and food security. Findings from the PCA, as well as the other indices, suggest that USAID/PEPFAR serves the most vulnerable households in the study regions on several, but not all, measured dimensions of vulnerability.
**Conclusions:** The vulnerability measures did not cluster in ways that would allow for the creation of a small number of composite measures. Instead, we found numerous pathways to vulnerability such that households have their own unique set of conditions making them vulnerable. Our findings suggest that simple indices are inadequate to capture a broad concept of HIV-related economic vulnerability, and that donors and implementers should avoid simplified quantitative targeting tools in this context. Instead, a case management approach may be the best way to address the complex pathways of vulnerability.

## TUPED340

### DATA MINING REVEALS DISPARITIES IN HIV VIRAL LOAD SUPPRESSION

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**Background:** Viral load suppression (VLS) through effective antiretroviral therapy (ART) reduces the risk of morbidity and mortality for people living with HIV (PLWH) and reduces the likelihood of transmission. Health disparities are well documented among PLWH and can be manifested by age, race or ethnicity, sexual orientation and income. Contemporary analytical techniques may provide a more precise modeling of disparities than traditional statistical techniques and identify common barriers to VLS.
**Methods:** We evaluated viral load suppression among a sample of 11,419 adult PLWH receiving treatment from 186 New York State HIV clinics in 2013. Information from patient medical records was abstracted using manual chart review. Disparities in VLS were examined with classification and regression tree analysis (C&RT), a commonly used data mining technique.
**Results:** 77.8% (8,885) of patients were virally suppressed. C&RT identified 8 mutually exclusive subgroups with varying rates of VLS. Housing status, substance abuse, and insurance payer and not race/ethnicity were predictive of viral load suppression. Patients who abused substances and were unstably housed had the lowest rate of VLS (56.2%).
**Conclusions:** Substantial disparities in viral load suppression rates exist among patients engaged in HIV medical care. Racial and ethnic inequalities likely reflect social determinants of health including housing instability and substance use. The information-rich results from C&RT can be used as a basis for targeted and tailored interventions to improve patient and population health outcomes.

## TUPED341

### SOCIAL AND ECONOMIC BARRIERS TO CARE AND TREATMENT FOR BLACK MEN WHO HAVE SEX WITH MEN AND WOMEN (BMSMW) WHO ARE LIVING WITH HIV: LESSONS FROM THE BRUTHAS COHORT

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**Background:** Black MSM suffer astonishing rates of HIV, with 20-25% of incident cases in the US. A subset of BMSM, BMSMW, are diagnosed later, and are more likely to be poor and have reduced access to health care than BMSM. BMSMW often insist on secrecy about their same sex desire as well as their HIV status, and may experience unique barriers to seeking regular care and treatment, and achieving viral suppression.
**Methods:** From February 2011-May 2014, we recruited 400 BMSMW in the San Francisco Bay Area into a randomized controlled trial, of whom 13% (52) men reported being HIV+. To learn more about their care and treatment experiences, we invited N=25 to be interviewed between May-December 2014. Topics included: current living situation, social support and disclosure, experiences of accessing and maintaining care and treatment, and HIV-related stigma. Recordings were transcribed and coded for major themes, which were discussed in analytic memos.
**Results:** Men faced significant social and economic barriers to maintaining regular care and treatment adherence. At baseline, 40% were homeless in the past year and 80% were currently unemployed. Participants had trouble securing affordable housing, found disability payments inadequate to cover subsistence needs, and felt frustration over their inability to gain formal employment and stable income. Concerns over meeting basic needs took precedence over medical appointments and medication adherence. Pursuing opportunities in the informal economy was reported as a reason for missing medical appointments, and losing pills on the streets and the lack of privacy in homeless shelters made it difficult for unstably housed men to remain adherent to treatment. Men received little social support from family or friends for being in care or on treatment because of their reluctance to disclose their HIV status to others given their concerns about homophobia and HIV-related stigma.
**Conclusions:** HIV health promotion efforts for BMSMW must also include attending to their basic social and economic support needs. Integrating access to HIV care and treatment into services for poor unstably housed individuals may facilitate better adherence. Peer groups of BMSMW who are comfortable disclosing to each other could provide HIV-specific forms of social support to improve outcomes.

## TUPED342

### FOOD INSECURITY, HIV RISK BEHAVIOR AND VIOLENCE AMONG FEMALE SEX WORKERS IN INDIA: EVIDENCE FROM AVAHAN-III EVALUATION STUDY

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**Background:** Food insecurity is one of the important contributing factors among female sex workers to engage in risky sexual behaviors and cause of HIV in developing countries. Studies exploring linkages between food insecurity and HIV risk behaviors among FSWs are limited despite having potential program and policy implications. This study attempts to assess the food insecurity among FSWs and examine its relationship with HIV risk behavior and violence in India.
**Methods:** Data were drawn from the Avahan-III baseline evaluation survey- 2015, conducted among FSWs (n=4098) using two stage cluster sampling approach in five states of India. Multivariate logistic regression (with adjusted odds ratios (AOR) and their 95% confidence intervals (CI)), bivariate analysis and frequency were used to assess the relationships between food insecurity, HIV risk behaviors and violence.
**Results:** Nearly one-fifth of FSWs (17%) reported of facing food insecurity in past 6 months. More than 35% of FSWs had entertained more clients to cope with the situation of food insecurity followed by defaulted on loans (24%), borrowed money from informal sources (20%) and had sex without condoms (7%). The likelihood of using consistent condom use with non-regular (67% vs. 77%; AOR: 0.6; 95% CI: 0.4-0.9) and regular partner (22% vs. 51%; AOR: 0.3; 95% CI: 0.2-0.4) were significantly lower among FSWs those had food insecurity than others. The likelihood of using consistent condom use with occasional (AOR: 0.5; 95% CI: 0.4-0.7) and regular clients (AOR: 0.8; 95% CI: 0.6-0.9) were significantly lower among FSWs those have reported food insecurity compared to those not. FSWs those faced food insecurity were also at higher degree of reporting STI symptoms (28% vs. 13%; AOR: 2.7) and violence (16% vs. 9%; AOR: 2.1) than their counterparts.
**Conclusions:** The findings of the study highlight that FSW's food insecurity is significantly associated with unprotected sex, other HIV risk behaviors and violence. This study underscores the need for community-led interventions focusing on food insecurity and economic strengthening activities to reduce HIV vulnerability among FSWs. However, further evidence based research and advocacies on food insecurity are required to ensure that HIV prevention programs are appropriately addressed.

## TUPED343

### LONG-TERM LABOUR MARKET ATTACHMENT PREDICTS KEY ANTIRETROVIRAL THERAPY OUTCOMES AMONG PEOPLE WHO USE ILLICIT DRUGS IN A SETTING OF UNIVERSAL HIV HEALTH CARE COVERAGE

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**Background:** A growing body of observational research links employment with key measures of health among people living with HIV (PLHIV), including antiretroviral therapy (ART) adherence, mortality, and virologic suppression. However, studies to date have focused on employment at a single point in time rather than looking at labour market attachment over time.
**Methods:** Using data from the AIDS Care Cohort to Evaluate Access to Survival Services (ACCESS), a cohort of HIV seropositive people who use illicit drugs in Vancouver, Canada, we categorized labour market attachment as the proportion of all observations individuals report being in regular, temporary or self-employment, ranging from no employment (no observations), rarely employed (0-1/3), sometimes employed (1/3-2/3), and often employed (>2/3). Using multivariate generalized estimating equations, we then predicted associations between labour market attachment and ART outcomes in the previous six months, controlling for relevant confounders. Outcomes examined included no ART exposure to date, ART exposure with no dispensation, ART exposure with sub-optimal dispensation and optimal (>95%) ART dispensation.
**Results:** Between May 1996 and May 2015, of 1,136 participants, 608 (53.5%) reported no employment, 316 (27.8%) were rarely employed, 138 (12.1%) were sometimes employed and 74 (6.5%) were often employed. In GEE analyses, individuals in the rarely (adjusted odds ratio [AOR]: 0.64; 95% confidence interval [CI]: 0.50-0.84) sometimes (AOR: 0.62; 95% CI: 0.43-0.90) and often (AOR: 0.47; 95% CI: 0.27-0.80) employed groups were significantly less likely to be ART naïve than those reporting no employment. Additionally, individuals in the rarely (AOR: 1.33; 95% CI: 1.09-1.63) and sometimes (AOR: 1.47; 95% CI: 1.12-1.95) employed groups were significantly more likely to have some ART dispensation in the past six months, and

those who were often employed were significantly more likely than those reporting no employment to have optimal ART dispensation in the past six months (AOR: 1.50; 95% CI: 1.07-2.11).
**Conclusions:** This study documents low levels of labour market attachment among PLHIV who use illicit drugs and identifies labour market attachment over time as a significant differentiator for ART outcomes. Results point to the need for long-term strategies to promote labour market involvement among key affected populations.

## TUPED344

### FOOD INSECURITY IS ASSOCIATED WITH INTERNALIZED STIGMA AMONG WOMEN WITH HIV IN THE UNITED STATES

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**Background:** Food insecurity and internalized HIV stigma are independently associated with poor HIV clinical outcomes, but few studies have examined how food insecurity and HIV stigma are related or mechanisms underlying these relationships. We hypothesized that food insecurity would be associated with internalized stigma, and that the association would be mediated via depression and poor physical health.
**Methods:** We used cross-sectional data collected in 2013 from the Women's Interagency HIV Study, a national multisite study of women with or at risk for HIV in the United States. Using validated scales, we assessed associations between food insecurity (Household Food Security Survey Module) and internalized stigma (HIV Stigma Scale). We assessed depressive symptoms (Center for Epidemiologic Studies Depression) and physical health status (SF-36) as potential mediators. We utilized recursive structural equation modeling to test study hypotheses, controlling for potential demographic, socioeconomic, and clinical confounders. The analysis included 1240 women with HIV.
**Results:** Almost half (41.6%) were food insecure (i.e. with marginal, low, or very low food security), and mean [SD] internalized stigma scores were 1.76 [0.63] (range 1-4, higher scores = higher stigma). In adjusted models, increasing severity of food insecurity was significantly associated with internalized HIV stigma, indicating a dose response relationship: $\beta$=0.09, $\beta$=0.21, and $\beta$=0.49 (all $p< 0.05$) for marginal, low or very low food security, respectively, compared to high food security. Increasing food insecurity was also associated with higher depressive symptom severity and worse physical health status (both $p< 0.05$). In mediation models of food insecurity and internalized stigma, only depressive symptom severity was significantly associated with stigma ($\beta$=0.02, $p< 0.05$) and attenuated the association with food insecurity. Mediation varied by marginal, low, and very low food security: 81.3%, 50.0%, and 35.2%, respectively, of the total association between food insecurity and internalized stigma operated via depressive symptoms.
**Conclusions:** Food insecurity is associated with internalized HIV stigma among women in the US, which may partially operate via depressive symptoms for women with less severe food insecurity. Our findings suggest that addressing food insecurity may be relevant to HIV stigma-reduction interventions. However, longitudinal studies are needed to confirm the direction of this important, preliminary association.

## DYNAMICS OF SOCIAL STATUS AND POWER: GENDER, AGE, ETHNICITY AND DISABILITY

## TUPED345

### "THESE MEN OF OURS HAVE SUCH FRAGILE HEARTS": ANTHROPOLOGICAL PERSPECTIVES ON GENDER DIFFERENCES IN TREATMENT OUTCOMES IN A LARGE-SCALE, PUBLIC-SECTOR HAART ROLLOUT PROGRAM IN NAMIBIA

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**Background:** Namibia has achieved universal access to HAART. While equity has been a major focus of rollout, men continue to be treated in lower numbers and have worse outcomes than women. This study examines the socio-cultural factors behind gender disparities in HAART outcomes.
**Methods:** This in-depth study was conducted near Walvis Bay, Namibia. The mixed-methods approach combined a quantitative analysis of patient inputs and outcomes at a HAART clinic with 18 months of ethnographic research on 12 patients and ongoing participant-observation in the community.
**Results:** Men outnumber women in the city population (63%), but are under-represented in testing (51%), care (44%) and HAART initiation (47%), and over-represented in mortality (59.7%). This may be largely attributable to differences in gender roles. Establishing both 'modern, urban' and 'traditional/rural' feminine identity was complimentary to HAART. Many women reported testing positive in antenatal screening, which allows timely linkage to care. Motherhood was described as a guarantor of social capital and support, and a motivation for adherence. Among men, testing was not socially valued and the clinical and social requirements of HAART conflicted with gender roles that demand risk taking, employment (or the appearance of employment) and independence and discourage health-seeking behaviour. Many men felt frustrated by an inability to achieve and maintain masculine identity in a precarious economy, and described the demands of HAART as incompatible with masculinity. Those men who succeeded reported strong social support, disinterest in prevailing gender norms, and clinic cooperation with accommodating travel and work schedules.
**Conclusions:** Social-cultural and political-economic forces shape HAART outcomes powerfully. Efforts to better engage men will be crucial for ensuring equitable access to the benefits of HAART as rollout expands across sub-Saharan Africa. Men need safe pathways into care to facilitate earlier diagnosis, delivery methods that accommodate work and travel schedules, and support structures to improve retention.

## TUPED346

### MALE INVOLVEMENT AS A LINK TO PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) OF HIV IN ABIA STATE NIGERIA

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**Background:** Male involvement explores community norms and values and also helps Health Systems to reach those who need the services. It assesses and makes use of existing community resources including sources of social influence in supporting PMTCT activities. Adherence depends a lot on spousal support therefore male involvement has greatly promoted Zinnok's activities in the communities by encouraging women to attend ANC with their partners at the first sign of pregnancy and also in making important decisions that will ensure that babies are born without any HIV infection.
**Description:** A huge number of Women in the state usually bear the burden of pregnancy and child birth alone but with male involvement messages, male support is noticed as men's interest to become more aware and to take positive action is evident. Male involvement has been seen to provide guidance to men on acceptance of PMTCT services.
**Lessons learned:** Zinnok initiative for women and children have trained about 600 men in Ukwa East and Ukwa West LGAs of Abia state, Nigeria on male involvement in PMTCT. These include the male partners of women of reproductive age and pregnant women. The men now encourage their wives to attend ANC, are involved in feeding options for their infants and encourage their wives to still go to primary health centers in the community for subsequent treatment and care even when they may have delivered at Traditional Birth Attendants (TBA) centers. There are discussions on infant feeding options with men and the men encourage testing of other family members. Engaging the males have been seen to decrease stigma and discrimination, increase accessibility to services and promotes acceptability of services. Awareness campaign and keying into men associations and meetings to share

information on male involvement are the methods used. The men in turn have one on one discussions with others to spread the information.
**Conclusions/Next steps:** Improving and strengthening male involvement in PMTCT services requires a male friendly approach. Increased interventions involving the men will help achieve much success in HIV prevention, Treatment and care.

## TUPED347

### UNDERSTANDING THE SOCIAL BARRIERS TO HIV SERVICE UTILISATION AMONG OLDER PEOPLE IN BOTSWANA

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**Background:** The impact of the HIV epidemic on older people is shaped by the social, political, demographic and economic circumstances in which they live. Projections point to a rise in the number of people aged 50 and older living with HIV (PLWH), in Botswana, as well as increased rates of new HIV infections within this sub population. Despite this, little is known about the social factors that affect HIV service utilization in this cohort.
**Methods:** We conducted semi-structured face-to-face, in-depth qualitative interviews with 50 consenting PLWH .>=50years. Interview questions examined the values, behaviours and social context of older adults to gain insight and explore the complexity inherent in living with HIV in Botswana. A conceptual framework for social analysis of reproductive health, developed by Price and Hawkins, was adapted to serve as a guide for our analysis.
**Results:** Negative stereotypes about older persons are a major challenge to healthcare utilisation among older people. Interviewees noted perceived isolation, rejection, stigma and ageism as their biggest challenge in their day-to-day interaction with the community and health personals in general. Current services focused on individual-level interventions and outcomes, thus neglecting structural interventions, community interventions and social outcomes. Interviewees felt that healthcare providers regarded support for older people as being primarily a family responsibility and hence feel obliged to be content with whatever services are rendered. They, however note rejection as the major the limitation for relying on family and friends for social support. Interviewees noted that less attention was paid to the complexities presented by sexual health and exploration, needs and demands among older adults, particularly older women, who are often rendered non-sexual and therefore not expected be sexually active. The majority of the interviews showed a lack of understanding in accessing and utilising public health services available and often felt at the mercy of the system riddled with "come back tomorrow" delayed report syndrome.
**Conclusions:** The quality of life in adults aging with HIV in Botswana is in question due to social isolation as well as medical complications, poorer mental health, institutionalised stigma and ageist tendencies from health care providers and society at large.

## TUPED348

### A STUDY OF FACTORS AFFECTING MALE INVOLVEMENT IN HIV-RELATED SERVICES IN MALAWI

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**Background:** The HIV epidemic in Malawi is feminized, with an estimated 12.9% of women infected, compared to 8.1 % of men (aged 15-49). Evidence shows these services can be more effective and long lasting with active participation of their male counterparts. Involvement of males in HIV related services is important. Available evidence suggests the proportion of males actively involved in HIV services is lower than that of females. The main objective of the study was therefore to assess factors contributing to low male involvement in HIV related services.
**Methods:** A mixed method approach was used, including secondary analysis of data; review of relevant policy documents, study and program reports; key informant interviews at national, zonal and district levels and in-depth and focus group discussions. Non probability sampling methods were used in sampling participants.
**Results:** Respondents report that the health delivery system is male unfriendly, with health facilities located very long distances from most people and providing HIV services under environments deemed too public for a condition highly stigmatized. HIV services were observed to be concentrated in or near urban or semi urban areas. Societal construction negatively affects male health seeking behaviour, with men believing they must be invincible and seeking health attention is a sign of weakness. Fear of stigma and losing partners was another reported reason for minimal participation of males. Myths and misconceptions were also identified.
**Conclusions:** Despite concerted attempts to include male involvement as an approach to fight HIV infection; there is need to mainstream male involvement in programming and implementation. Male friendly environments as well as improved availability and access of male-targeted HIV services are needed. Integration of livelihood programs with HIV services and use of male peer campaigners may positively influence male participation. There is need to deconstruct gender based constructs that inhibit strong health-seeking behaviour among men.

## TUPED349

### BLACK AND *QUILOMBOLAS* HIGH SCHOOL STUDENTS VULNERABILITY TO HIV/AIDS: SEXUAL VIOLENCE, COMMUNITY STIGMATIZATION AND LACK OF ACCESS TO PREVENTION PROGRAMS SHOULD BE MITIGATED

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**Background:** Literature on Brazilian AIDS epidemic rarely analyzes race/ethnicity. Native Brazilians and black people are 51,1 % of the population and are socially vulnerable for all social indicators - schooling, jobs, housing, police violence and, of course, health. This study analyzed the singular vulnerability of *quilombolas* high schools students to HIV-infection in Brazil. *Quilombolas* are centuries-old black communities founded by Afro-descendants that escaped from slavery and stayed isolated until the 1960s, mostly in forests and sierras.
**Methods:** An ethnographic study and a survey among teenage students assessed HIV/pregnancy prevention knowledge, access to prevention tools and sexuality practices in 6 different school contexts in two Brazilian States, before a prevention-intervention. Three schools were in the Brazilian-DF capital metropolitan area and the other three were located at a SPaulo state rural area also serving *quilombola* communities. After parental authorization the students completed the survey. We analyzed data from all 925 students of 15-19 years old using reported "skin color", the Brazilian census category, categorized as non-black x black; subsequently, we compared *quilombola* students answers with their non-*quilombola* colleagues in the São Paulo region (n=372) using Kruskal Wallis and Pearson Chi-Square test (< 0.01).
**Results:** The only significant difference among black (62,5%) and non-black students in all 6 sites was an earlier age of first sexual intercourse. When comparing *quilombolas* (22% of 372) with non-*quilombolas* (78%) in São Paulo, this difference was larger (13,5 x 14,7). Still, *quilombolas* students had more sexual partners, lower prevention knowledge, lower AIDS risk perception, lower access to condoms; they were the segment more likely to report events of sexual abuse (20% x 5%). Ethnography showed different *quilombola* community experiences of stigmatization and a divided transition from traditional culture to recent adherence to Christian-evangelic churches. We could not discuss sexual violence within the consented research process.
**Conclusions:** The quilombola's social vulnerability as well as programmatic neglect is shared with other impoverish rural communities but have singularities demanding further research and investments to mitigate HIV/AIDS young people vulnerability, increasing in Brazil. Race-ethnicity and its related discrimination has been a cross-cutting issue to AIDS responses and should be focused in Brazil.

## Economic transitions and social and cultural change

### TUPED350

### Participation in economic strengthening (ES) intervention and health related quality of life (HRQoL) among food insecure people living with HIV (PLHIV) in Ethiopia

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**Background:** Health-related quality of life (HRQoL); a comprehensive indicator of physical, mental, and social well-being; is increasingly used to assess the well-being of people living with HIV (PLHIV). This study aims to explore the association between engagement in economic strengthening (ES) intervention and HRQoL among food insecure PLHIV.
**Methods:** Comparative cross-sectional design was employed to compare HRQoL scores of food insecure PLHIV benefitting from the ES project of WFP Ethiopia to food insecure PLHIV not participating in ES. The study covered 620 ES and equal number of non-ES PLHIV. The standard Medical Outcome Survey (MOS) was used to measure HRQoL. Multiple linear regressions were run to analyze the relationship between the dependent variable (QOL domain scores) and the independent variables.
**Results:** On the average, PLHIV that have stayed in ES activities for a year or more have consistently higher magnitude of HRQoL scores in all MOS sub-scales included in the study, namely; general health perceptions, pain, role function, social functioning, mental health, energy/fatigue, cognitive function, health distress and health transition compared to the comparison group that are either not engaged or just to start engaging in ES activities, all significant at 0.001 levels. The mean HRQoL score difference between the two groups ranges between 14.4 and 18.7, with the highest mean difference in health distress score and the lowest in self-esteem score. Controlling for key socio-economic and demographic variables, engagement in ES increases MOS sub-scales by 14 to 18 points, all significant at 0.001 levels. As suggested by the magnitude of the coefficients of multiple linear regression models, the impact of engagement in ES activities on HRQoL is much more pronounced in terms of health distress, role functioning, and general health scores.
**Conclusions:** Participation of food insecure PLHIV in ES is associated with improvement in HRQoL. This may mean that assisting PLHIV to extricate them out of poverty or to achieve food security through ES may be an important strategy to bring about improved health related quality of life which is important in the management of AIDS related illnesses.

## Economic and social dynamics and impacts of intergenerational and/or transactional sex

### TUPED351

### Increasing access to HIV services for young vulnerable female workers through their trade unions: the case of the hair and beauty trade union in Kenya

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**Background:** HIV incidence in Kenya is currently at 101,000 new infections per year. Moreover, 53% of people living with HIV (PLHIV) do not know their HIV status. Prevalence is higher amongst women (7.6%) than men (5.6%), with 21% of new adult HIV infections among young women (15-24). This initiative mobilized trade unions in the hair and beauty sector to reach these vulnerable young women with information and services.
**Description:** The ILO partnered with the Central Organization of Trade Unions in Kenya, its affiliate, the Kenya Union of Hair and Beauty Salon Workers, and the AIDS Healthcare Foundation to increase HIV services for young women within the hair and beauty sector and expand their access to social protection. Due to the nature of their work - commission-based incomes, lack of job security and social protection - young women often resort to selling sex to supplement their low incomes, increasing their vulnerability to HIV.
Through this partnership, union branch officials were trained on HIV management at the workplace. Onsite integrated health/HIV testing and counseling (HTC) services were provided in workplaces, combined with sensitization on the benefits of enrolling with the National Hospital Insurance Fund (NHIF). The union mobilized workers to join the hair and beauty SACCO (Savings and Credit Cooperative), encouraging them to save a portion of their income. The results:
• 3,476 young women were tested for HIV and those testing positive were referred for treatment
• 1,725 young women registered with NHIF and 189 enrolled with the SACCO
• 12,100 male and female condoms were distributed.
**Lessons learned:**
• Integration of HIV/health services helps reduce stigma and increases uptake of HIV testing
• Engagement of trade union leaders, informal business association leaders and local administration is essential to effectively reach workers.
• Mobilization of vulnerable workers to register to NHIF and to enroll in saving schemes is key to ensure sustainable access to HIV services.
**Conclusions/Next steps:** Providing onsite HIV/health services enhances uptake; hence, the initiative will be replicated in additional hair and beauty worksites, as well as in female-dominated informal occupations, with the objective of reaching vulnerable young women with needed services.

## Violence and conflict: political, social, structural, interpersonal and family-based

### TUPED352

### Prevalence of intimate partner violence and physical and mental health outcomes of women living with HIV in an urban clinic setting

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**Background:** Rates of intimate partner violence (IPV) in women living with HIV have been estimated at more than two times their HIV negative counterparts. IPV has been linked to a number of negative physical and mental health outcomes. However, limited data exists examining the impact of recent IPV on adherence to HIV care and subsequent treatment markers.
**Methods:** Women were recruited from an urban HIV specialty clinic. Women were eligible to participate if they had been attending the clinic for at least one year and reported having been in a relationship within the past one year. A one-time, tablet computer-based survey was used to assess past year IPV and reported mental health symptoms. These data were used in conjunction with medical records review to examine relationship between past year reports of IPV, mental health symptom and treatment markers (CD4 count and viral load measurements).
**Results:** A total of 242 women completed survey measures and had appropriate medical record data for inclusion. They were primarily black (92%) and non-Hispanic (99%). Half (n=122, 50%) reported some form of past year IPV. Of women reporting past year IPV, 39.3% reported depressive symptoms vs. 13.6% of women who had not experienced past year IPV ($p < 0.001$) a similar pattern was identified for PTSD symptoms (33.6% vs. 12.7%, $p < 0.001$). In a multivariable regression model controlling for age, ART use, PTSD, depression and substance abuse, women who reported past year IPV were twice as likely to have CD4 counts less than 200 (OR: 2.62, 95%CI: 1.005-6.81, p=0.049) and detectable viral load (OR: 2.14, 95%CI: 1.14-4.00, p=0.018).
**Conclusions:** Fifty percent of women in this study reported past year IPV. Women who experienced recent IPV were more likely to have CD4 counts below 200 and detectable viral load measurements. They also reported more symptoms of PTSD and depression. Biopsychosocial frameworks need to be used to assess adherence and response to HIV treatment. Assessment and intervention for ongoing violence as a potential cause of mental health issues, barrier to medication adherence and source of chronic stress may offer providers an opportunity to improve care to their patients living with HIV.

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## TUPED353

### ESTIMATING THE CAUSAL EFFECT OF INTIMATE PARTNER VIOLENCE ON CONDOM USE: AN APPLICATION OF MARGINAL STRUCTURAL MODELS TO COHORT DATA FROM RAKAI, UGANDA

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**Background:** Research indicates that women's experience of intimate partner violence (IPV) is associated with incident HIV and that women who experience IPV may be less likely to use condoms. Previous studies have controlled for covariates on the causal pathway between IPV and condom use, like pregnancy status, which may attenuate estimates of the effect of IPV on condom use. The goal of our study was to apply causal methods to a large cohort with repeated measures of IPV to estimate the effect of IPV on condom use.
**Methods:** We used data from waves 7-13 of the Rakai Community Cohort Study to estimate the effect of women's experience of IPV during the year prior to survey on condom use at last sex. Women aged 14-49 at baseline who reported ever having sex at baseline or during follow-up and answered IPV and contraception-related questions were included in these analyses (N=8,525). We used inverse probability weights to account for time-varying confounders that were affected by prior exposure to IPV. Stabilized weights were estimated using time-fixed confounders (religion, tribe, age at first pregnancy) and lagged values of time-varying confounders (age, relationship status, occupation, partner's occupation, education level, sexual and reproductive history, pregnancy intentions, pregnancy status, IPV exposure). A weighted marginal structural model, fitted with generalized estimating equations to account for the correlation of repeated measures within individuals, was used to estimate the effect of IPV on condom use.
**Results:** Women who experienced IPV in the year prior to survey were less likely to report condom use at last sex (Table 1) than women who did not experience IPV during that year. On average, any IPV, emotional, physical, or sexual IPV were associated with a 40% reduction in the odds of condom use at last sex.

| | Crude estimate | Unweighted logistic regression | Marginal structural model |
|---|---|---|---|
| Type of IPV | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| Any IPV | 0.56 (0.51, 0.62) | 0.66 (0.59, 0.74) | 0.62 (0.56, 0.69) |
| Emotional IPV | 0.60 (0.54, 0.67) | 0.71 (0.63, 0.80) | 0.66 (0.59, 0.74) |
| Physical IPV | 0.51 (0.46, 0.58) | 0.60 (0.52, 0.68) | 0.56 (0.49, 0.64) |
| Sexual IPV | 0.56 (0.49, 0.63) | 0.64 (0.55, 0.74) | 0.58 (0.51, 0.66) |

*[Table 1. Estimates of the relation between women's experience of IPV in the last year and condom use at last sex (N=8,525; 2000-2010)]*

**Conclusions:** Women who experience IPV are less likely to use condoms. Understanding how IPV affects condom use has important implications for ensuring that HIV prevention programs can best serve women who experience IPV.

## TUPED354

### DETECTING, PREVENTING AND RESPONDING TO PHYSICAL, SEXUAL AND EMOTIONAL ABUSE AND NEGLECT THROUGH THE HIV CONTINUUM OF CARE

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**Background:** Data from the Violence against Children (VAC) surveys and global analyses illustrate the scale and scope of violence against children and adolescents and emphasizes the urgency of responding effectively. 4Children, a USAID funded consortium, has undertaken a project to identify opportunities for violence prevention and response interventions within HIV paediatric testing, counselling and treatment services. The objective of this project is to develop guidance that will enhance detection, prevention and response to all forms of violence against children within HIV services.
**Description:** The project, initiated in July 2015, consists of:
- a literature review on the linkages between HIV and child protection;
- semi-structured interviews with over 25 key informants ranging from global policy-makers and in-country practitioners across nine countries;
- synthesis of findings to inform the development and validation of guidance tools.
**Lessons learned:** The literature review and interviews identified the following preliminary results:
- the documented linkage between HIV and all forms of child protection violations;
- the lack of clinical guidance to systematically detect, respond and prevent violence against children and the limited focus on physical and emotional abuse and neglect within HIV services ;
- resource limitations hindering an appropriate response to issues of violence against children within HIV services compounded by the declining resources for counselling;
- the need for robust and accountable systems to identify and support prevention and response to violence against children throughout the HIV continuum of care.
**Conclusions/Next steps:** There is widespread evidence of the linkage between HIV acquisition and treatment outcomes with violence and neglect. This linkage is not translating into routine identification and appropriate support to children throughout HIV services. Health and social workers require guidance and systems to work more closely together to detect, prevent and respond to the needs of children who have experienced or are at risk of physical, emotional, sexual abuse or neglect. The next step is for these findings to inform the development of guidance such as job aids in clinical and community settings.

## TUPED355

### VIOLENCE, ECONOMICALLY MOTIVATED SEX, AND SELF-REPORTED STI AMONG ADULT MEN IN FIVE COUNTRIES: POPULATION-BASED SURVEY FINDINGS FROM THE UN MULTI-COUNTRY STUDY OF MEN AND VIOLENCE IN ASIA AND THE PACIFIC

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**Background:** Violence and economically motivated sex are well established risk factors for HIV & STI among women, but too little is known about how these factors affect men's risk at the population level. Data on self-reported STI symptoms, while not diagnostic, allow for large-scale multinational data collection and analysis that is otherwise infeasible. We draw on data from the UN Multi-Country Study of Men and Violence in Asia and the Pacific to compare the relationship between violence, economically motivated sex, and STI risk across five countries.
**Methods:** Population-based household survey data from were collected from a total of 6,667 men aged 18-49 at sites across Bangladesh, Cambodia, China, Indonesia, and Bouganville, Papua New Guinea (PNG). Research methods were comparable across countries, including anonymous self-reporting of sensitive data.
**Results:** Self-reports of ever having STI symptoms/diagnoses varied by country: Bangladesh 54.7% (95%CI 51.5 - 57.7), Cambodia 28.0% (25.5 - 30.7), China 24.5% (21.7 - 27.4), Indonesia 13.3%
(11.7 - 15.0), PNG 36.2% (31.6 - 41.0). However, statistically significant adjusted odds ratios (aORs) from multiple logistic regression models showed consistent themes (controlling for the complex sample structure, age, lifetime partner numbers, substance use, and SES).

| Risk Factor | Bangladesh | Cambodia | China | Indonesia | PNG |
|---|---|---|---|---|---|
| Violence against female intimate partner | 1.20 (0.98 - 1.46) | 2.25 (1.75 - 2.92) | | | 1.98 (1.22 - 3.22) |
| Sexual violence against non-partner woman | 1.66 (1.13 - 2.44) | | 2.38 (1.35 - 4.21) | 1.85 (1.23 - 2.77) | |
| Gang membership | | 1.78 (1.10 - 2.90) | | 1.69 (1.11 - 2.53) | 1.90 (1.22 - 2.95) |
| Transactional sex with woman | 1.51 (1.04 - 2.20) | 1.81 (1.42 - 2.30) | | 1.49 (1.09 - 2.06) | 1.87 (1.21 - 2.89) |
| Sex with sex worker | 1.68 (1.19 - 2.39) | | | 1.67 (1.06 - 2.55) | 2.40 (1.41 - 4.10) |
| Depression score | 1.10 (1.07 - 1.13) | 1.04 (1.02 - 1.07) | 1.06 (1.01 - 1.11) | 1.11 (1.07 - 1.14) | 1.05 (1.01 - 1.09) |
| Childhood trauma score | | 1.04 (1.00 - 1.08) | 1.10 (1.03 - 1.17) | | |
| Gender Equitable Men (GEM) Score | | 0.97 (0.94 - 0.99) | | | 0.94 (0.90 - 0.98) |

*[aORs and 95% confidence intervals for self-reported STI]*

**Conclusions:** Across five Asian countries, men who report perpetration of violence (against intimate partners, against other women, or through gangs), or depression were more likely to self-report a lifetime history of STI. Buying economically

motivated sex (through transactional sex or sex work) increased men's risk in four countries. In two countries, more gender equitable men were less likely to report lifetime STI. These findings affirm perpetration of gender based violence and use of economic power as key determinants of men's sexual health across contexts and affirm the need to promote gender transformative approaches to STI and HIV prevention among men.

## TUPED356

### Analysing the effects of relationship level factors and perceived gender attitudes among female sex workers on experience of intimate partner violence in North Karnataka, South India

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**Background:** Like other women in India, female sex workers (FSWs) frequently experience violence from their intimate partners (IPs)-a reality that increases their risk of acquiring HIV or other sexually transmitted infections (STIs). Though research has established many risk factors for intimate partner violence (IPV), existing studies have focused mostly on the contribution of individual and community level factors to IPV risk. The effect of relationship-level factors and women's gender attitudes on violence, is less studied.
**Methods:** Data from a cross-sectional study conducted in 2014 with 620 FSWs in Bagalkot district of Karnataka, India was used to analyse the effect of relationship characteristics and gender-related attitudes on the likelihood of experiencing severe physical or sexual partner violence in the past 6 months. Partner violence was measured using a modified version of the Conflict Tactics Scale. Severe violence was defined as experiencing slapping pushing or shoving "many times," or any act of sexual or severe physical violence (acts c-f on the CTS) in the six months preceding the survey. Bivariate and multivariate methods were used for analyses.
**Results:** Results show that, overall, 24% FSWs experienced severe violence from their IPs in the past six months before the survey. In an intimate partner relationship, FSWs, who received social support from their IPs and had greater intimacy in their relationship were less likely to experience severe violence (AOR:0.49;p< 0.05 & AOR:0.35;p< 0.01, respectively) compared to their counterparts. Frequent alcohol use by a woman's male partner increased her likelihood of experiencing violence almost 10-fold (AOR: 9.71; p< 0.001). Additionally, a higher likelihood of experiencing severe violence was associated with the belief that men need sex and cannot control their urges (AOR: 1.96; p< 0.05), and counter-intuitively with the belief that forcing a woman to have sex against her will is a sign of disrespect (AOR: 2.86; p< 0.05).
**Conclusions:** Relationship level factors along with gender related attitudes emerged as significant predictors of violence, even after adjusting for the effects of individual level variables. Interventions to reduce HIV risk among sex workers should focus on improving the quality of their intimate partnerships and on shifting attitudes regarding forced sex.

## TUPED357

### Social network cohesion amplifies the effect of network gender norms on men's perpetration of intimate partner violence in Dar es Salaam, Tanzania

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**Background:** Previous research has shown that social network-level gender norms are associated with men's perpetration of intimate partner violence (IPV) in sub-Saharan Africa. Theory and empirical evidence suggests that the effect of these norms on men's behavior may depend on the cohesion of the social networks. More cohesive networks, characterized by higher levels of trust and camaraderie, may also allow for faster flow of information.
This study drew on data from our on-going HIV and IPV prevention trial in Dar es Salaam, Tanzania with 1,106 sexually active men nested within 59 networks of randomly selected social groups called "camps." The purpose of this study was to assess the degree to which the social cohesion of networks moderated the relationship between camp-level gender norms and men's perpetration of physical IPV.
**Methods:** We modeled the interaction between network-level social cohesion and network-level gender norms on men's past-year IPV perpetration using a 2-level hierarchical logistic regression model. IPV perpetration was assessed using an adapted version of the WHO violence against women instrument. Network-level gender norms were computed by averaging responses among camp members to a 15-items adapted version of the Gender Equitable Men Scale. Network-level social cohesion was measured by averaging response among camp members to a 5-item adapted social cohesion scale. Our model included individual-level controls (demographic characteristics, childhood violence exposure, alcohol use, and attitudes towards gender roles) and camp-level controls (camp size and years of operations).
**Results:** Network-level social cohesion significantly moderated the effect of network-level gender norms of the odds of perpetration. Examination of simple slopes revealed that the positive relationship between inequitable network-level gender norms and men's perpetration was strongest in highly cohesive networks ($\gamma$= .25, p=.04) and not significantly different from zero in networks with average or low levels of cohesion.
**Conclusions:** Interventions seeking to reduce IPV should consider efforts to simultaneously increase cohesion within networks while striving to make gender norms more equitable. Transforming gender norms may not be as effective in reducing men's perpetration of IPV if it is done within socially fragmented networks compared to networks that are more cohesive.

## TUPED358

### Understanding and addressing violence among key populations to offer effective HIV programming

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**Background:** Violence affects HIV risk, testing uptake, and treatment adherence. Key populations (KPs) - men who have sex with men (MSM), people who inject drugs (PWID), sex workers (SWs), and transgender people - face high levels of violence, but relatively little is done on this important issue. Understanding local experiences of and responses to violence can inform effective HIV programming.
**Methods:** As part of a gender analysis to inform KP programming in Kenya, we conducted a desk review and 59 qualitative, in-depth interviews with KP representatives, government officials, program managers and funders, and healthcare workers (HCWs). Questions covered types of violence that KPs experience, responses to violence, and potential connections between HIV and violence response services. Expanded notes from the interviews were analyzed for recurring themes per KP.
**Results:** Respondents described widespread violence against all KPs. Within KPs, MSM perceived to be the primarily anally receptive partner; transgender people currently transitioning; and younger, new, and transgender SWs were believed to experience the most violence. Across all KPs, individuals living with HIV were perceived to be at greater risk. These findings are reinforced by the literature. Yet, respondents stated HCWs do not routinely screen for violence and do not provide counseling on violence, including when discussing strategies for disclosure with HIV-positive clients. Furthermore, all respondents agreed that most KP members are unlikely to report violence but desperately need access to violence response services. They recommended increasing violence response services at community-based organizations (CBOs) - including counseling and safe spaces - and strengthening the links between clinics and CBOs through education and referral by HCWs and peer accompaniment for referred services.
**Conclusions:** Violence response services are a vital part of effective KP HIV programming, particularly because violence is often most common among KPs living with HIV or with the greatest HIV risk. Yet they are largely unavailable in Kenya and elsewhere. There are clear opportunities to build stronger HIV response services at CBOs and strengthen links between violence response and HIV services. Stronger violence response within HIV programs could protect KPs' human rights while meeting KPs' holistic needs.

## TUPED359

### HIV-RISK BEHAVIORS OF MEN WHO PERPETRATE INTIMATE-PARTNER VIOLENCE IN RAKAI, UGANDA

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**Background:** Across cultural settings the epidemics of HIV and intimate partner violence (IPV) are linked; violence victimization is highly prevalent among women with HIV. However, much of the research on violence and HIV is cross-sectional, and does not include information on violence perpetration from the perspective of men. This study investigated associations between male perpetration of physical and sexual IPV and select HIV risk and protective behaviors and outcomes in rural Uganda.
**Methods:** We used data from five rounds (2004-2013) of the Rakai Community Cohort Study (RCCS), an on-going HIV surveillance cohort that enrolls ~14,000 consenting men and women 15-49 years on a semi-annual basis in Rakai, Uganda. We categorized the male physical and the male sexual violence variables into three categories (no violence, only verbal, and physical), and considered the proportional odds models to estimate their association with HIV-related risk factors, while accounting for the repeated measurements of observations through robust estimation. The HIV-related risk factors include alcohol use before sex, inconsistent condom use, and number of sex partners, medical circumcision, and HIV prevalence. The male sample size is 21,157.
**Results:** A small percent of men (17.3%) reported only verbally abusing or shouting (n=3,664), and even fewer men (10.4%) reported physically abusing (e.g. pushing, slapping, punching) (n=2,208) their wife or primary partner in the past year. Few men reported using verbal (1%) or physical threats (3.1%) to force their partner to have sex with them (n=23; 650, respectively). Men who reported perpetrating physical abuse and/or men who reported sexual abuse were more likely to report drinking alcohol before sex, inconsistent condom use, and having a greater number of sexual partners in the past year and lifetime, relative to men did not perpetrate IPV. Men committing IPV were less likely to have accessed male medical circumcision than men who did not report violence. IPV perpetration was not significantly associated with HIV status.
**Conclusions:** Men reporting acts of physical and sexual abuse also reported higher rates of HIV risk behaviors. HIV prevention efforts must also address prevention of IPV with men.

## TUPED360

### INTERVENTIONS IN THE PRIVATE: INTIMATE PARTNER VIOLENCE AND REDUCING VULNERABILITIES

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**Background:** The concept of crisis-response within public spaces to combat the vulnerability of female sex workers (FSWs) to violence, and in turn to reduce their vulnerability to HIV/AIDS infections, was a key addition to the HIV programme during phase I and II of the Avahan India AIDS Initiative. This strategy emphasized the ways of countering, negotiating and combating violence perpetrated by agents of law enforcement, and ensuring that the external environments surrounding the FSWs were secure and safe. This has, over the years, led to the assumption that FSWs feel safe and protected in private spaces.
**Description:** Under the aegis of the Phase III of the Avahan Initiative, the strategy on violence has included prevention in addition to redressal and has made efforts to understand the current experience of violence from different people. The Avahan Initiative looks to 84 Community Organizations (COs) in five states of India to implement these approaches.
Individual data on violence faced indicates that of the total number of incidents faced in the previous six months, 41.49% are incidents of intimate partner violence. Out of this, only 58.41% incidents were reported (to authorities or peers). The data gives vital insights: firstly, violence has changed spheres and, this calls for interventions to focus on private spaces; spaces that are often away from the reach of donors, implementers and activists; secondly, the gaps in reporting cases of intimate partner violence are staggering.
**Lessons learned:** This paper predicts that a behavioural and attitudinal shift in the perception and combating of intimate partner violence is possible through the utilization and layering of four holistic approaches:
(i) awareness generation;
(ii) prioritization of the most vulnerable in the programme;
(iii) strengthening of the extant system of crisis-response; and
(iv) advocacy with stakeholders.
**Conclusions/Next steps:** The public realm is the domain of politics - where FSWs have negotiated power in the earlier phases of the Initiative, while the private sphere envelops within itself a secluded 'zone of privacy' which the interventionist programmes, including Avahan, has not been able to pervade. Vulnerability to violence in both spheres should be equally prioritized and effectively addressed.

## TUPED361

### BENEFIT OF STEPPING STONES FOR PREVENTION OF INTIMATE PARTNER VIOLENCE AMONG MEN DEPENDS ON PARTICIPANT'S USE OF VIOLENCE BEFORE BASELINE: SECONDARY ANALYSIS OF DATA FROM THE COMMUNITY RANDOMISED CONTROLLED TRIAL

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**Background:** The Stepping Stones community randomized controlled trial in South Africa demonstrated reduced HSV-2 incidence and reduced perpetration of intimate partner violence (IPV) among young male participants. Here, we explore factors that predicted IPV incidence over 2 years of follow-up and the possibility of differential intervention impact on different participants.
**Methods:** We analyzed data from 1,132 young South African men who participated in the 2 year, cluster-randomized controlled trial of Stepping Stones. We used hierarchical linear modeling to explore changes in self-reported perpetration of IPV over time. The intervention was treated as cluster-level variable; childhood experiences, household economic status, and pre-baseline IPV perpetration were treated as person-level variables. All other potential risk factors -- participation in transactional sex, having multiple or concurrent sexual partners, perpetration of non-partner sexual violence, depression, relationship conflict, and substance use -- were treated as time-varying. We tested all theoretically-relevant potential interaction effects.
**Results:** Men who received the Stepping Stones intervention reported reduced perpetration of IPV over time, while those who experienced childhood trauma and those who had perpetrated IPV before the start of the study increased IPV perpetration. Alcohol problems, depression, and perpetration of sexual violence against non-partners were all risk factors for increased perpetration of IPV. There were significant differences among men who reported perpetration of IPV before the start of the study. Among these men, the intervention showed no effect, and the effects of alcohol and non-partner sexual violence on increasing risk were significantly attenuated.
**Conclusions:** This analysis affirms that many of the risk factors hypothesized from cross-sectional research lead to increased perpetration of IPV among young men, specifically: childhood trauma, alcohol problems, depression, and sexual violence against non-partners. It also affirms the preventive benefit of the Stepping Stones intervention. However, it reveals significant differences in patterns of risk and benefit depending on whether men reported perpetration of IPV before the beginning of the study. This affirms the urgent necessity of effective primary prevention of IPV among young men, and further suggests that new strategies are required to prevent on-going perpetration among young men who have already engaged in IPV.

## SEXUALITY AND GENDER-BASED VIOLENCE AND EXPLOITATION, INCLUDING IN CONFLICT SETTINGS

### TUPED362

#### HIGH REPORTS OF VIOLENCE IN ADULTHOOD AMONG WOMEN LIVING WITH HIV IN CANADA AND AFFILIATED RISK FACTORS

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**Background:** Worldwide women experience high rates of violence related to entrenched gender inequities. This violence may be exacerbated for women with HIV, who experience HIV-related stigma among other forms of marginalization. We assessed the prevalence of, and factors associated with, experiencing violence in adulthood among women with HIV enrolled in a Canadian cohort.
**Methods:** Baseline survey data were analyzed for women with HIV (≥16 years) enrolled in a community-based research cohort study in British Columbia (BC), Ontario (ON), and Québec (QC). Violence was assessed through self-reported experiences of physical, sexual, verbal, or emotional violence in adulthood (≥16 years). Multivariable logistic regression was used to identify factors associated with having experienced any form of violence in adulthood.
**Results:** Of 1322 participants, (25%-BC, 50%-ON, 25%-QC) the median age was 43 (IQR=36-51) years and 22% identified as Indigenous, 28% African, Caribbean or Black (ACB), 42% white/Caucasian, and 8% other. Most (80%) participants reported ever experiencing any adulthood violence, including physical (62%), sexual (45%), verbal (74%), and emotional (46%). 1004 participants with complete data on violence were included in the multivariable analysis. Factors significantly associated with having experienced any adulthood violence included: recreational drug use in the past 3 months (AOR: 17.89, 95% CI: 4.29-74.59); post-traumatic stress disorder (PTSD) (AOR: 2.27, 95% CI: 1.49-3.47); gender discrimination (AOR: 1.05, 95% CI: 1.02-1.07); and age (AOR: 1.02, 95% CI: 1.00-1.04). Participants taking antiretrovirals (AOR: 2.70, 95% CI: 1.69-4.34), Indigenous women (AOR: 1.89, 95% CI: 1.10-3.27) and Caucasian women (AOR: 1.91, 95% CI: 1.26-2.89) in comparison with ACB women, were also more likely to report adulthood violence.
**Conclusions:** Four out of five women with HIV in this study experienced violence in adulthood, with high rates of physical and sexual violence. Experiences of adulthood violence were associated with PTSD symptoms and recreational drug use, highlighting the need for trauma-informed and harm reduction approaches to engage women in the HIV care continuum. Women who experience gender discrimination and other forms of social exclusion, including women who use drugs and Indigenous women, reported disproportionate rates of violence. Intersectional approaches that address gender discrimination are crucial to reduce gender-based violence experienced by women with HIV.

### TUPED363

#### NUH GUH DEH! (DON'T GO THERE): END SEX WITH THE GIRL CHILD/END HIV AMONG ADOLESCENT GIRLS IN JAMAICA

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**Background:** Eve for Life's programme to support adolescent girls living with HIV in Western Jamaica revealed that 45% of clients reported being forced at first sex and contracting HIV as a result. The Jamaica Reproductive Health Survey 2008 report that 20% of young women below 19 report rape as first sex. Despite a possible linkage between HIV transmission among young girls and child sexual abuse (CSA), these remain largely unexplored in the national response. Funded by the UN in Jamaica and the British High Commission, a campaign was implemented to raise awareness about the significant and long term consequences of SA of young girls and the links to HIV and to stimulate dialogue and action (reporting abuse) on the issue of child sexual abuse.
**Description:** The campaign utilised a multi-pronged approach, combining empowerment sessions, media, person-to-person and community interactions around SA of girls and HIV. 13 survivors of CSA participated in an empowerment programme. They received counselling, learnt about gender and HIV issues and communication skills. They developed digital stories on their experience and HIV and the diary of one survivor was published. Between October 2014 and October 2015, a community and media intervention was launched using the material produced to address the SA of girls as an HIV prevention strategy.
**Lessons learned:** The campaign highlighted the value of community mobilisation around SA and HIV issues. It resulted in 4961 persons reached in community forums, schools and one-on-one interactions at the community level; 25 articles published in local newspapers; 8 radio and 7 television interviews and two documentaries aired on local television.
**Conclusions/Next steps:** CSA is increasing in Jamaica. Girls aged 15 - 17 years account for 63% of all SA cases reported to the Office of the Children's Registry. This co-relates with the trends in the national HIV and AIDS data where girls aged 14 - 19 years old are four times more at risk of contracting HIV than boys the same age. The high prevalence of both HIV and sexual abuse of girls points to the need to bridge programmatic responses to address HIV.

### TUPED364

#### EXPLOITATIVE SEX WORK AMONG MSM AND TRANSGENDER WOMEN IN SOUTH ASIA: VULNERABILITY TO SEXUAL ABUSE AND HIV

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**Background:** Studies on how gender based violence (GBV) exacerbate HIV related vulnerabilities among Men Who have Sex with Men (MSM) and Transgender (TG) Women especially in cross-cultural contexts are rare. This paper highlights pathways between GBV and HIV-related vulnerabilities of MSM and TG women engaged in sex work in India, Afghanistan and Pakistan- three different cultural contexts yet characterized by similar patriarchal structures and unequal gender norms. This paper presents data from three countries conducted as a part of a seven-country South Asian regional study supported by UNDP.
**Methods:** A total of 10 FGDs were conducted with MSM and TG women in Afghanistan, India, and Pakistan using case vignettes to elicit narratives of GBV among study participants along various situations in the lives of MSM and TG women. We analyzed data using a coding tree emergent from the reading of descriptive data, and used Atlas-ti to identify the key themes and various linkages including those structural issues that underlie the pathways.
**Results:** Analyses reveal that GBV is pervasive in the lives of MSM and TG women and is emergent from multiples structures such as family, community, intimate relationships, health and law enforcement institutions, including police. Both internalized and experienced stigmas characterize the pathways through which MSMs and TGs are denied their rights and discriminated. All pervasive denial and discrimination is rooted in the strong patriarchal structures and norms around what is normal and finds multiple expressions. MSM and TG engaged in sex work report greater sexual violence associated with lack of ability to negotiate safety, unavailability of condoms, vulnerability to gang rape, blackmail and lack of access to forums for redress for violence. Results also show that not belonging to a network, being effeminate, being young and not having sources of gainful employment increases dependence on exploitative sex work and thereby vulnerability to violence, mental ill health and exposure to risky sex.
**Conclusions:** Interventions must address institutions and norms that nurture and perpetuate GBV. They should strengthen community networks, involve perpetrators of violence, ensure economic inclusion and advocate for better protection and mitigation mechanisms against GBV rather than narrow medicalized approaches to HIV prevention.

### TUPED365

#### SEXUAL VIOLENCE AND RAPE IN RUSTENBURG, SOUTH AFRICA: IMPLICATIONS FOR SERVICE PROVISION AND PREVENTION

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**Background:** Rustenburg Municipality (population 550,000) is one of Africa's fastest growing cities, and as the country's platinum mining capital, attracts many migrant workers. Bojanala district, in which Rustenburg is situated, has an HIV prevalence

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of 35% among antenatal women; its rape prevalence has not previously been reported.
HIV transmission is higher during forced sex (particularly child sexual abuse) than consensual sex, which can exacerbate transmission in areas with concurrent epidemics of HIV and rape. Here we quantify prevalence of sexual violence and rape in Rustenburg.
**Methods:** In this cluster randomized household survey fieldworkers collected information from women aged 18-49 on their experience of rape, as well as associated behaviors and attitudes. The study population and prevalence of rape (forced sex or sexual acts) are described.
**Results:** The average age of participants (n=1,123) was 32 years and 44% had completed secondary school or higher. The majority of women grew-up in South Africa; however, 62% grew-up in a rural area/village outside of the Rustenburg Municipality.
Life-time prevalence of rape of 33%, with 10% experiencing at least one rape by a sexual partner, and 8% experiencing at least one rape by a non-sexual partner before the age of 15 years. The reported incidence of rape was 53 per 1000 person years.
Among those who had been raped, 17% reported seeking legal services after a previous experience of rape.
**Conclusions:** We report an extremely high prevalence of sexual violence, including rape by partners, non-partners, and among children in the platinum belt of Rustenburg, making women vulnerable to negative health outcomes, including HIV acquisition. Reported access to legal and comprehensive medical services is particularly poor in this highly vulnerable population, highlighting the need for improved service delivery.
The HIV/AIDS and rape epidemics share similar risk factors and challenges to access, exacerbating harm. A coordinated local and national approach to the prevention, management, and planning of both is necessary.

## TUPED366

### ASSOCIATIONS BETWEEN ADOLESCENT EXPERIENCES OF VIOLENCE IN MALAWI AND GENDER-BASED VIOLENT ATTITUDES AND BEHAVIOURS

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**Background:** Emotional, physical, and sexual adolescent maltreatment in the home or at school have been found to be key predictors of gender-based-violence (GBV). GBV has strong links to the HIV epidemic in sub-Saharan Africa. The objective of this research was to measure the prevalence of exposure to violence among Malawian adolescents, and to test the hypotheses that such exposures are associated with prevalent gender-based violent attitudes and behaviours, which continues the cycle of violence and increased HIV transmission.
**Methods:** We analysed questionnaires collected from 561 primary school pupils, aged 10-19, in 1 urban and 2 rural districts of Malawi. Participants were 281 girls and 280 boys who assented following caregiver consent. Using SAS, the data was stratified by gender, and logistic regression analysis was performed, adjusting for sociodemographic differences in the final parsimonious models.
**Results:** Both girls and boys had witnessed domestic violence (28.5% & 29.6%), experienced emotional abuse at home (23.1% & 22.9%), physical abuse at home (28.1% & 30.4%), physical abuse at school (42.4% & 36.4%), and bullying (33.8% & 39.6%).
Girls who internalized violent attitudes towards women were more likely to have experienced emotional abuse (OR 2.1), and physical abuse at school (OR 1.7). Condoning rape was associated with physical abuse at school (OR 1.9). Participation in bullying was associated with experiencing emotional abuse at home (OR 4.5).
Among boys, violent attitudes towards women and condoning rape were not associated with violence exposure. Participation in bullying was associated with prior experience of being bullied (OR 2.9), and physical abuse at school (OR 2.7).
**Conclusions:** These results indicate that - among girls, but not boys - internalized violent attitudes towards women and acceptance of rape are linked to violence exposure in homes and schools. The findings can inform programmes designed to reduce violence victimization among Malawian girls. Some effective interventions could be microfinance loans, programs designed to reduce sexual violence and IPV in homes, parenting programmes, and enforcing strict prohibitive measures on physical violence and punishments in schools. All of these programs could be effective in reducing gender-based-violence and impeding its contribution to new HIV infections.

## TUPED367

### INTERPERSONAL AND STRUCTURAL FACTORS OF NON-CONDOM USE WITH INTIMATE PARTNERS AMONG SEX WORKERS IN CONFLICT-AFFECTED NORTHERN UGANDA

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**Background:** Women sex workers (SWs) in sub-Saharan Africa have among the highest HIV burden, and similar pregnancy intentions to the general population of women of reproductive age, yet we know less about male condom use with intimate non-paying partners than with clients. Understanding the social and structural contexts of non-condom use in intimate partnerships is critical given shared pathways for HIV and pregnancy, particularly in the absence of other biomedical interventions (e.g. antiretroviral therapy, and hormonal contraceptives).
**Methods:** Drawing on a community-based project in partnership with The AIDS Support Organization (TASO) Gulu, SWs, and other community organizations, we conducted interview-administered questionnaires embedded in SW/peer-led outreach to bars, hotels, and truck stops across Gulu, and voluntary HIV testing with 400 women SWs between 2011 and 2012. Multivariable logistic regression was used to examine factors associated with non-condom use at last sex with SWs' main/most recent intimate partner.
**Results:** Of the 379 women SWs with an intimate partner, 150 (39.6%) reported non-condom use at last sex with their most recent intimate partner. The median age of women was 21 years (IQR= 19.0 - 26.0), with 63.3% having completed less than primary education. One-third (32.5%) were living with HIV, and the majority (69.9%), were mothers supporting one or more children. In multivariable analysis, having low sexual relationship power (Adjusted Odds Ratio (AOR) 3.40, 95% Confidence Interval (CI) 1.05 - 2.68), harassment by agents of the state (police or military) (AOR 1.96, 95% CI 1.23 - 3.15), and hormonal contraceptive use (AOR 1.68, 95% CI 1.77 - 6.53), were independently associated with non-condom use with intimate partners.
**Conclusions:** While non-condom use may be reflective of pregnancy intentions and a higher degree of intimacy within intimate partnerships, this study highlights how gendered power dynamics, both at the interpersonal (low sexual power and decision-making with intimate partners) and structural levels (harassment by policy and military), shape condom use with intimate partners of SWs in a post-conflict setting. Policy reforms to ensure the protection of SWs' health and human rights, and monitoring and redress of abuse in conflict-settings remain critical, alongside gender transformative approaches to HIV prevention, treatment, and care.

# MEDIA, CULTURAL AND RELIGIOUS REPRESENTATIONS OF HIV AND AIDS

## TUPED368

### THE NEWS MEDIA DISCOURSE SURROUNDING HIV IN THE U.S. DEEP SOUTH: NEGATIVITY, FEAR OF CONTAGION, AND OSTRACIZATION

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**Background:** Thirty years after the first reported HIV case, the overall number of new US diagnoses continues to fall. As a result, the media focus on HIV has markedly decreased arguably leading to a false sense amongst individuals-at-large that HIV is no longer an urgent health issue to address. American news media has also experienced a rapid transformation through changes in technology impacting the public information environment. These changes create a pressing need for advocates to understand how HIV is discussed and portrayed in the public discourse.
**Methods:** Drawing on anthropological tools, this study conducted textual analysis of 161 news media stories throughout seven Deep South states (where HIV incidence rate is highest) from 2010-2014 found through Google searches, downloaded and coded. There was a minimum of 20 articles per state. We coded for media context, level of interactivity, and content of the stories regarding ideology, stigmatizing and emotional attributes, and policy focus.
**Results:** Only 7% of the articles were on the "front page." Over 26% of the articles were written due to the release of a data set. In terms of policies, 17% discussed criminalization. The shorter the articles in terms of word length, the more conservative they were rated by the coders (on a scale of 1 being extremely liberal and 7 extremely conservative) and those data-driven articles were rated as more conservative (M =3.86). A plurality of the articles (42%) were negative in tone. The top coded

emotions were: skepticism, fear and contempt. In South Carolina (where there are active HIV-criminalization cases), there were more references in the articles to the contagion/danger posed to others by HIV. Lastly, ostracization was often noted in the HIV-related articles as a repercussion. Overall, 80% of the articles allowed for comments to be posted; of which 56% had posted comments. The range of article-shares was from 0 to 11,900.
**Conclusions:** Ample evidence shows that media articles help shape attitudes and beliefs, educate the public and can help mold policies. These study findings make it imperative that we continually educate media on HIV and stigma as we also work on the ground with high-risk populations.

## Experiences and impacts of HIV-related stigma

### TUPED369

### 'We don't want to be noticed collecting drugs': the effects of stigma and discrimination on adherence to medication amongst people living with HIV in Tiv Land, North Central Nigeria

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**Background:** In spite of recognising stigma as a factor impeding the public utilisation of HIV counselling, testing, and treatment services in Nigeria, gaps in knowledge still exist concerning the impact of stigma and discrimination on adherence to medication amongst people living with HIV (PLWH). This study examines the impact of stigma and discrimination on adherence to medication amongst people living with HIV in Nigeria.
**Methods:** A sample of 1,621 (864 women; 757 men) respondents was collected from 2 clinics (Mkar; Aliade) and other 2 locations (Jyovkundan; Udei) using multi-stage and purposive sampling methods. An eight page questionnaire with closed and open ended questions was used for quantitative data collection amongst 805 HIV seropositive clinic attendees and 796 HIV seronegative individuals. SPSS (version 21) was used for quantitative data analysis. Twenty (20) respondents (10 HIV seropositive; 10 HIV seronegative) participated in in-depth interviews which were recorded.
**Results:** They were 46.3% men and 53.7% women. Those between 30 and 34 years were 23.4%, while those between the ages of 25 and 29 years were 21.9%. Approximately 55% were married, 17.9% were either divorced or separated, while the single and those cohabiting were 26.2% and 0.6% respectively. Generally, their income was low, 70.7% were earning less than N25, 000 (approximately $125 USD) per month. All respondents were on drugs. Some of the HIV patients are isolated, they sit, eat and drink water in personalised seats and plates; uncomplimentary statements are made about them. In reaction to stigma and discriminations, some of them avoid public places, if possible, they travel long distances away from their immediate community to collect drugs, to avoid been noticed around the centers. Thus, they sometimes miss taking drugs regularly as prescribed, suffer depression and die.
**Conclusions:** Not only that stigma and discrimination hinder public utilisation of HIV counselling, testing and treatment services, it impede adherence to medication amongst people living with HIV in Nigeria. More efforts should be made to create awareness to reduce stigma and discrimination of HIV patients, while augmenting their income to overcome the challenges of visiting far health centers to collect drugs, should the need arise.

### TUPED370

### The predictive power of stigma on substance use and sexual risk behaviors among people living with HIV/AIDS in Southwest China

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**Background:** HIV stigma against people living with HIV/AIDS (PLWHA) is prevalent. The impact of HIV stigma has various effects on their risk behaviors during their sexual episodes as well as on substance use among PLWHA. In this study, we explored the predictive power of HIV stigma on substance use and sexual risk behaviors among male and female PLWHA in China.
**Methods:** A total of 2987 PLWHA were recruited via a pre-established sampling scheme. Approximately 10% of cases were selected from top 12 study sites in terms of HIV cases in Guangxi. In order to explore the predictive power of the stigma on risk behaviors among PLWHA, we first categorized the score of HIV stigma based upon its quantiles. We examined demographics, psychosocial wellbeing and risk behaviors across these quantiles by employing Chi-square (for categorical variables) and ANOVA (for continuous variables) with trend tests. We further assessed the predictive power of HIV stigma on risk behaviors (substance use and risky sexual behaviors) using restricted cubic splines in the multivariate regression analyses. A gender-specific stratum analyses were also conducted to explore the predictive power of HIV stigma between male and female PLWHA.
**Results:** The bivariate analyses and trend testes revealed that both psychosocial distress and behaviors of substance use increased significantly among PLWHA with higher stigma. The restricted cubic spline model indicated a possible threshold for the risk of smoking and drug use among PLWHA. PLWHA with 50th percentile stigma score were more likely to report smoking (β=0.08,95%CI=0.02, 0.14), and drug use (β=0.10,95%CI=0.01, 0.19). The highest percentile of HIV stigma only marginally increased the numbers of sex acts (β=0.60,95%CI=-0.03, 1.23) and sexual partners (β=0.77,95%CI=0.00, 1.53).
**Conclusions:** Our analysis found HIV stigma had a stronger predictive power on substance use, but not a good predictor for sexual risk behaviors. Health prevention programs should target to PLWHA with higher stigma for their substance use problems. Further research should be conducted to explore risk factors for sexual risk behaviors among PLWHA to eliminate the potential of them as the source of the HIV transmission in China as well as other settings worldwide.

### TUPED371

### Resolved and unresolved issues among people living with HIV in Japan after 10 years of advancement in medical environment: results from nationwide multicenter surveys from 2003 to 2013

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Research on Support for PLHIV and DU in Regional Communities
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**Background:** Advances in ART over the past 10 years have changed the recuperation of people living with HIV (PLHIV) in Japan drastically. Yet, has "Living with HIV" really been easier? Nationwide research on the quality of life of PLHIV has been conducted every five years. The latest one was done in 2013, and a comparison was made in order to track a trend in the living conditions of PLHIV since 2003.
**Methods:** Anonymous, self-completed questionnaires were distributed to 2,473 outpatients at 31 leading AIDS care hospitals in Japan. The survey period was from July 2013 to April 2014. The same method was adopted in the 2003 (783 outpatients at 5 hospitals) and 2008 (1,813 outpatients at 33 hospitals) studies.
**Results:** Among 1,469 responses returned by mail, 94.1% were men and 5.1% were women in 2013. Response rate was 59.4% (72.3% in 2003 and 66.4% in 2008). There is a significant increase in the rate of once-daily dosage of HIV medication (from 3.8% in 2003 to 56.6% in 2013) and once every 2-3 months of healthcare provider visits (from 37.2% to 73.0%). More people showed intentions to work (37.2% in 2003, 49.1% in 2008, and 58.7% in 2013 said, "Do not want limitations on the way of working"). The ratio of non-working population of PLHIV stayed at the same level over the years (20-25%). The percentage of PLHIV who left former job following positive HIV diagnosis was 37.6% in 2003, 42.0% in 2008, and 40.5% in 2013. In 2003, 27.5% had come out as HIV positive at work, yet the rate slightly decreased to 21.0% in 2013. The 2013 study showed that 73.4% experienced "thinking of an excuse for not disclosing HIV status" and 10.8% "unwillingly leaving their job due to HIV."
**Conclusions:** The treatment burden has been greatly alleviated by therapeutic advances. Nevertheless, there are still stressors that hinder PLHIV from participating fully in society. Some people try to solve workplace issues through changing their job, not through consulting with someone at work. Appropriate measures are needed to foster an understanding of HIV/AIDS and to remove stigma at all levels of society including workplaces.

## TUPED372

### CREATING CONTEXTUALIZED FILMS THROUGH COMMUNITY ENGAGEMENT TO ADDRESS HIV-STIGMA IN WESTERN KENYA

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**Background:** HIV-stigma impacts HIV-infected adolescents' psychosocial development and how they navigate their social surroundings. We sought to better understand the experiences of HIV-infected adolescents in western Kenya with HIV-stigma and to subsequently develop culturally sensitive films to reflect those experiences.
**Methods:** A US and Kenyan collaborative team conducted a qualitative study investigating the social and cultural impact of HIV-stigma on adolescents living with HIV. Our participatory research strategy included focus group discussions with HIV-infected adolescents and with caregivers of children with HIV, followed by in-depth interviews with participants, including HIV-infected adolescents and various community members in Eldoret, a mid-sized town in western Kenya (e.g. shop owners, pastors, teachers). Interviews, conducted in Kiswahili or English, were translated and transcribed. Applied thematic analysis was used to identify themes reflecting the lived experience of stigma. A participatory advisory board, comprised of research investigators, HIV disclosure counselors, and HIV-infected adolescents, drew upon these culturally contextualized themes to create narrative scripts for films focused on HIV-stigma.
**Results:** The participatory advisory board generated 4 film narratives from the in-depth interview transcripts. Major themes of HIV-stigma included enacted stigma from neighbors, school children, and caregivers. The in-depth interviews from community members (e.g. shop keepers, pastors, and teachers) emphasized enacted examples of HIV-stigma from community social systems, including public ridicule, shaming, and shunning for families and adolescents living with HIV. HIV-infected adolescents shared personal narratives of perceived HIV-stigma in school and college environments, and experiences of enacted stigma from caregivers and family members. Filming and producing the films was conducted in July 2015, followed by post-production editing. Using local Kenyan actors in partnership with Moi University, the collaborative team created four film narratives that showcase the experience of HIV-stigma from the perspective of HIV-infected adolescent main characters.
**Conclusions:** Using a context-focused methodology and community participatory approach, we developed four unique films showcasing the impact of HIV-stigma in western Kenya. With planned use in clinical, counseling, and community-based settings, these films could mitigate the impact of HIV-stigma and serve as tools to encourage dialogue and openness about HIV.

## TUPED373

### STIGMA IN THE AGE OF UNDETECTABILITY

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**Background:** In the age of undetectability and wide usage of ART, the 2015 UK Stigma Index (UKSI2015) indicates that stigma - felt, anticipated, or enacted - remains a persist feature in the lives of almost half of people living with an HIV diagnosis. As a result, the quality of life for people who are living with HIV (PLWHIV) is negatively affected. This research, which is a continuation of the quantitative data formulated by the UKSI2015, aimed to ask why people who are living with HIV experience stigma in this way.
**Methods:** 35 semi-structured interviews were carried out with a representative sample of PLWHIV. Interviews were conducted either in person, viva skype or over the phone. The researcher who conducted these interviews is HIV+. It is her status that afforded her a common ground with interviewees. The methods employed in the analyses of the data were pre-determined themes and inductive analyses.
**Results:** This research found that felt, anticipated or enacted stigma is a complex process. It varies over time and is manifested in various situations, ranging from disclosing status to a new partner to discussing diagnosis with healthcare professionals and employees. It also demonstrated that there are differences in how heterosexual women and homosexual men accept and come to terms with their diagnosis. And also, how they experience stigma. Furthermore, it illustrated that people who are HIV+ are often unaware of what it means in terms of transmission when undetectable. Moreover, it demonstrates that of those who were interviewed, 90% experienced anticipated stigma, primarily because of a lack of knowledge within the wider population.
**Conclusions:** This research demonstrates that PLWHIV are still experiencing stigma, especially anticipated stigma. Furthermore, this research clearly shows that if the general public were aware of what it means to be living with HIV, then those who have HIV would experience less stigma. This research has the possibility to not only influence how voluntary organisations address the needs of those living with HIV, but also to inform national policy. It also proposes that there should be a unifying voice from the medical community when discussing what it means to be undetectable.

## TUPED374

### "TO DIE FROM PEOPLE'S GAZE": TRAJECTORIES OF WOMEN LIVING WITH HIV IN SWITZERLAND

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**Background:** HIV-infected women are often ignored in debates about AIDS, especially in high income countries. Until now, studies of women remain rare, except those that focus on women considered at risk of transmitting HIV, such as sex workers. The over-visibility of some women, and the invisibility of others, demonstrates that the importance of HIV-infected woman has not yet been fully acknowledged. Furthermore, to be HIV-infected may have become medically commonplace in Switzerland, socially, it is still stigmatizing.
**Methods:** To examine the social experience of living with HIV and its daily management, 30 in-depth interviews with HIV-infected women (34 to 69 years old), diagnosed before 2000 were conducted in the French-speaking part of Switzerland from 2013 until 2015. Of the 30 participants, 27 were diagnosed before the arrival of antiretroviral therapies. Mainly infected through heterosexual relationships, all the interviewees shared the perception that they were not previously at risk for HIV infection because they did not belong to any at-risk groups.
**Results:** The cascade of "non-statuses" marking these women - not belonging to any targeted group, living in an in-between condition, with a virus labeled as "undetectable" - seems to increase their feelings of guilt and social illegitimacy, a phenomenon largely overlooked by the medical profession. The study reveals how it is still difficult and shameful for them to consider themselves as "HIV-infected" and therefore to disclose their situation to others. In addition, the study population indicates that stigmatization is not only associated with traditional modes of contamination (e.g. drug users, homosexuals). Although most of the women did not experience overt discrimination, the risk of rejection remains deeply embedded, revealing the presence of an important self-stigma effect.
**Conclusions:** This is the first qualitative study in Switzerland that sheds light on "other" women living with HIV. These findings demonstrate that favourable medical outcomes do not guarantee a better social life even for those who are not a priori stigmatized. Their HIV trajectory taught them how to transform an intolerable contamination into an acceptable story for themselves but also for others since several believed that they might not die from AIDS but rather from people's stigmatizing gaze.

## TUPED375

### DIMENSIONALITY OF DISCLOSURE OF HIV STATUS AMONG POSTPARTUM WOMEN ON ANTIRETROVIRAL THERAPY IN CAPE TOWN, SOUTH AFRICA

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**Background:** Disclosure of HIV status to sexual partners and others has been presented as a universally positive health behaviour and is widely encouraged by antiretroviral treatment (ART) programmes, providers and policies. However, disclosure is highly contextual and the positive effects of disclosure may be neither linear nor universal. We explored dimensions of disclosure among postpartum women on ART.

**Methods:** *As* part of the Maternal Child Health-Antiretroviral Therapy (MCH-ART) study, we conducted 47 in-depth interviews with postpartum women (median time postpartum, 9 months) who initiated ART during pregnancy at a public sector primary care clinic in Cape Town, South Africa. Primary elements of disclosure were coded and interpreted according to dominant themes and subthemes.
**Results:** The majority of women reported disclosing to at least one person, but only half reported disclosure to their partner. While disclosure to mothers, sisters, and friends was linked to emotional and other support, disclosure to partners was more commonly described in terms of duty or responsibility. HIV status was fundamentally private rather than public, and women expressed fear of attending clinics close to their homes because of the risk of public disclosure. Many women who did not disclose to partners were financially dependent on them, and in turn felt disclosure involved unnecessary risk. In contrast, a subset of participants reported taking medication in front of others without discussing their HIV status, which seemed to represent tacit disclosure.
**Conclusions:** Despite access to ART, stigma remained a feature in descriptions of disclosure, particularly in relation to partner disclosure. For women who tacitly disclosed, they either intentionally undermined the fear of being "known" as HIV positive, or else did not feel this stigma. The juxtaposition of tacit disclosure with ongoing stigma suggests an evolution of the epidemic in contexts of relatively good ART access, perhaps signalling normalisation and destigmatization. In this context, the strong promotion of disclosure by HIV-related services may unintentionally thwart attempts to continue the destigmatization of HIV status.

## TUPED376

### CHANGES IN HIV-RELATED STIGMA IN EASTERN AFRICAN COMMUNITIES AFTER INTRODUCTION OF A LARGE HIV "TEST AND TREAT" INTERVENTION

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**Background:** The ART rollout is associated with reductions in HIV-related stigma, but pathways through which this occurs are poorly understood. Studies have focused on individual psychosocial measures, with less attention to understanding processes through which rapid diffusion of ART uptake affects changes in community-level attitudes and social norms.
**Methods:** We used longitudinal qualitative data to examine evidence for change in HIV-related stigma, and its pathways, in eight communities participating in an ongoing test-and-treat trial in Kenya and Uganda (SEARCH, NCT#01864603). SEARCH aimed to increase uptake and normalize HIV testing and care through community-led, multi-disease and patient-centered approaches. Baseline and year one data were collected using focus group discussions (n=8 groups) with participants at community health campaigns, and in-depth interviews with care providers (n=50), community leaders (n=32) and members (n=112). We analyzed data using grounded theoretical approaches and Atlas.ti software.
**Results:** A majority of those interviewed one year after SEARCH implementation reported feeling that HIV-related stigma had decreased in communities ("*people are not fearful anymore*"). Longitudinal analyses revealed improved attitudes towards people living with HIV/AIDS (PLWHA), reduced anticipated stigma and increasingly open discussions about HIV. However, there were reports of enacted stigma against some PLWHA following status disclosure, particularly women. Perceptions that stigma had reduced elicited new anxieties ("*now you cannot identify the infected*", and "*there is less fear for HIV... that causes us to worry, more people are going to get infected...*"). As testing saturated communities, many HIV-positive individuals were newly emboldened to disclose their status ("*these days you just take your drugs in the open..."*). As more individuals experienced benefits of ART they engaged in advocating for others to initiate ART. Those who did not feel safe to disclose were relieved that taking ART permitted them to more effectively conceal their status.
**Conclusions:** Social norms and attitudes related to HIV are rapidly changing in communities participating in a large test-and-treat trial. Benefits of ART embolden HIV-positive individuals to openly engage in care. These 'advocates' for ART are a key social influence on stigma reduction, and should be supported, as they are already playing a critical role in expanding ART uptake.

## TUPED377

### *"HOW CAN I TELL?"*: CONSEQUENCES OF HIV STATUS DISCLOSURE AMONG COUPLES IN EASTERN AFRICA IN THE CONTEXT OF AN ONGOING HIV 'TEST AND TREAT' TRIAL

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**Background:** People living with HIV/AIDS (PLWHA) anticipate HIV-related stigma and fear disclosure to intimate partners. Yet, disclosure is critical to reducing HIV transmission and improving engagement in HIV care. This qualitative study characterized HIV disclosure experiences, consequences, and perceived norms among couples in communities participating in an HIV test-and-treat trial in Kenya and Uganda (SEARCH, NCT#01864603).
**Methods:** In-depth interviews were conducted with HIV care providers (n=50), leaders (n=32) and members (n=112) of eight communities. Data were analyzed data using grounded theoretical approaches and Atlas.ti software.
**Results:** Findings confirmed gender differences in the barriers to disclosure; while both men and women feared blame and accusation from intimate partners, women also feared violence and abandonment (*"I did not tell my husband because [what if] I tell him and he abandons me at the last moment when I am in labor?"*).
Positive consequences of disclosure included increased engagement in HIV care, and encouraging care-seeking and adherence in partners ("My husband keeps on reminding me 'have you taken those drugs?") Yet negative consequences occurred, including partnership dissolution, blame and accusation, and reports of violence ("*some men beat their wives just because of that [bringing HIV medications home]"*).
Among HIV-infected individuals in discordant relationships, men more often reported supportive spouses ("*we normally share [HIV risk reduction strategies] since I have been infected and she is HIV negative*"), than did women ("*my husband refused to use condoms and even threatened to marry another wife".*)
Care providers lent support for HIV-positive women who wanted to engage partners in testing but feared negative consequences: "*They engaged the two of us in a session and asked him if we could all test."*
**Conclusions:** Findings demonstrate differing disclosure experiences and support needs of women and men living with HIV in east Africa, with HIV-positive women in discordant couples particularly vulnerable to negative consequences of disclosure. Care providers are already playing an important role in facilitating disclosure for PLWHA; efforts to strengthen capacity in health systems for gender-sensitive clinician- or counselor-assisted disclosure should be accelerated within test-and-treat efforts.

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## TUPED378

### EXPERIENCES OF STIGMA AGAINST PARTICIPANTS IN A NETWORK INTERVENTION TO REDUCE HIV TRANSMISSION FROM RECENTLY INFECTED PEOPLE IN ATHENS, GREECE AND ODESSA, UKRAINE

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**Background:** Interventions to prevent HIV transmission by working with HIV-infected people and their networks may provoke stigma against participants if their infection statuses are inferred or disclosed. We examine the extent to which participants in such an intervention experienced stigma during or after their participation in the program in two sites with large epidemics.

**Methods:** Participants and controls in an intervention targeting recently infected individuals ("recents") and their sexual and injection networks were interviewed about their experiences of stigma and discrimination in follow-up interviews six months after entering the study. This intervention recruited recents' network members, and distributed community alerts among networks and at venues where recents reported injecting and/or meeting sex partners. These alerts indicated the presence of recents in the network, educated about protection from transmission, and urged recipients to support recents. Stigma items were operationalized as experiences of negative, stigmatizing behaviors like nasty comments, threats/attacks, or exclusions from social gatherings (4 items, Cronbach's α =.643) and experiences of positive, helping behaviors from others who thought they were recently infected (3 items, α = .675). Responses were compared by intervention site, by sex, and by study arm. Fifty-seven percent of participants reported that they injected drugs.

**Results:**

| | Total (N = 610) | Athens (N = 283) | Odessa (N = 327) | Male (N = 466) | Female (N = 144) |
|---|---|---|---|---|---|
| Mean number of types of stigma experienced (0-4) | 0.18 (S.D. = 0.56) Min = 0; Max = 4 | 0.28 (S.D. = 0.75) Min. = 0; Max = 4 | 0.09 (S.D. = 0.28) Min. = 0; Max = 1 | 0.18 (S.D. = 0.55) Min. = 0; Max = 4 | 0.17 (S.D. = 0.62) Min. = 0; Max = 4 |
| Proportion of participants experiencing at least one stigmatizing event (out of 4) | 12.3% | 16.6% | 8.6% | 13.1% | 9.7% |
| Mean number of types of positive/ helping behaviors experienced (0-3) | 0.77 (S.D. = 1.00) Min = 0; Max = 3 | 0.41 (S.D. = 0.87) Min = 0; Max = 3) | 1.09 (S.D. = 1.00) Min = 0; Max = 3) | 0.71 (S.D. = 0.99) Min = 0; Max = 3 | 0.96 (S.D. = 1.02) Min = 0; Max = 3 |
| Proportion of participants experiencing at least one positive/ helping event (out of 3) | 39.3% | 20.8% | 55.4% | 36.3% | 49.3% |

*[Frequencies and Descriptive Statistics for Stigma and Positive/Helping Experiences among Particpants]*

Reports of stigma were relatively infrequent. Frequencies of positive experiences were higher. Mean number of types of stigma experienced was less than 0.3 for all groups. Odessa participants reported fewer stigma experiences (t=-4.1, p< .0005), and more helping experiences (t=8.9; p< .0005). Females reported more helping experiences (t=2.6; p=.01). Nine individuals (all in Athens) reported being threatened or attacked. Field investigations determined these incidents were not caused by the intervention. Recents and their networks did not differ from controls on frequency of negative stigma experiences.

**Conclusions:** This intervention does not appear to present an unduly high risk of experiencing stigma related to "recent" status. It did seem to elicit support from others. Differences between intervention sites should be further examined to determine how local conditions affect stigma.

## TUPED379

### COMMUNITY SAVING SCHEMES: A SUSTAINABLE EMPOWERMENT MECHANISM FOR PEOPLE LIVING WITH HIV IN MITYANA DISTRICT, UGANDA

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**Background:** While access to microfinance services is still a challenge for many Ugandans, the barriers for PLHIV is compounded by stigma and discriminatory practices and requirements manifested in form like difficulty in securing loan guarantors, lack of collateral by orphans and widows, perceptions by MFI s that PLHIV have little time to live among other according to study conducted by NAFOPHANU, AMFIU and ACORD. To overcome this discrimination PLHIV formed community saving schemes to create their own basket of credit to loan amongst themselves

**Description:** This started out as a pilot by NAFOPHANU in Mityana district. 15 groups were identified, trained and supported to start income generating enterprises including animal or crop husbandry, stone quarrying, poultry and bricklaying as a revolving scheme. From the income, they invested into saving schemes to create a pool of credit. No collateral except one's social standing and trust plus at a very small interest to steadily expand the fund

**Lessons learned:**

1. 13 have successfully formed vibrant savings schemes. One group in Malangala village started with 20 members but currently comprises of 187 members
2. The programme has enabled communities to appreciate the potential of PLHIV. With almost half of the co-save group membership comprising HIV negative community members, there is reduced incidences of stigma and discrimination for PLHIV in public life.
3. Communities are alive to the potential they hold to raise credit amongst themselves to invest in their development. The meagre investments of groups have grown to between 7 and 15 million shillings credit funds to date.
4. The mechanism contributed to PLHIV resource base and many have been able to finance treatment options that are not freely available in the public health care centers

Microfinance institutions have now expressed interest to offer the saving groups and their individual members saving, investment and loan facilities; a reversal in their earlier stance

**Conclusions/Next steps:** Reducing the economic vulnerability of PLHIV is critical in breaking the stigma and discrimination. Improving financial standing of PLHIV is essential for positive living and dignity.

# STIGMA AND DISCRIMINATION IN SPECIFIC SETTINGS, INCLUDING FAMILY, COMMUNITY, WORK PLACE, EDUCATION AND HEALTHCARE SETTINGS

## TUPED380

### THE SOCIAL CONSTRUCTION OF HIV STIGMA AND SEXUAL HEALTH SEEKING BEHAVIOUR AMONG BLACK SUB-SAHARA AFRICAN (BSSA) COMMUNITIES IN THE ENGLISH CITY OF BIRMINGHAM

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**Background:** There is a lot of quantitative research information in the public domain on HIV and stigma including sexual health seeking behavior. This statistical information has shown that BSSA communities present late with HIV and sexual transmitted infections owing to HIV stigma (Drummond, 2008). Currently there is very limited published qualitative information on the factors influencing the social construction of HIV stigma and sexual health seeking behavior among BSSA communities.

**Methods:** This research focused on the BSSA communities in the English town of Birmingham. A qualitative methodology was used to identify and explore the key factors influencing the social construction of HIV stigma and sexual health seeking behavior among BSSA communities. Screaming silences provided the theoretical underpinning for this study which sits in some aspects of feminism, criticalist and ethnicities based approaches(Serrant, 2010).

**Results:** The findings from this study were reviewed in light of current sexual health policies and strategies to consider how sexual health professionals and services can best meet the health care needs of BSSA communities. The institution of marriage,

religion, HIV epidemiological statistics, politics and immigration, HIV as a sensitive subject, sexual health professionals and sexual orientation emerged as key features of the social scripts associated with the social construction of HIV stigma and sexual health seeking behaviour among BSSA communities.
**Conclusions:** The social construction of HIV stigma and sexual health seeking behavior is influenced by commonly shared and personal appraisal of socially determined relevant issues. This forms the bases in which sexual scripts are given meaning and HIV stigma is constructed alongside a socially accepted pattern of sexual health seeking behavior. This research study compliments the currently available pool of quantitative data linking issues of HIV stigma and ethnicities in the United Kingdom. The findings from this thesis reveal a wide range of critical issues to embark on further qualitative research in the area while providing a lead for British based perspectives on HIV stigma and black ethnic minority groups.

## TUPED381

### STIGMA AND DISCRIMINATION IN HIV TESTING SERVICES: EXPLORING EXPERIENCES OF YOUNG TRANSGENDER WOMEN AND MEN WHO HAVE SEX WITH MEN IN KINGSTON, JAMAICA

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**Background:** Stigma and discrimination reduce access to HIV testing. Men who have sex with
men (MSM) and transgender women experience pervasive human rights violations in Jamaica. Young MSM in Jamaica have the highest HIV infection rates in the Caribbean. There is little information about HIV among transgender women in Jamaica, who are overrepresented in the Caribbean epidemic. HIV-related stigma is a reported barrier to HIV testing among Jamaica's general population, yet little is known of HIV testing among MSM and transgender women in Jamaica. We explored HIV testing experiences among MSM and transgender youth in Kingston, Jamaica.
**Methods:** We implemented a community-based research project in collaboration with HIV and
lesbian, gay, bisexual and transgender (LGBT) agencies and community groups in Kingston. We conducted in-depth individual semi-structured interviews with young (18-29 years old) MSM (n=20), transgender women (n=20), and key informants (n=13). We also held focus groups with young transgender women (n=8) and MSM (n=10). We conducted narrative thematic analysis to identify, analyze and report themes.
**Results:** Findings revealed HIV testing experiences included: confidentiality breaches; healthcare
provider mistreatment; and HIV-related stigma. Participants discussed how physical arrangements in clinics that segregated persons receiving an HIV test led to confidentiality breaches by community members. In LGBT-friendly clinics participants were concerned about negative consequences from other LGBT persons discovering they were getting an HIV test. Participants were fearful that healthcare providers would disclose their HIV test results and discriminate against them. At times healthcare providers openly mocked participants trying to access HIV testing, condoms and lubricant. Many participants hid their sexual orientation and gender identity from healthcare providers due to fears of stigma. Participants expressed fears of testing HIV-positive—this intersected with the stigma of HIV as a 'gay' illness. Facilitators to HIV testing included nonjudgmental healthcare providers and mobile testing sites (e.g. health bus).
**Conclusions:** Findings suggest the need for policy and practice changes in HIV testing clinics in
Jamaica. Restructuring physical clinical spaces and anti-discrimination training for healthcare providers are required. Interventions to challenge HIV-related stigma, homophobia and transphobia in healthcare settings can enhance access to the HIV prevention cascade among MSM and transgender youth in Jamaica.

## TUPED382

### THE LONG ROAD TO LIFE INSURANCE

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**Background:** The conclusion of a life insurance policy can have various aims:
• Providing a measure of financial security for the partner/family if the insured passes away
• Economic help in old age
• Protection of mortgages
Who wishes to become self-employed or buy a house/apartment, has to meet certain financial conditions. The required capital can be partly obtained as a mortgage. Getting a mortgage usually requires to present a life insurance. Until recently, people living with HIV were completely excluded from life insurance in Switzerland and therefore mostly unable to realize their dream of becoming self-employed or buying an own home.
**Description:** In 2013 the re-insurance company SwissRe carried out a study about the insurability of HIV-positive people treated with antiretroviral therapy. It was a collaborative analysis of HIV cohort studies throughout Europe. The study concluded that over 50% of those who are HIV-positive may be eligible for life insurance. Most of those living with HIV have a virtually normal life expectancy if being treated with antiretroviral therapy. This means that it is no longer justified to exclude HIV-positive people from life insurance if certain conditions are met (high CD4-count, no co-infection with hepatitis, etc.). Referring to the SwissRe study, the Swiss Aids Federation contacted Switzerland's life insurers and confronted them with the study results.
**Lessons learned:** Although the re-insurer specified in its study the conditions under which a HIV-positive person can be insured, the insurers inquired did not agree to provide life insurance to people living with HIV, even if they complied with the conditions mentioned above. After the sobering feedback, the Swiss Aids Federation established a cooperation with an insurance broker. He clarifies with the clients if the conditions presented by SwissRe are met and submits the application along with a medical certificate to the insurance companies.
**Conclusions/Next steps:** By interposing an insurance broker, several insurers agreed to make a life insurance contract. In a next step, the insurance companies will be contacted again to detect whether they are going to change their negative attitude considering the fact that some insurance companies now agree to supply life insurance to people living with HIV.

## TUPED383

### DISCRIMINATION IN HEALTHCARE SETTINGS AGAINST PLHIV IN MYANMAR

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**Background:** Marginalized communities across Asia face myriad human rights violations due to stigma, discrimination and weak or egregious policy and legal frame works that violate or fail to protect their rights. Communities face widespread social stigma, legislative and policy restrictions, and punitive legal frameworks that result in rights violation, including discrimination at health care settings.
**Description:** To address and end discrimination against PLHIV and KP at healthcare setting in Asia, Myanmar Positive Group was selected as one of the CBOs from Myanmar to participate in Asia Catalyst's Regional Human Rights Training Program. The program included sub-grant for documenting rights violation against PLHIV at healthcare setting. MPG together with Aye Myanmar Association conducted 40 interviews in 5 provinces in Myanmar.
**Lessons learned:** Various forms of discrimination at health care settings were documented in Myanmar. PLHIV were denied services following disclosure and were asked to find other service providers. When services were provided, PLHIV faced differential treatments as a direct result of their HIV status. This included forced additional expenses, publicly humiliating treatment, practices that breach privacy and confidentiality such as segregated waiting areas and bed spaces. Furthermore, service providers were also found deliberately engaging in unnecessary disclosure of the HIV status of the patient without consent. Concerning findings also included practices of coercive sterilization of Women living with HIV seeking pregnancy related services. These negative experiences discouraged PLHIV to seek timely health services resulting into sub-standard physical health and poor psychological state including added financial burden.
**Conclusions/Next steps:** The evidence clearly demonstrates that PLHIV and key population are not able to enjoy rights to health and non-discrimination enshrined in the Constitution of Myanmar. Ministry of health must take steps to address this and ensure zero discrimination at health care centers against PLHIV. MPG is mobiliz-

ing communities to urge the Ministry of health to issue a directive to health service providers to provide appropriate ethical capacity building to staff at all levels on discrimination and rights to health of PLHIV in Myanmar.

## TUPED384

### PAYING FOR SECRECY: YOUNG PEOPLE LIVING WITH HIV'S STRUGGLE TO SECURE SEXUAL AND REPRODUCTIVE HEALTH SERVICES

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**Background:** Integrated HIV-care and treatment and sexual and reproductive health (SRH) services are a key priority as part of a holistic response to adolescent health. Research has tended to focus on supply-side service delivery issues (such as creating adolescent friendly services) at the expense of understanding how young people navigate their way through an integrated system. We explored experiences of young people living with HIV (YPLWH) accessing SRH services.
**Methods:** YPLWH (n=8) were trained as peer researchers to undertake qualitative interviews with their peers (aged 16-25) in Zimbabwe (n=24) and South Africa (n=24). There were equal numbers of young men and women. In Zimbabwe, participants were recruited from support groups of YPLWH; in South Africa, participants on treatment were recruited through clinics. Discussions focused on access to SRH information and services. English language transcripts were thematically analysed.
**Results:** Young people in both Zimbabwe and South Africa expressed reluctance to access SRH information and supplies through their normal HIV clinics. Participants placed high value on anonymity while seeking SRH services so as to avoid potential judgement by their regular HIV providers and other community members attending the same clinics where they accessed care, even if they had not experienced this previously. This was primarily in response to their desire to retain a positive relationship with their primary healthcare worker who supported their HIV treatment and care. They felt raising issues of sex and SRH could break this relationship. A number of participants described paying to ensure secrecy around SRH seeking behaviour manifested itself in two ways: 1) buying condoms as opposed to collecting them for free at a clinic and 2) seeking out SRH services, information and commodities at alternative clinics, even though this involved extra costs for transport and user fees.
**Conclusions:** YPLWH demonstrated high levels of agency in ensuring privacy and avoid incurring censorship and discrimination while seeking access SRH information and commodities. Values clarification training for HIV healthcare workers is recommended and alternative innovate models of SRH/HIV integration should be considered.

## TUPED385

### A GROUNDED THEORY STUDY OF HIV-RELATED STIGMA IN US-BASED HEALTHCARE INSTITUTIONS

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**Background:** HIV-stigma is pervasive in US-based healthcare settings as well as abroad. People living with HIV (PLH) report stigmatization from healthcare providers. While various studies have assessed stigma from the perspectives of PLH, there is a significant dearth of scholarship on healthcare worker conceptualizations of stigma. The aim of this study, therefore, was to develop a substantive theory that explains how healthcare workers perceive stigma.
**Methods:** Grounded Theory (GT) methods were used in the conduct of this study. Twenty-seven (N=27) healthcare workers from two US-based medical institutions were engaged in in-depth semi-structured interviews about HIV-stigma. Participants were queried on origins, triggers, manifestations, and impacts of HIV-stigma. Theoretical sampling and saturation were used for recruitment and data collection. Data analysis included open, axial and selective coding, comparative methods, memo-writing, and diagramming. MAXQDA was used to analyze and organize the data.
**Results:** Participants expressed that negative historical depictions of HIV/AIDS and unequal provider-patient power dynamics were responsible for stigma and subsequently led to fears of contagion, high variability in medical education, and changes in institutional norms. Respondents also noted that initial portrayals of HIV as a "death sentence" narrowed the field of specialization (overspecialization), making it difficult for non-specialists to care for PLH. Manifestations of HIV-stigma were described as preventive measures that exceed recommended guidelines, care refusal, unnecessary referrals to HIV-specialists, and overall reduced contact with PLH. Two findings were particularly striking:
One, overspecialization of HIV management and contact reduction diminishes normalization of HIV and result into "unintended stigma".
Two, HIV-stigma not only impacts patients, but also leads to harmful outcomes for providers including work-related anxiety and noninvestment in patients with HIV. Study participants asserted the importance of health communication in provider-patient relationships, PLH-driven medical trainings, and patient empowerment.
**Conclusions:** The emergent theory revealed that healthcare workers perceive HIV-stigma as an injurious process that disrupts the development of therapeutic patient-provider relationships. Additionally, HIV-stigma directed from medical providers may be "unintended" due to field overspecialization and contact reduction with PLH. The current qualitative work may inform future research on HIV-stigma reduction strategies within healthcare settings.

## TUPED386

### COMMUNITY RESPONSE TO HIV-RELATED STIGMA AMONG HEALTHCARE PROVIDERS IN UKRAINE: ALL-UKRAINIAN NETWORK MODEL

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**Background:** According to the survey «Index stigma of people living with HIV» (2013), conducted in more than 50 countries, PLWHA in Ukraine experience stigma and discrimination (S&D) from the health care professionals (HCP), which directly affects their adherence to treatment. To overcome S&D among HCP All-Ukrainian Network of PLWH implemented 4-component model in pilot healthcare facilities (HF), which includes HCP training to reduce stigma, implementing of PLWH friendly policies, legal support to S&D cases. Implementation of the model was accompanied by a study of its effectiveness. The objective of the study was: assess of HIV-related S&D among HCP and determines changes in the level of S&D after the intervention.
**Methods:** The study was conducted in 12 HFs. Method, standardized face-to-face interview with HCPs in their workplace. The study has quasi-experimental design, is conducted by a panel and has two waves - before the model implementation (2013) and after (2014). The first wave sample - 1324 respondents, the second - 1441.
**Results:** The first wave of the study showed rather low level of knowledge and high level of stigma. The results of the second wave showed positive changes as a result of the model implementation: the level of knowledge about HIV transmission changes from 54% to 64%. Level of stigma caused by fear of being infected changed from 24% to 9%. Although 89% of HCP believed that treating HIV+ patients and other patients should be the same, herewith 57% (28% - the second wave) believe that PLWH should be treated separately from others to protect the general population from infection and 22% (17% - the second wave) say that if the HCP is afraid of infection from the patient, he may refuse to treat him. The positive dynamic is observed in the practice of disclosure of HIV status of the client without his/her consent - from 56% to 40%.
**Conclusions:** The model introduced in pilot HF in 2014-2015, has shown its effectiveness in reducing S&D towards PLWH among MPs. In 2016 this model extended to additional 26 medical institutions in four regions of Ukraine.

## TUPED387

### ADDRESSING STIGMA AND DISCRIMINATION IN THE UNITED NATIONS WORKPLACE

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**Background:** UN Cares, the HIV workplace programme for the United Nations system, has for a decade provided communication, training and other services to enable this global workforce to address HIV, including HIV-related stigma.
In 2013 UN Cares conducted a survey assessing the readiness of UN Cares teams globally to address stigma and discrimination in the UN workplace on issues related to HIV.

While many respondents were supportive, others said they would not or were unsure if they would feel comfortable working alongside the following colleagues: transgender: 16.7%; bisexual: 15.5%; lesbian (female): 14.0%; gay (male): 12.5%; HIV-positive: 6.1%.
60% of respondents thought the UN system should better address the needs of UN staff who identify as being from one or more of the above population groups, as well as 92.4% who thought this for persons with disabilities, and 63.9% for persons with mental health conditions.
**Description:** Therefore, UN Cares developed in 2015 four learning modules together called UN for All, addressing human rights, LGBTI issues, disability and substance use in the UN workplace.
Each module relies on personal accounts of UN staff who are part of each of the population groups. Participants are exposed to concepts and the latest facts, personal accounts promote empathy, and the UN workplace is examined through existing policies including the Universal Declaration of Human Rights. Modules are dynamic, hands-on and interactive.
**Lessons learned:** In late 2015, UN Cares trained 211 UN staff in 93 countries from 29 UN organizations to facilitate these sessions with colleagues. On a scale of 1 to 5, aggregate feedback so far is: Core module, 4.43 and, LGBTI module, 4.48. One comment: "This was a real eye-opener for me. I took many things for granted and realized that I did not know even the terminologies (LGBTI)."
Even in contexts where discussing the rights of LGBTI persons is difficult, setting an organizational expectation of respect and inclusion, and referring to human rights agreements, can help.
**Conclusions/Next steps:** UN Cares will continue to implement UN for All across the organization and share lessons.

## TUPED388

### HEALTHCARE WORKER REFLECTIONS ON THE RELATIONSHIP BETWEEN HEALTH FACILITY SPACE AND HIV STIGMA IN 21 SOUTH AFRICAN AND ZAMBIAN FACILITIES: THE ELEPHANT IN THE ROOM OF HIV SERVICE DELIVERY?

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**Background:** Accessing antiretroviral treatment (ART) on a routine basis can be accompanied by anticipated and/or experienced stigma linked to 'being seen' at the health facility. The relationship between health facility spaces and HIV stigma for people accessing HIV-related services, and the added paradox of healthcare workers often 'hiding' their own HIV status in these spaces, is 'the elephant in the room' of HIV service delivery.
**Methods:** Healthcare workers key to HIV services (ART delivery and HIV counselling and testing) were interviewed in 21 urban government health facilities in South Africa (9) and Zambia (12), August to December 2015. This included at least three healthcare workers per facility. Participants completed either a mapping exercise or an in-depth interview (IDI). Both activities documented healthcare workers' perceptions and experiences of 'how comfortable' people coming for HIV testing and PLWH 'feel' in different areas of the facility and awareness of policies/guidelines on infection control, patient rights, stigma reduction and HIV. 89 healthcare workers (39 facility workers and 50 lay workers - 21/89 PLWH) participated; 3/89 participated in both mapping and IDIs. Structured observations were also carried out.
**Results:** Participants found talking about stigma in 'their' facility hard. The mapping revealed a relatively consistent pattern of PLWH fearing to be seen at the TB corner and in the general waiting and pharmacy areas as opposed to feeling comfortable in the specialised HIV spaces. Items, like HIV testing slips, could be stigmatising. There was low awareness of policies/guidelines. Some health facilities had a separate ART system for healthcare workers LWH who were anxious about being identified, rarely disclosed to co-workers and identified 'self-stigma' as the strongest type of stigma.
**Conclusions:** Tailored interventions are needed for stigma related to health facility layout for everyone accessing HIV-related services, including healthcare workers living with HIV. Removing HIV identifiers (e.g. signs, coloured referral slips), putting policies/guidelines into practice, introducing integrated services, promoting all clinic spaces as 'HIV equal' and 'stigma free', 'self-stigma' reduction strategies and PLWH support group activities might mitigate stigma. Additional interventions for healthcare workers LWH - a 'key population' facing additional challenges accessing HIV services - urgently need careful consideration.

## TUPED389

### HEALTH CARE WORKER ATTITUDES AND BEHAVIOURS TOWARDS KEY POPULATIONS IN SOUTH AFRICA AND ZAMBIA: A CROSS-COUNTRY ANALYSIS WITHIN THE HPTN 071 (POPART) TRIAL

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**Background:** HIV-related stigma within healthcare settings may act as a barrier to the uptake and delivery of HIV care, particularly among key populations (KP) such as female sex workers (FSW) and men who have sex with men (MSM). This work describes attitudes and behaviours towards KP among health workers (HW) involved in the delivery of a package of HIV prevention interventions aimed at reducing community level HIV incidence. The work is nested within the HPTN071(PopART) trial, conducted in 9 communities in South Africa (SA) and 12 in Zambia (Z).
**Methods:** Data were collected from all facility- and community-based HW working in study communities who consented to participation in a quantitative survey (N=1875). HW were asked to respond to the same 9 statements about their perspectives on three populations (young women who become pregnant before marriage, FSW, and MSM) using a 4-point Likert scale of strongly agree, agree, disagree, and strongly disagree. The statements pertain to community-level stigma, co-worker stigma, and personal attitudes. We calculated combined proportions of HW who agreed or strongly agreed with each statement for each KP, stratified by country.
**Results:** In both countries, HW agreed more with statements about community-level stigma than co-worker or personal stigma. The statement 'People sometimes talk badly about' each KP received the highest proportion of agreement across all statements (range across 3 KP, SA:81.1-91.5%; Z:89.1-94.4%). For the statement 'My co-workers sometimes talk badly about' each KP, agreement was much lower (range SA:12.4-14.4%; Z:21.0-23.3%). Agreement with the statement 'If I had a choice, I would prefer not to provide services to' each KP was lower still (range SA:9.3-10.2%; Z:4.4-10.5%). Overall, agreement with statements about attitudes towards young women who become pregnant before marriage was lower than for attitudes towards FSW and MSM. Agreement with all statements was generally higher in Zambia than South Africa.
**Conclusions:** Our analyses suggest that stigma towards KP may exist within health care settings in PopART study communities and that the level of stigma perceived by HW may be higher in Z than SA. Further analyses will investigate how stigmatizing attitudes towards KP might differ across types of HW, and across socio-demographic characteristics.

## TUPED390

### FLAG MY VOICE: PAIRING INFLUENTIAL LEADERS AND LGBT COMMUNITY MEMBERS TO ELIMINATE STIGMA AND DISCRIMINATION IN RURAL TOWNSHIPS OF MPUMALANGA

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**Background:** The South African National Strategic Plan (NSP) on HIV, TB and STIs (2012-2016) includes the promotion of human rights and justice, as both play a paramount role in ensuring equity in access to and uptake of services. However, high levels of stigma and discrimination directed at Lesbian Gay Bisexual and Transgender (LGBT) community members prevent the achievement of equity. Under the "Flag my Voice" programme we used a challenging yet innovative approach of supporting LGBT members to form partnerships with local influential leaders to give a voice to and bring about change in attitudes of stigma and discrimination in the Gert Sibande (GS) district communities.
**Description:** Ten local LGBT volunteers participated in prevention trainings and interactive programme design meetings. Participants were supported to approach influential public figures, such as police, taxi drivers and business owners, to work in pairs. Each pair developed a specific action plan using print media, radio and outreach activities, capitalizing on the influential positions of the public figures. These interventions resulted in: a) continued dialogue between LGBT and the community about LGBT rights; and b) the diffusion of positive behavior change. Results were documented using digital stories and presented during community feedback events, inspiring the expansion of the programme to include municipal departments, CBOs and NGOs in addressing similar issues.

**Lessons learned:** Availability, disinterest and self-stigmatization present real challenges when working with public figures. LGBT volunteers need adequate information and training to successfully mobilize potential partners. Strong religious and cultural beliefs continue to contribute to high stigma and discrimination; however, working with non-gay identified leaders in the pairs provided a strong new entry point into the community. Our use of digital stories to capture and promote positive messaging ensured continuity and helped sustain the programme with new working pairs.

**Conclusions/Next steps:** Community level stigma and discrimination prevention programmes can be effective when interventions have a hands-on approach, and are designed and implemented by local individuals, organizations and departments. Establishing new communication pathways through the formation of pairs encourages knowledge transfer, the development of relevant shared goals, and more integrated prevention interventions.

## TUPED391

### CLASSIFICATION OF REFUSALS TO PROVIDE CARE EXPERIENCED BY PLHIV: A PROPOSAL STEMMING FROM A COMMUNITY-BASED SITUATION TESTING SURVEY, APRIL 2015

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**Background:** Although provider refusal and discrimination in accessing dental and gynaecological care are frequently reported by persons living with HIV (PLHIV) in France and the rest of Europe, they are very poorly documented with official data.
French law provides for a concrete legal classification of the reasons for refusing to provide care only when such refusals are directed at low-income individuals (because of a specific health insurance coverage): outright refusals; discouragement strategies or disguised refusals (unusually long waits for an appointment, abusive or repeated referrals to a colleague, etc.); and discriminatory practices (a specific protocol, a breach of doctor-patient confidentiality, etc.). This classification was transposed to the context of PLHIV.
To document and classify possible differential treatments in accessing care between PLHIV and persons assumed to be HIV-negative in France, AIDES, a community based organisation for the fight against HIV and hepatitis, conducted a situation testing survey.

**Methods:** The situation testing survey which used a community-based research protocol, was carried out in April 2015 among 440 dental offices and 116 gynaecology offices randomly selected in 20 French cities.
The replies from each medical office to two medical appointment seekers with the same sociodemographic characteristics, differing only in their HIV serological status, were observed.

**Results:** Among the 440 dental offices that were contacted, there were 3.6% outright refusals to provide care, 30% disguised refusals to provide care, and 16.8% instances of discrimination attributable to HIV. For the gynaecology offices, the figures were, respectively, 1.7%, 4.3% and 17.2%.

**Conclusions:** There were refusals to provide care, both outright and disguised, and discrimination directed at PLHIV when they requested an appointment. The classification of reasons for refusing to provide social care is fully transposable and suited to HIV-phobes' refusals to provide care, which fall under the same illegal practices. This situation testing survey made it possible to test this classification in real-world situations for the first time in France to reveal violations of medical ethics. Its effectiveness proves that this classification should be extended and endowed with a genuine legal framework.

## TUPED392

### HIV-RELATED STIGMA AMONG SPANISH-SPEAKING LATINOS IN AN EMERGING IMMIGRANT RECEIVING CITY IN THE UNITED STATES

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**Background:** Latinos infected with HIV in the United States (U.S.) present to health care services with more advanced disease than their non-Hispanic counterparts, with undocumented foreign-born men at highest risk for delayed diagnosis and presentation to care. HIV-related stigma has been associated with a reluctance to test for HIV among Latinos in the U.S. Despite the harmful impacts of community-wide stigma on HIV prevention and linkage to care efforts, there is limited data on the nature and degree of HIV-related stigma in urban Latino immigrant communities. Understanding and combating stigma in the community is crucial to improving HIV prevention and outcomes. Thus, this study assessed community HIV-related stigma within an emerging Latino immigrant receiving city.

**Methods:** We conducted a brief survey among a convenience sample of 312 Spanish-speaking Latinos. HIV-related stigma was assessed through 6 items selected to incorporate multiple stigma domains: fear of transmission and disease, anticipated stigma, association with shame, blame and judgment and support for discriminatory actions or policies against PLHA. Associations between stigma items, sociodemographic characteristics and HIV testing history were considered.

**Results:** We found a high prevalence of stigmatizing beliefs, particularly with regards to fear of infection due to an inaccurate understanding of HIV transmission and association with blame, shame and judgment about people infected with HIV. Gender, education and religiosity were significantly associated with stigmatizing HIV-related beliefs. For example, men were 3.4 times more likely to hold more than 3 stigmatizing beliefs than women, and were also twice as likely as women to report feeling hesitant to test for HIV for fear of people's reaction if the test is positive.

**Conclusions:** Our findings revealed several attitudes and beliefs that likely propagate HIV-related stigma in the Latino immigrant community. These findings can help inform future stigma interventions in this community. In particular, we were able to distinguish between drivers of stigma such as fear and moralistic attitudes, highlighting specific actionable items. Understanding community level HIV-related stigma is a first step to developing culturally sensitive interventions that address the needs of the growing Latino immigrant population in the U.S.

## TUPED393

### THE HUMAN RIGHTS AND HIV/AIDS PROGRAM: A COMMUNITY-BASED PROGRAM TO PROTECT THE RIGHTS OF PEOPLE LIVING WITH HIV (PLHIV)

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**Background:** There is a public health paradigm under which respect for human rights is a key component of HIV prevention strategies. Indeed, it is now accepted that the non-respect of these rights contribute to spread the epidemic. Based on this, COCQ-SIDA (Quebec-wide coalition of organizations working on HIV/AIDS) implanted a Human Rights and HIV/AIDS Program (HRHAP) in 2005. The goal of this program is to promote and to protect the rights of PLHIV and support all COCQ-SIDA's members in their own strategies for promoting human rights.

**Methods:** The HRHAP performs legal monitoring of violations of PLHIV's rights and develop common policies and advocacy strategies. Moreover, an HIV information service (HIV Info Rights) was created in 2009 within the HRHAP. This service provides the opportunity for PHAs to receive free information and legal assistance on matters related to their serological status (discrimination, insurance, access to care, criminalization ...). Since its inception, more than 1,200 people have used HIV Info Rights: the number of users is increasing continuously, from 169 users in 2009/2010 to 230 in 2014/2015.

**Results:** The HRHAP has wrote a policy position on the criminalization of HIV exposure, representing the position of all COCQ-SIDA's members, and has participated in several cases at the Supreme Court of Canada. Also, with the support and involvement of its members, the HRHAP has carried out a community-based research project on access to dental care for PLHIV. This research allowed the HRHAP to inform dental care professionals about discrimination and access to care within the dental care services.

**Conclusions:** The HRHAP is conducting an advocacy project on discrimination in employment against PLHIV in particular due to the use of health questionnaires during recruitment process. In this context, the HRHAP coordinated the produc-

tion of a short film about this issue and conducted a survey on discrimination in employment. The HRHAP plans to make concrete recommendations to political and judicial actors to promote access and retention in employment for PLHIV. The HRHAP would also develop HIV Info Rights service and reach people who do not attend community-based organizations.

## TUPED394

### MY HEALTH, MY RIGHTS: SUCCESSFULLY CHANGING A HOSTILE LEGAL AND HIV ENVIRONMENT FOR TRANSGENDER WOMEN AND EFFEMINATE GAY MEN IN PUEBLA, AGUASCALIENTES AND MEXICO CITY METROPOLITAN AREA

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**Background:** Mexico has a Human Rights (HR) legal framework which includes the HR of LGBTI persons, who continuously experience institutional violence, abuse and harassment which jeopardize their lives and hinder their access to security, justice and healthcare. Gender based violence and social homo/transphobia lead to high levels of hate crimes, hence the need to address such violence urgently.
**Description:** : "My health, my rights" (Mi Salud, Mis Derechos) identified, documented, analyzed and made visible the experiences of LGBTI populations regarding abuses and violations of their HR by health, security and justice authorities due to high prevalence of stigma and discrimination. The program documented how health, security and justice service providers abuse the HR of transgender women and "effeminate" gay men, especially when HIV is present, a factor that allows for further discrimination and violence. Participatory community assessments, community engagement strategies and practical participatory tools enabled beneficiaries to tailor public political actions to the social realities and lived experiences of the LGBTI communities. A data base identified the perpetrators as well as the norms, regulations, laws and international treaties being violated. Evidence-based advocacy and community mobilization helped changing harmful and abusive municipal regulations.
**Lessons learned:** Meaningful involvement of target populations in evidence-based advocacy interventions is a key element to ensure that legal changes in a hostile environment can take place. Establishing strategic alliances with key stakeholders facilitates entry to decision-making spaces. The program has reached 720 most at risk people MARP mostly Transgender women and effeminate gay men; documented 120 cases of HR violations; held 15 participatory community assessments, and 9 awareness sessions with police and justice staff and produced two practical guides to raise awareness among healthcare providers and police.
**Conclusions/Next steps:** Program outcomes indicate that promoting structural changes in close partnership with affected communities and key decision making allies, is an effective way to achieve structural changes in the environment, opens a path to include new partners already involved in other local initiatives, and contributes in reducing the risks of HIV linked with gender based violence and HR abuses..

## TUPED395

### STIGMA AND DISCRIMINATION EXPERIENCES IN HEALTH CARE SETTINGS MORE EVIDENT AMONG TRANSGENDER PEOPLE THAN MALES HAVING SEX WITH MALES (MSM) IN INDONESIA, MALAYSIA, PHILIPPINES AND TIMOR LESTE: KEY RESULTS

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**Background:** To investigate the experience of stigma and discrimination (SAD) in health care settings (including HIV/AIDS and sexual and reproductive health services) among Males having Sex with Males (MSM) and Transgender (TG) persons in South East Asia, a four-country study conducted by the ISEAN-Hivos Regional Program (Global Fund HIV/AIDS Grant). It aims to provide information on the status of stigma and discrimination (SAD) among MSM and transgender persons using a questionnaire developed based on the forms of SAD as described in the Stigma and Discrimination Index Questionnaire.
**Methods:** The study's questionnaire described SAD in terms of the respondents' self-reported perception of: 1. Refusal of health care services, 2. Physical maltreatment, 3. Verbal maltreatment, and 4. Provision of health care service below standards. A total of 2,409 respondents, 30% (n=719) of whom are self-identifying male-to-female transgender persons, participated in this study. There were 264 transgender respondents from Indonesia, 204 in the Philippines, 174 in Malaysia, and 77 in Timor Leste.
**Results:** Overall, the results indicate that significantly more transgender respondents experienced SAD in health care settings compared to MSM. In terms of proportion, verbal maltreatment was the most commonly experienced (24.26%), followed by receiving a perceived low quality of health service (22.57%), being refused access to health care services (18.23%) and lastly, physical maltreatment (18.21%). Comparing across countries, there were proportionately more SAD experiences reported by transgender respondents in Timor Leste (41.06%), followed by Malaysia (32.67%), Philippines (7.47%) and Indonesia (2.0%).
**Conclusions:** The result of the SADS suggests that there is a wide variation across the four countries in terms of transgender persons experiencing stigma and discrimination. Verbal maltreatment is the topmost common form of SAD among transgender respondents. The study indicates that transgenders' personal experiences of SAD are more frequent than MSM. Also, about one third of the transgender respondents continue to experience SAD. Almost 60% of the transgender respondents, however, did nothing to address SAD. SAD still exists in health care settings, which needs support for more interventions to significantly decrease, if not totally eradicate SAD in its many forms.

## TUPED396

### HIV AND SEXUALITY RELATED MULTIPLE STIGMA AND LOSS OF SOCIAL SUPPORT EXPERIENCED BY HIJRA PERSONS IN MUMBAI, INDIA

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**Background:** In India, the marginalized subgroup of transgender, referred as Hijras constitute a high-risk group with 8.8% HIV prevalence. HIV related stigma is multifold when the person is also a Hijra person. A study, SHAKTI, funded by ICMR and NIH, focused on the aspects of stigma of HIV and sexuality among Hijra persons in Mumbai.
**Description:** A qualitative research study was undertaken to explore the multiple stigma related issues among Hijra communities. Data from Hijra persons was collected through 6 in-depth interviews and 7 FGDs covering a total of 50 Hijra persons.
**Lessons learned:** Hijra persons especially those in commercial sex were vulnerable to HIV, faced multiple stigma of sexuality, gender non-conformity, sex work and HIV in health care settings. HCPs in particular were trans phobic and were less knowledgeable about sociocultural aspects and health issues faced by Hijra persons which resulted in lack of competent and satisfactory health care services to Hijra persons. Hijra person reported negative attitudes from doctors and from nurses and ward boys. The attitude of these health care providers changed particularly upon learning HIV status of the Hijra persons. The negative attitudes from support staff accompanied by neglect and dissatisfactory treatment from providers at the public hospitals and ART centers resulted in Hijra persons postponing opportunistic infections' treatment and routine health check-ups. HIV status also led to ostracization by `Gurus' and loss of livelihood on account of outing of their HIV positive status to peers and potential clients.
**Conclusions/Next steps:** Hijra persons fall through the HIV care continuum due to the institutional and social factors. In order to retain Hijra persons in the HIV care, there is a need to develop intervention at two levels. Firstly, at the institutional level, there is an urgent need to implement evidence-based trainings among health care providers to promote understanding in terms of sex, gender, sexuality and health care challenges faced by Hijra. Secondly at the community level, there is a need to work with Hijra `Gurus' about `positive living' so that loss of social support is minimized for the HIV positive Hijra persons and retain them in HIV care continuum.

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## TUPED397

### STIGMA AND DISCRIMINATION FACED BY PEOPLE LIVING WITH HIV/AIDS AT HEALTH CARE SETTINGS

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**Background:** The People Living with HIV (PLHIV) faces stigma &discrimination at workplace, school settings and healthcare settings. This study aims to further recognize the underlying roots of stigma and discrimination associated with PLHIV in health care settings in India and factors that may facilitate promotion of more equitable attitudes and actions to support them.
**Methods:** The study was conducted in 17 districts covering 6 states of India. A total of 1,260 health care providers (HCPs) were selected for the study. The target group for the study was HCPs— Primary Group (medical staff) and Secondary Group (non-medical staff). Interviews with 635 doctors, 266 medical students, and 358 non-medical HCPs were conducted during the month of July 2014
**Results:** The study reveals that more than 50% of HCPs had incorrect knowledge of transmission through blood splashes to eyes or mouth. More than 75% of all HCPs believed sputum was a transmitter of HIV. Apart from incorrect knowledge, misconceptions such as the possibility of HIV transmission through touch, sharing clothes or utensils, mosquito bites, and breath were prevalent among HCPs. The medical staff reported taking extra precautions such as double gloves (77%), PEP (68%), boots (67%), vaccines (39%), and complete avoidance of the patient (6%) while dealing with an HIV-positive patient. Discriminatory practices were also found as 53% of medical staff reported that invasive procedures on patients from high-risk groups (sex workers, poor, etc.) were postponed until their serostatus was confirmed.
**Conclusions:** The discriminatory comes in form of segregation of PLHIV from other patients, labelling of beds, delay in treatment, breach of confidentiality, withholding HIV test results from patients, disclosure without consent, mandatory HIV-testing before invasive procedures, and providing insufficient or inadequate counseling. Gaps in knowledge, lack of training and policies, fear of contagion, and self-identified inefficiencies of doctors to treat PLHIV, contributed to an environment of stigma and discrimination toward PLHIV within health facilities. Need for an intervention targeting medical staff members addressing knowledge gaps, stigmatizing attitudes, and discriminatory practices within the health facilities have been identified by the study findings.

## TUPED398

### ADVANCING LABOUR RIGHTS OF PERSONS LIVING WITH HIV IN ARGENTINA

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**Background:** Fundación Huésped (FH) observed a high percentage of complaints about employment regarding stages of applications and employer-employee relations at the moment when the person's HIV status becomes known. Our principal focus concerns discrimination in recruitment, and following hiring, due to HIV testing and regular medical exams.
This discriminatory attitudes continue to exclude a high number of HIV-positive individuals from the workforce.
**Description:** In the last 12 years, Argentina continues reaching toward employment rights as fundamental human rights. Via policy, incorporation of international criteria through our courts and the development of political agreements, the concept of the worker being subject to fundamental human rights has developed. Still, FH has daily pointed out discriminatory labour practices which are believed to be protected by legal dilemmas, and continue to prevent equal access and opportunity in employment.
**Lessons learned:** As a result of the advocacy of FH, in May of 2015, Argentina's Ministry of Labour issued Resolution 270 allowing the reporting of laboratory studies seeking the HIV status of job applicants. Thus, it stops the previous ¨limitless power of choice¨ by an employer, instead preserving human rights to dignity and equal treatment of applicants.
This resolution creates a force of law stating this is the "most favorable to the worker¨ and it enhances the scope of anti-discrimination rules in force, in Argentina, extending their application not only to the workplace but also to the pre-contractual period. To help properly apply these rules, FH is in a committee with community organizations and various government sectors. Difficulties faced in the implementation, dissemination and compliance with the resolution demonstrate the importance of this ongoing dialogue.
**Conclusions/Next steps:** Currently, Persons Living with HIV (PLWHIV) have no limits in their work goals, and can apply to any job of their choice for which they possess the required skills and technical capabilities. Living with HIV is no impediment to career development, it does not mean a greater cost to the employer, nor does it jeopardize the health of other employees. Therefore, FH continues to strive to break down all barriers that prevent PLWHIV access to work, and protection of effective implementation of Resolution 270/2015.

## TUPED399

### HIV-RELATED STIGMA AND DISCRIMINATION IN HEALTHCARE: FINDINGS FROM THE STIGMASURVEYUK 2015

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**Background:** Stigma and discrimination remain important barriers to HIV prevention and care. We examine the association between experiences of HIV discrimination in healthcare with worry about and avoidance of care.
**Methods:** STIGMASurveyUK 2015 is a community led project. Participants reported their experiences at a range of health care settings in the previous 12 months in an online anonymous survey. A 'discrimination' composite was based on the sum of scores of five questions regarding: being treated differently to other patients, refused treatment, given the last appointment of the day not by choice, and experiencing negative comments about people living with HIV or excess attention to barrier protection by healthcare workers. Descriptive, univariate and multivariate analyses were performed.
**Results:** 1528 participants (97%) completed the healthcare section. Mean age was 44 years (range 18 - 83 years). 1152 (76%) were male (948 [82%] identified as men who have sex with men) and 344 (23%) female (322 [93%] identified as heterosexual). 555 (36%) identified as Black, Asian or minority ethnic.
41% of participants (628) reported experiencing discriminatory treatment in a healthcare setting; 46% (147) of Black African or Caribbean participants reported discrimination compared to 41% (385/699) of white British ($p< 0.001$); and 18/32 (56%) trans compared to 41% of other participants ($p=0.034$).
Overall 60% (910) reported worrying about being treated differently to other patients and 29% (439) reported avoiding healthcare when required.
Of the 628 participants who experienced discriminatory treatment, 89% and 54% (n=628) reported worrying about being treated differently and avoiding care respectively. These figures were significantly higher compared to the 766 participants who reported no discrimination (27% and 10% respectively; $p< 0.001$ for both).
Experience of discrimination in healthcare was strongly associated with both worry about discriminatory treatment (aOR 14.25, *CI10.10, 20.09*) and avoidance of care when required (aOR 8.70, *CI6.27, 12.07*) after adjustment for demographics, diagnosed depression, time of diagnosis, disability, injecting drug use, self-image and resilience.
**Conclusions:** Experiences of discriminatory treatment in healthcare settings are strongly and independently associated with worry about care and avoiding seeking care when required. Sensitivity training targeted at healthcare workers to reduce discriminatory treatment of HIV-positive patients is required.

## TUPED400

### MEASURING STIGMA AND DISCRIMINATION AMONG PEOPLE LIVING WITH AND AFFECTED BY HIV IN CENTRAL UGANDA

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**Background:** Stigma and discrimination related to HIV&AIDS remain a barrier to access and utilization of services. In 2013, Uganda conducted her first ever PLHIV stigma index survey and key to note was to apply the tool to the regions to determine specific stigma levels. This has provided evidence that is used as an advocacy tool for effecting changes in the HIV&AIDS response in the region.
**Methods:** A standard structured cross-sectional survey design provided by GNP+, ICW, IPPF and UNAIDS was adopted for this survey. Specific methodological steps were derived from the accompanying PLHIV Stigma Index User Guide. The sample

was 2018 (1380 female, 638 males) PLHIV and affected persons. Ten districts from Central Uganda were represented. Data collection was completed in January 2015 by PLHIV.

**Results:**

§ Internal stigma manifests more than external stigma (53.7% versus 46.3%), more among women than men (60% versus 40%) and is highest in age group of 30-39 years. Thirty percent (30%) of PLHIV had low self-esteem and blamed themselves for being affected by HIV. However, stigma reduces with number of years someone lives with HIV

§ Stigma manifested more among PLHIV than those affected at 57.7% and 27% respectively

§ External stigma manifested itself largely through gossip (47.7%), verbal abuse (30%) and physical threats (14%). Exclusions from education and health services was minimal but quite high for those refused employment due to HIV status

§ Because of stigma, 40% had decided not to have children, 24% not to have sex, 21% not to get married and 10% not to attend social gatherings

§ Understanding of policies and laws stood at 63% but fewer people (38% rural, 55% urban) had ever discussed the contents contained in the documents. When rights were violated, only 39% had confronted or educated someone about it.

§ HIV testing was done largely on a voluntary basis and had disclosed status to health workers (85.5), family members (68%), social workers (64%).

**Conclusions:** The continuum of stigma has changed from wide spread social exclusion to internalized feelings and fears. Stigma reduction interventions should be premised on individual than the general community.

## TUPED401

### HIV-RELATED STIGMA WITHIN GP PRACTICES IN THE UK: FINDINGS FROM THE STIGMASURVEYUK 2015

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**Background:** The STIGMASurveyUK aims to identify how people living with HIV in the UK experience HIV-related stigma and discrimination in varied settings. We report on the experiences of people living with HIV within healthcare environments.

**Methods:** The STIGMASurveyUK was developed by people living with HIV and community members, in collaboration with clinicians and researchers. Adults living with HIV in the UK were recruited to complete an online survey from December 2014 to April 2015. Responses were anonymized, stored securely and analysed with community engagement.

**Results:** 1528 (97%) of participants completed the healthcare section. Mean age was 44 years (range 1883 years). 1152 (76%) were male (948 [82%] identified as men who have sex with men (MSM)) and 344 (23%) female (322 [93%] identified as heterosexual). 2% identified as trans.

1393 (91%) of respondents reported their GP (primary care doctor) was aware of their status. 55% (883/1528) reported feeling a high level of control in disclosure at the GP, while 54% (828/1528) felt a high level of support during the disclosure process in this setting. Fewer Black African or Caribbean reported feeling supported 47% (150/319) compared to White British participants 58% (552/948) ($p< 0.001$). A higher proportion of MSM reported feeling supported during disclosure 58.6% (558/952) compared to others 46.9% (270/576)($p< 0.001$).

In the past year, a third (498) of participants reported being worried or concerned about being treated differently to other patients at their GP practice and 14% reported avoiding care when required.

13% (195/1528) of respondents who had disclosed to their GP reported being treated differently to other patients at their practice. 19% (59/319) of Black African or Caribbean participants experienced different treatment compared to 10.2% (97/948) of White British participants ($p< 0.01$).

**Conclusions:** PLHIV in the UK reported experiences of stigma and discrimination in the general practice setting. This was particularly significant for persons from Black African or Caribbean communities Despite many participants reporting that GP clinic staff is aware of their status, only half report feeling in control and supported during disclosure. Educational tools for staff within GP practices are recommended to address HIV related stigma and discrimination in this setting.

## TUPED402

### HARD TIME AND SUCCESS: THOUGHTS ON XIAO FENG'S CASE AND PLHIV ACCESS TO MEDICAL SERVICE IN CHINA

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**Background:** In China, PLHIV access to medical service can be a very difficult thing due to severe discrimination and stigma among the medical workers to PLHIV. It usually results that many small illnesses on PLHIV become big disease due to no timely treatment, particularly for those illnesses that need to have surgical operation, even if the law and government regulation had stipulated that no one can stop PLHIV access to medical service. The reasons behind it are 1 lack of correct HIV knowledge among medical workers; 2 few PLHIV dare to openly use legal stipulation to suit those hospitals and medical workers and protect their rights; 3 no supervision over the law and government regulation implementation; 4 PLHIV community did not loudly voice our demand out.

**Description:** In 2013, Xiao Feng, a 26-year-old PLHIV from Tianjin, openly suited a local hospital for rejecting him receiving surgical operation to treat his lung cancer with support from China Alliance of People Living with HIV(CAP+). After many difficulties, in 2015, the Tianjin Superior People Court openly made their judgement that XIao Feng win the case and received RMB70,000 as an compensation. During the whole process, CAP+ and Xiao Feng use many different ways include change illness file names to force the hospital to give him operation. They together experienced a long hard time and finally won the case and Xiao Feng received proper treatment finally.

**Lessons learned:** 1 properly use media to call the attention from the society;2 better negotiation skill to face the state owned hospital; 3 internet and new technical application in the whole process; 4 close cooperation between lawyers and community based groups; and 5 skillfully use the government policies, state regulations and laws in reality.

**Conclusions/Next steps:** We will summarize the successful experiences and provide future support to PLHIV. We will advocate our government to provide HIV related education to those medical workers in the state owned hospitals. We will draft education materials target to medical workers. We will unite our PLHIV community to go on advocate on the internet and in real life for our rights to access to medical service in this country.

## TUPED403

### KNOWLEDGE, ATTITUDES AND BEHAVIORS TOWARDS SELF STIGMA AND DISCRIMINATION ASSOCIATED WITH MSM IN KARACHI, PAKISTAN

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**Background:** Being a young MSM and living in a close society like Pakistan is hard and excruciating painful. As an Islamic Republic, Pakistan does not acknowledge the existence of homosexuality. The impact of the self stigma and discrimination will have multiplier impact to this high risk marginalized MSM Community. Socially, they are alienated, and their sexual practice and behaviors are heavily restricted by the mainstream social and religious values. It is very hard to live with sexuality issue, where society keeps a blind eye to discuss sex education and other issues related to sexuality.

**Description:** Five focus group discussions (FGD's) with 5 participants each were carried out to identify the challenges faced by MSM's in Karachi, Pakistan. The participants were selected randomly through secondary quantitative data which was collected from service delivery reports of Volunteer Counseling and Testing-VCT of PMHS from May 25, 2012, till December 31, 2015. Ethical, verbal and written consent and other ethical considerations, as per PMHS's Institutional Manual were followed.

**Lessons learned:** All the participants of five focus groups share their personal experiences in detail about self stigma and discrimination towards them just because of their sexual orientation and preference. It also came into the light during the discussion that the harassment and sexual abuse they face and indifferent attitudes of family, friends, class mates and work colleagues towards them forced them towards self stigma. MSMs experience multiple health disparities including alcohol and drug use, partner violation and high risk sexual behavior leading to getting HIV infection.

**Conclusions/Next steps:** There is limited information on the impact of gay-related self stigma between MSM's and also within MSM communities in Karachi, Pakistan. In order to address self stigma and discriminations towards these MSMs and also to the larger population in this high risk marginalized segment of the society, there is urgent need for emphasized rights driven movements by educating the youth increasing their self esteem and social recognition through integrated approach that engaged, society, policy makers and MSM's themselves.

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## TUPED404

### ROLE OF PRIMARY MEDICAL CARE IN HIV RESPONSE IN UKRAINE: INVESTMENTS IN POST-GRADUATE EDUCATION OF FAMILY DOCTORS

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**Background:** The ways to achieve global strategies 90:90:90 in Ukraine, primarily involving professionals of specialized medical facilities (secondary health care). Herewith, little attention paid to the primary care medical assistance, which is provided for all citizens of Ukraine, including representatives of most-at-risk risk groups. Therefore more than 550 primary health care facilities are not involved into provision of medical care for HIV-positive people in Ukraine.
However, family doctors plays significant role in the cascade of services provided to PLWH. Family doctor has an opportunity to consult patients on the availability of HIV testing and interpretation of its results, as well as to refer patients for appropriate treatment and to monitor adherence to treatment and evaluating its results.
After analyzing the current work program cycles on postgraduate education of family doctors there was discovered that only 6 hours of practical lessons which cover issues of provision medical care to PLWH and MARPs in primary health care facilities. Pre-certification specialization courses program also doesn't include issues on HIV/AIDS.
**Description:** The curriculum of post-graduate training "Management of Patients with HIV/AIDS by Family Doctor" aimed to increase the level of knowledge and skills of family doctors on HIV/AIDS was developed and approved within USAID RESPECT project: "Reducing HIV-related Stigma and Discrimination for Most-at-Risk Populations in Health Care Facilities in Ukraine". 5 cycles of indicated TU with the participation of 111 family doctors were conducted in 2015.
**Lessons learned:** Results of studies show that the general level of knowledge of participants after training increased from 58% to 77%. In addition, as a result of the training, the level of communication and cooperation at regional level between family doctors, representatives of NGOs and specialized medical facilities increased.
**Conclusions/Next steps:** The number of patients referred to the HIV testing counseling centers and to the second level of health care services provision increased as a result of changing family doctors attitude to PLWH and willingness to share gained knowledge among other medical staff of HCFs.

## TUPED405

### HIV-RELATED STIGMA AND DISCRIMINATION IN RURAL COMMUNITIES IN KENYA: EXPERIENCES OF WOMEN LIVING WITH HIV AND COMMUNITY HEALTH VOLUNTEERS

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**Background:** PLHIV experience various forms of stigma and discrimination (S&D) both in their community and at health facilities. S&D has the potential to reduce demand for services and prevent PLHIV from accessing available care and treatment services. The purpose of this study is to assess the perception and experiences of HIV-related S&D among CHVs and PLHIV. This study is part of a larger study aimed at testing interventions to integrate family planning into HIV services at the community level.
**Methods:** This is a quasi-experimental before-and-after research design with a comparison site. Samia Sub -County of Busia County is the intervention site while Butula Sub-County is control site. Interventions will include a five-day training of CHVs in FP counselling using the community version of the balanced counseling strategy-plus job aids (BCS+), reducing HIV-related stigma and discrimination, and business skills to enable CHVs to run income-generating activities to sustain their operations. Baseline survey was undertaken in November and December 2015 and are reported here. The study population consisted of HIV positive women (N=1611) and CHVs (N=210).
**Results:** About 29% (N=1611) of all women living with HIV had experienced some form of stigma and discrimination. . Of those who experienced stigma and discrimination, a slightly higher proportion reported begin gossiped about in Samia (50%) compared to Butula (47.2%)(p>0.05). About 39% of respondents in Samia and 32% in Butula (P< 0.05) had been verbally assaulted due to their HIV status. CHVs also experience secondary stigma due to their support and care of PLHIV, 15% reported that family members or friends avoid them because they take care of PLHIV. In their work, however, CHVs also reported stigmatizing behaviors towards their PLHIV clients: about 15% avoid physical contact with PLHIV and 14% wear double gloves when touching patients with HIV.
**Conclusions:** Results from study show that there is a need to address S&D behaviours with CHVs. This is critical as we move towards relaying more on CHVs who are the frontline workers and who help to create linkages for PLHIVs to health care facilities.

## TUPED406

### THE LESS THAN GOOD QUALITY OF LIFE OF TRANSGENDER PEOPLE IN BRAZIL: RESULTS FROM THE MURIEL PROJECT

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**Background:** Globally, studies increasingly show transgender people encounter alarming levels of discrimination and physical violence that may contribute to their disproportionately high rates of HIV/AIDS. Thus we examined experiences with violence and discrimination across domains - from their immediate family to experiences with educational, employment, health care, and even transportation sectors - to better understand the context of vulnerability in which transgender people operate in Sao Paulo, Brazil.
**Methods:** Between November 2014 and October 2015, 673 transgender individuals receiving care at either a health facility or social services completed an interview-administered survey. Socio-demographic characteristics, experiences with violence and/or discrimination, as well as self-reported HIV status among transgender people (FtM and MtF) were assessed in 7 municipalities of the State of São Paulo. Analysis of selected variables from the semi-structured survey is presented. Participants were asked to select one of the following categories to qualify their relationship with each domain: good, acceptable, troublesome, very bad and non-existent. Descriptive statistics are presented.
**Results:** Among the 673 trans people interviewed, 626 were MtF and 47 were FtM. 180 (26.87%) individuals reported being HIV-infected, 166 (24.78%) did not know their status and the remaining individuals did not disclosure their status. Nearly half (47.85%) described their relationship as "Good" with family and with their employers (44.87%), whereas approximately a third described their relationship as "Good" while using public transportation (33.28%), shopping (36.85%), and in religious settings (35.66%). Even fewer reflected positively on their experience with the educational system (21.99%), or the police (11.89%).
**Conclusions:** More than half of the transgender people interviewed in São Paulo do not have a good relationship engaging with basic institutions. In order to change the unacceptable living conditions faced by transgender people in Brazil, public policies and programs need to address specific institutions and work with a range of stakeholders to improve the daily experience of transgender individuals in Brazil.

## TUPED407

### PAIN AND NON-ADHERENCE TO ART ARE ASSOCIATED WITH PERCEIVED DISCRIMINATION BY HEALTH CARE PROVIDERS AMONG RACIAL MINORITY PERSONS WHO FORMERLY OR CURRENTLY USE DRUGS

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**Background:** Racial/ethnic minorities, persons living with HIV (PLHIV), and persons who use drugs (PWUD) are vulnerable to major social stress, including discriminatory treatment by healthcare providers. Research suggests that social stress may contribute to physical and mental distress and disparities in HIV health outcomes. We sought to examine the role of pain on a vulnerable population's perceptions of discriminatory experiences from health care providers, and its associations with their adherence to antiretroviral therapy (ART).
**Methods:** Cross-sectional data from baseline of the AFFIRM Care study was used. The study recruited current or former drug using persons (n=276) attending an academic, urban US HIV clinic. Participants were primarily older (median age 53)

African Americans (97%), diagnosed with HIV a median of 20 years prior. Perceived discrimination from health care providers in the prior two years was defined as based on race/ethnicity, HIV, speech, and current or former drug use. Adherence was defined as excellent adherence versus less than excellent adherence or not taking ART for other than doctor-initiated reasons. Depressive symptoms were assessed by the CES-D 10.
**Results:** Three-fourths of participants reported pain in the prior 30 days that interfered with their normal activities, 36% reported recent heroin or cocaine use, and only 41% reported excellent adherence to ART. Logistic regression results indicated that perceived discrimination was independently associated with pain interference (AOR=1.47; 95% CI 1.08, 2.02) and non-adherence to ART (AOR=0.30; 95% CI 0.11, 0.77), as well as perception that their doctor would not believe them if they had serious pain (AOR=3.06; 95% CI 1.36, 6.89) and reports that their doctor had ever refused them pain medication they felt they needed (AOR=3.23; 95% CI 1.44, 7.27). Analysis adjusted for depressive symptoms and other potential confounders.
**Conclusions:** Perceived discrimination from healthcare providers was associated with pain and non-adherence to ART among drug using PLHIV. The results suggest ways in which perceived discriminatory experiences contribute to the population's disparities in healthcare quality and outcomes. Improved relationships between healthcare providers and drug using PLHIV, and enhanced access to safe, effective pain treatment, may help ameliorate PWUDs' disparities in pain and HIV health outcomes.

# REPRESENTATIONS OF STIGMA: SOCIAL ATTITUDES, MEDIA AND PUBLIC DEBATE

## TUPED408

### NO TOLERANCE FOR TOLERANCE: CONSTITUTIONAL CHALLENGE TO JAMAICAN TV STATIONS' REFUSAL TO AIR ADVERTISEMENT CALLING FOR LGBT RIGHTS

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**Background:** Stigma, discrimination and violence threaten the rights and health of LGBT Jamaicans, and undermine HIV interventions, contributing to HIV prevalence of 32.3% among Jamaican gay men/MSM (versus overall population prevalence of 1.8%). Jamaican human rights activists and AIDS-Free World produced "Love and Respect," a 30-second video advertisement calling for respect for human rights of LGBTI Jamaicans (http://tinyurl.com/JamaicaLoveRespect). Despite repeated requests, Jamaican TV stations refused to air it as a paid advertisement.
**Description:** Jamaican human rights advocate Maurice Tomlinson launched a court challenge, claiming the refusal amounts to an unjustifiable breach of his constitutional rights to freedom of expression and to disseminate ideas through any media, contrary to Jamaica's 2011 *Charter of Fundamental Rights and Freedoms*. He sought a court order that the TV stations air the ad in exchange for the standard fee. In November 2013, the court of first instance ruled against his claim of constitutional breach. With support from the Canadian HIV/AIDS Legal Network, Tomlinson appealed, alleging multiple errors in reasoning.
**Lessons learned:** The case is precedent-setting. It is the first case relating to LGBT rights before Jamaica's Court of Appeal. It is also the first case in Jamaica to address the issue of balancing constitutional rights between two private parties, rather than asserting constitutional rights against the state. Jamaica's 2011 Charter is among the minority of constitutions worldwide that provide for this "horizontal application" of constitutional rights. The TV stations argue their freedom of expression and right to property give them absolute discretion to refuse to air any material - and point to the criminalization of MSM in Jamaica, and concern about negative public reaction, in justifying their refusal. Tomlinson argues that media outlets' refusal to air material, which has the effect of infringing freedom of expression and the right to disseminate ideas through media, cannot be "arbitrary, discriminatory or otherwise unreasonable." Access to media is an important tool for human rights advocacy, particularly for marginalized, stigmatized communities.
**Conclusions/Next steps:** The appeal was heard in February 2016. Further appeals may be required. Media outreach accompanying the court case has generated ongoing coverage and commentary in Jamaican media.

# LEGAL PROTECTION OF PEOPLE LIVING WITH HIV AND KEY POPULATIONS

## TUPED409

### BEING STRATEGIC ABOUT STRATEGIC LITIGATION: USING STRATEGIC LITIGATION TO ADVANCE PUBLIC HEALTH OUTCOMES

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**Background:** Strategic litigation can be a powerful advocacy tool to effectively address HIV as in addition to ensuring protective laws, policies and practices, it can also result in the empowerment of marginalized populations and lead to greater public awareness of relevant issues. Despite this, it remains an underutilized tool.
**Description:** To address this gap, we sought to identify why strategic litigation is underused; its limitations and risk; its benefits on health outcomes; and key lessons learned from almost a decade of experience in supporting litigation on HIV throughout the world.
The research was based on a comprehensive desk review of written and audio materials, including academic papers; publications by practitioners, funders, and international agencies; and legal filings and decisions. It was also based on key interviews with over two dozen funders and practitioners.
The research draws on a detailed discussion of six emblematic HIV-related cases. The cases were deliberately selected from a range of countries, including Namibia, Russia, Kenya and Canada and cover different HIV-related issues, such as access to opioid substitution therapy, coerced sterilization of HIV-positive women and access to HAART.
**Lessons learned:** Key lessons identified include:
• Strategic litigation should be part of a broader, long-term advocacy plan and involve partnership with other organizations and allies, including social movements. Further, organizations seeking to litigate on HIV should build relationships with a wide range of experts, including medical practitioners, epidemiologists, and health economists.
• Strategic litigation funders should provide multi-year funding to a range of organizations, including community-based organizations and advocacy organizations, and support complementary media activities.
• Organizations should draft an implementation strategy prior to litigating and reassess it as the litigation continues.
• Organizations should consider taking an incremental approach to litigation. For example, it may be strategic to challenge the police abuse of sex workers prior to challenging the criminalization of sex work.

**Conclusions/Next steps:** There is a need to both scale up the use of strategic litigation in the HIV response and to ensure it is used most strategically. To support this, the study findings will be widely disseminated to relevant funders, practitioners and organizations.

## TUPED410

### JUSTICE PROGRAMS FOR PUBLIC HEALTH: LESSONS AND GOOD PRACTICES

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**Background:** For many people living with HIV, people who use drugs, sex workers, and palliative care patients, rights violations are part of everyday existence, negatively impacting their health and well-being. Violations both impede access to health services, such as when police harassment prevents people who use drugs from accessing harm reduction, as well as to underlying determinants of health, such as safety or housing. Access to justice programs are critical in addressing these violations. However, in many countries, these programs are nonexistent, the link between rights and health is poorly understood, and there is little guidance on effective programming.
**Description:** To address this gap, we sought to identify good practices for access to justice programming in the context of HIV, drawing on almost a decade of experience in supporting this work in sub-Saharan Africa, Eastern Europe, and Central Asia. Our research was based on interviews and facilitated discussions with practitioners and funders, complemented by a review of materials from practitioners, academics, funders, and international agencies. Our findings were then vetted by over 40 expert reviewers before finalization in 2015 and launches in Kenya and Macedonia.
**Lessons learned:** Key lessons identified include:
· Lawyers need to meet communities "where they are at," working outside regular office hours, engaging in outreach, and addressing needs non-judgmentally.

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· Trained paralegals drawn from the communities they serve are well-placed to provide rights education and "legal first aid," responding quickly to violations and addressing multiple needs.
· Integrating legal and health services leads to better access and more holistic care.
· With training and support, customary justice structures can play an important role in protecting rights and facilitating access to justice.
· Addressing a community's pressing, daily justice concerns lays critical groundwork for systemic change.
**Conclusions/Next steps:** The next step is to share good practices on access to justice programming in the context of HIV with practitioners, governments, and funders so that justice services become more responsive to the needs of marginalized groups and programs can be scaled up. We are also building the capacity of local implementers to document their work, identify systemic outcomes, and link this to advocacy and funding.

## TUPED411

### LEGAL ENVIRONMENT ASSESSMENTS: A TOOL TO GENERATE EVIDENCE FOR LAW, POLICY AND STRATEGY REVIEW AND REFORM IN AFRICA

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**Background:** The report '*Risks, Rights and Health*' of the Global Commission on HIV and the Law showed stigma, discrimination, punitive laws, police violence and lack of access to justice continue to fuel the HIV epidemic. It recommended conducting legal environment assessments (LEAs) as a method to generate evidence for changing unfavourable laws and policies pertaining to HIV. An LEA looks at HIV and human rights, and reviews legal, policy and regulatory frameworks in the context of HIV focussing on stigma and discrimination; women and gender; children and young people; criminal laws and key populations; and access to HIV treatment. In Africa, LEAs have been successfully used to generate evidence for law, regulation, policy and strategy review and reform and strengthen stakeholder capacities.
**Description:** With Norwegian and Swedish Government assistance, UNDP supported 10 African countries to conduct LEAs from 2013-2015. Guidance to conduct LEAs was developed and countries engaged with stakeholders (LGBTI, key populations, services providers, government ministries, the police, the judiciary and civil society), to build capacity and generate evidence on laws, policies, regulations and strategies pertaining to HIV, and to identify human rights barriers, challenges, and gaps. Evidence from the LEAs were used by governments to address gaps in their national policies and strategies, inform their global fund concept notes and engage in longer-term law and policy reform.
**Lessons learned:** Countries used evidence from the LEAs—for law revision to remove criminalisation of HIV transmission (DRC); to include lubricants in national drug list (DRC); to stop harassment of MSM (Malawi); to reform law and include protection for PLHIV, women and prisoners (Chad); to revise the law and remove criminalisation of HIV transmission (Mozambique); and to prioritise key population interventions in new national HIV plans (Nigeria). Evidence from LEAs were utilised to inform Global Fund new funding model concept notes (Cameroon & Kenya).
**Conclusions/Next steps:** Legal environment assessments generate evidence for countries to undertake law, policy and strategy reforms, build capacity of stakeholders and strengthen the voice of key and vulnerable populations to improve their access to rights-affirming HIV services.

## TUPED412

### PEER TO PEER LEARNING ON PREVENTING ANTI-HOMOSEXUALITY BILLS: THE DR CONGO AND BURKINA FASO CASE STUDY

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**Background:** In February 2015, a political party in Burkina Faso introduced a draft Bill for discussion in the National Assembly, seeking to outlaw and 'repress' bestiality, paedophilia and 'same sex marriage'. News of this was shared between organisations working with key populations, lawyers, civil society organisations (CSOs) and UN agencies to discuss preventive measures. The groups sought support to draft a strategy to address/counter this challenge.
**Description:** An emergency meeting of all stakeholders to plan a course of action was organised. Actions planned and undertaken included quiet diplomacy, preparing counter-arguments, corresponding with key government officials including the President of the National Assembly and Minister of Justice, convening a meeting of key HIV/AIDS stakeholders to discuss next steps, and preventing media sensationalism. In response to this urgent need UNDP DR Congo, which had developed a document for Parliamentarians titled "ARGUMENTAIRE TECHNIQUE CONTRE LA CRIMINALISATION DE CERTAINES POPULATIONS CLES" shared the document promptly with stakeholders in Burkina Faso. Letters were sent with this argument to key stakeholders while interactions were held with select stakeholders to prevent furtherance of the agenda for the draft Bill, which was not taken up for discussion.
**Lessons learned:** A rigorous legal environment assessment in one country leads to significant learning and national capacity-building that can be used across nations if they share similar constitutional and judicial processes. In addition to technical expertise, the strong working group in DRC was the key institution in this case, and it convened at short notice to respond to the request from UNDP Burkina Faso for support. Collaboration between agencies, civil society and other stakeholders too was important to respond to similar emergencies.
**Conclusions/Next steps:** There is an urgent need to institutionalise preventing and addressing human rights violations through the establishment of a nation level working group or entity. Collaboration and peer to peer sharing of information and learning is important for strengthening South-South learning that can prevent adoption of harmful laws, policies and practices in the context of HIV.

## TUPED413

### HEALTH IMPACTS OF UNMET LEGAL NEEDS FOR LOW-INCOME WOMEN LIVING WITH HIV

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**Background:** The law can serve as a barrier or a facilitator to achieving health equity. In the United States, there is very little research examining the relationship between addressing individual rights under the law and possible health impacts of doing so. This is particularly true with regard to low-income women living with HIV. In a recent Ford-funded study, researchers collected surveys from primarily low income, cisgender and transgender women living with HIV to ask about unmet legal needs and self-reported health impacts stemming from those needs. Results regarding transgender women were previously released, however, results from cisgender women are new.
**Methods:** Researchers collected data from July through October, 2014, utilizing in-person computerized surveys administered throughout Los Angeles County, the second largest community of people living with HIV in the U.S. The final data set includes 387 total complete surveys of which 20% were completed in Spanish. Almost a third of all respondents (112) identified as cisgender and transgender women. Study procedures were approved by the UCLA Institutional Review Board. Data were analyzed using Stata v13.1. Inferential statistics were used to test differences between subgroups.
**Results:** Both cisgender (49%) and transgender women (44%) experienced legal problems with accessing health care and facing discrimination on the basis of HIV status (18% for cisgender and 24% for transgender women). While nearly half (44%) of transgender women reported being harassed, attacked with violence and/or subjected to another crime in the year prior to the survey, less than a quarter (24%) of cisgender women reported the same. While marginally significant (Pr=0.053), the study found that 77% of transgender women reported negative health impacts on physical well-being as a result of unmet needs compared to 56% of cisgender women.
**Conclusions:** All women reported experiencing unmet legal needs. These data illuminate commonalities and differences across women. While these differences may not always be statistically significant, data suggest that transgender women may experience more negative health impacts on physical well-being as a result of unmet legal needs. Results indicate the need for correlative studies to further illuminate the link between health and unmet legal needs.

## TUPED414

### STRENGTHENING THE HIV-RELATED LEGAL AND POLICY ENVIRONMENT FOR KEY POPULATIONS IN THE DEMOCRATIC REPUBLIC OF THE CONGO: A CASE STUDY

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**Background:** Following the work of the Global Commission on HIV and the Law, there has been increased interest in the HIV-related legal and policy environment. Implemented by the United Nations Development Programme (UNDP), one such project seeks to use the Global Commission's recommendations to improve HIV-related legal and policy environments for key populations including LGBT populations and women and girls in 11 countries in sub-Saharan Africa including the Democratic Republic of the Congo (DRC).
**Description:** A critical mass of stakeholders, across different types of organizations including government, civil society organizations and United Nations agencies, each with access to different networks and champions have met regularly for the last few years and undertaken systematic and strategic advocacy, each playing to their respective strengths and collectively adopting multiple entry points for action to improve the HIV-related legal and policy environment. To maximize project learning, we did a desk-based document review and key informant interviews with project implementers and beneficiaries.
**Lessons learned:** Remarkable strides are being made to improve relevant HIV-related laws and policies in the DRC. Examples include 'creating an enabling legal and policy environment' as a key pillar of the National Strategic Plan on HIV; the addition of lubricant to the essential medicines list; and collective efforts to amend problematic provisions of the HIV law to protect people living with HIV.
These achievements derive largely from the unwavering commitment of key stakeholders, and relied on a robust evidence base as to why action was necessary. Findings and conclusions from the PLHIV Stigma Index and the UNDP-supported legal environment assessment were critical. Capacity building on HIV and the law (e.g. judges, health workers, parliamentarians) has been essential for raising awareness, ensuring appropriate service delivery, and creating an ever-increasing circle of advocates committed to positive change.
**Conclusions/Next steps:** The incremental gains in policies and related activities achieved to date should be appreciated and built upon as part of the process towards legal change. The fact that this work can take place to such positive effect in a conflict-affected country offers lessons to government, civil society and donors in other similarly situated countries.

## TUPED415

### LEGAL SERVICES: ESSENTIAL TO NATIONAL RESPONSES, YES, BUT WHAT ABOUT QUALITY AND COVERAGE?

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**Background:** HIV-related discrimination is an obstacle to scaling up HIV prevention, care and treatment services in every country. The United Nations International Guidelines on HIV/AIDS and Human Rights identify legal services as a core State obligation. This program aims strengthen and expand HIV-related legal services, and to support law and policy reform.
**Description:** The current phase 2014-2016 took place in Latin America, Middle-East/North Africa, and West Africa. Technical and financial support was provided to non-governmental organizations in each country to provide quality legal services to PLHIV and other key affected populations - MSM, transgender, SW, prisoners and PWUD. NGO capacity was enhanced through regional networking and inter-regional consultations. Results include: building strong networks and sharing experiences; building awareness within communities by partnering with community-based organizations; expanding access to legal services; strengthening legal skills and knowledge, including in interactions with police and the criminal justice system; and influencing governmental and legal policy for sustainable outcomes, e.g. through strategic litigation and the inclusion of legal services in national plans. Independent evaluations found that the program has created cadres of informed attorneys, paralegals, judges, and community advocates who can now better utilize legal processes to protect human rights and improve health care access. Health care providers are now better informed about how to treat patients with respect and in accordance with human rights laws and policies. The program has supported the development of communication networks and information dissemination systems that are sustainable and which have led to increased community mobilization in response to HIV needs in the program countries.
**Lessons learned:** Community paralegals are needed to engage affected communities. Lawyers and paralegals need skills to work with police to reduce harms in hostile legal environments. Collaboration and partnerships between organizations and universities are needed to expand the provision of legal services and produce evidence for advocacy.
**Conclusions/Next steps:** To be sustainable, legal services must be integrated into national HIV plans and responses. State institutions providing counseling and legal assistance must be engaged. Tertiary legal education (including legal clinics) should aim to build HIV and health law and policy capacity.

## TUPED416

### LABOUR INSPECTION IN ENTERTAINMENT ESTABLISHMENTS PROTECT ENTERTAINMENT WORKERS IN CAMBODIA

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**Background:** "Entertainment workers" in Cambodia include entertainers, massage staff, employees in nightlife establishments and beer promoters. Due to their working conditions, these workers are at high risk of HIV infection. Studies carried out by the ILO from 2005-2011 identified a number of specific vulnerabilities, including: work accidents; violence; sexual harassment; poor working conditions; forced alcohol consumption; and client refusals to use condoms.
**Description:** Based on the study findings, the ILO collaborated with the Cambodian Ministry of Labour and Vocational Training (MoLVT), trade unions, entertainment establishment owners and the Women's Network for Unity to develop a regulation on occupational safety and health for entertainment workers. These regulations mark an important "first" in protecting the basic rights of all entertainment workers, including their right to a safe and healthy workplace. The regulation, the first of its kind, was adopted by the MoLVT in August 2014 (*"Working Conditions, Occupational Safety and Health Rules of Entertainment Service Enterprises, Establishment and Companies" (Prakas 194), available at:.* The regulation extends labour protections available under Cambodian labour legislation to entertainment workers. IN 2015, to support implementation, the Government provided capacity building to labour inspectors and entertainment establishments.
To date, the MoLVT has trained more than 150 labour inspectors, and organized regular feedback meetings between the inspectors and entertainment establishments owners/workers to discuss progress and challenges encountered in implementation.
**Lessons learned:** A key factor in the successful implementation of the regulation was the establishment of an effective monitoring system to track progress in implementation.
Another important success factor is the on-going dialogue between the labour inspectors from the MoLVT and other key actors (including NGOs and civil society) to continuously promote improved working conditions and ensure occupational safety and health for all entertainment workers.
**Conclusions/Next steps:** The ILO will continue to provide technical support to promote the effective implementation of the regulations throughout all entertainment establishments in the country, with the aim of reducing HIV transmission among this key vulnerable group of workers.

## TUPED417

### INTEGRATION OF LEGAL AID SERVICES IN PALLIATIVE CARE (PC): EXPERIENCE OF USING COMMUNITY PARALEGALS TO PROTECT RIGHTS OF PALLIATIVE CARE PATIENTS

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**Background:** Most patients on palliative care experience human rights violations due to the fact that health workers dwell more on issues requiring medical attention which limits access to justice. Reports on stressed palliative care patients -majority with HIV; alarmed UGANET to intervene through training of Community paralegals

who worked with health facilities to raise awareness on human rights and linked many PC patients in need of legal aid to UGANET lawyers.
**Description:** 100 paralegals were identified from 5 regions of Uganda covering 10 districts. 10paralegals were trained from each district. They were trained in basic legal human rights knowledge and palliative care. UGANET handled the legal aspect and PCAU trained them in palliative care. 2paralegals were attached to the nearest health center providing palliative care services in each sub county.
Each paralegal raised awareness in the community about the available legal services from UGANET and the importance of palliative care to patients especially those who cannot travel to the health facilities. The palliative care team from the Hospices and Home care centers together with the legal officer link up with the paralegals to provide a holistic approach to palliative care patients.
**Lessons learned:** 100paralegals were capacitated with palliative care skills and empowered with basic legal knowledge; that supported 1530 (1001 F, 529 M) PC patients who had lost due to socio-cultural exclusion related to their health status. Out of these; 197 patients reported reduction in stress and depression after receiving free legal aid services from UGANET Paralegals and lawyers. 130 patients (98males and 32 females) reported improved adherence levels because their succession planning worries were sorted by community paralegals and lawyers through will making. Over all; treatment adherence has also improved and health workers attribute it better social welfare of PC patients.
**Conclusions/Next steps:** Holistic Palliative care as opposed to standalone medical palliative care remain critical in upholding the human value and dignity of patients. Clinical outreaches should go hand in hand with 'socio-legal' interventions through trained community paralegals to improve patient's quality of live. However; end of life care requires a lot of patience and commitment for impactful results.

## TUPED418

### HUMAN RIGHTS OF INTERNALLY DISPLACED PEOPLE (IDP) LIVING WITH HIV IN UKRAINE

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**Background:** According to official data of the Ukrainian CDC Center of the Ministry of Health of Ukraine, as of 01.01.2015, there were 137,390 people living with HIV (PLWHIV). In 2014, armed conflict in the Eastern Ukraine affected the region of approximately 5.2 million people including the Donetsk region which has high HIV and TB prevalence; 50% of the registered people living with HIV reside in 3 (out of 27) oblasts (Dnepropetrovsk, Donetsk, Odessa). The migration of PLHIV and key populations at higher risk of HIV to other regions of the country creates challenges, more cases of human right violations and an additional burden to the health systems of the host-regions (including ART distribution, prevention programmes and other).
**Description:** The focus of UNDP humanitarian response was to monitor the human rights violations of internally displace PLWHIV by using formative assessment, existing national and regional online online *google.doc* platform monitoring systems, national HIV hotline, and providing legal assistance to internally displace key population and PLWHIV via a small grant scheme for local NGOs from most affected areas.
**Lessons learned:** IDPs living with HIV experience difficulties and violation of their human rights (lack of proper medical services, and at the same time they face high stigmatization at the host communities). Most of the health institutions and medical specialists discriminate IDPs due to their HIV-positive status.The number of women IDPs living with HIV is much higher then men and they are more vulnerable to human right violations. Strong need for legal service of IDPs with HIV and local NGOs can provide legal support.
**Conclusions/Next steps:** The IDPs living with HIV are discriminated in the host communities and in healthcare sector institutaions. NGOs in collaboration with local governments have to provide special assistance, human rights protection and legal aid for IDPs with HIV at the local level.

## TUPED419

### THE FIGHT AGAINST STIGMA AND DISCRIMINATION IS NOT OVER: 53 COUNTRIES STILL HAVE HIV-SPECIFIC ENTRY AND RESIDENCE REGULATIONS FOR PEOPLE WITH HIV

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**Background:** Beside global advocacy efforts from the HIV-Community 53 countries still have HIV-specific restrictions for entry and residence in place. Out of these 53 countries 27 deport or threaten to deport PLHIV, 11 categorically deny entry and 13 have laws that restrict entry even for short term stays in place. The situation contributes to the discrimination of PLHIV.
**Description:** The ongoing documentation of HIV-specific restrictions at entry and residence carried out by community-activists let the creation of global database HIV-specific restrictions at www.hivrestrictions.org. The gathered data from embassies around the world and the feedback from users of the database are an important source of information for mobile populations and foreign workers. The data demonstrate the relevance and importance of independent information, it contributes to the personal security and safety of PLHIV.
**Lessons learned:** The work demonstrates the importance of community-owned documentation. The "hype" around advocacy efforts is over or moved to other areas. When we started with this work 104 countries had restrictions in place. The situation certainly improved but its not over yet and its problematic to see that the global HIV-community other advocates does not address restrictions, for example in countries from the middle east that affect thousand of migrant workers, or uses upcoming sport events, like the World Cup in Qatar to mobilize communities while cross human rights violations against migrant workers in these countries are obvious.
**Conclusions/Next steps:** The current situation is discriminatory, a violation of human rights and a huge burden for PLHIV. States and in some cases intergovernmental organizations dent to downplay the impact of discriminatory laws. There might be silence around this topic since the successes celebrated with the revision of law in the US. Yet, the figures we have demonstrate that the fight against state-based discrimination is far from over.

# SOCIAL AND POLITICAL ADVOCACY AND MOBILIZATION

## TUPED420

### AN INVESTIGATION INTO THE FUNCTIONALITY OF THE PROVINCIAL, DISTRICT AND LOCAL AIDS COUNCILS IN LIMPOPO PROVINCE, SOUTH AFRICA

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**Background:** The commitment of the South African Government to fight the spread of HIV is demonstrated through the existence of multi-sectoral AIDS Councils at National, Provincial and Local levels that serve to coordinate the AIDS response. The AIDS Councils in the Limpopo Province are governed by the Policy Framework. The purpose of this research was to investigate the functionality and effectiveness of the AIDS Councils in the Limpopo Province. The objectives were to identify challenges that hinder their effectiveness and to propose strategies to improve effectiveness of the co-ordination role. According to the Limpopo Provincial AIDS Council Policy Framework, AIDS Councils are considered to be functional if they are able to meet certain set criteria.
**Methods:** The study was conducted from May to July 2015, in all five districts of the Limpopo Province. The design of the research was descriptive and respondents were selected through purposive sampling. The study population consisted of HIV and AIDS co-ordinators. A semi-structured questionnaire and an AIDS Council functionality scale were distributed amongst 30 officials to gather both qualitative and quantitative data. The researchers applied composite frequency tables, pie and bar graphs to present quantitative data. Qualitative data was analysed through thematic analysis.
**Results:** The study revealed that AIDS councils are semi-functional in some Districts and Local municipalities, the capacity of AIDS Councils varies. Some of the challenges that hinder the functionality of AIDS Councils include the absence of dedicated secretariats, weak capacity of HIV and AIDS c-ordinators, competing priorities and irregularly held meetings. Various strategies were identified in order to deal with these challenges.
**Conclusions:** The functionality of AIDS Councils at all levels is crucial as it facilitates the multi-sectoral response. AIDS Councils also promote effective co-ordination of various structures so as to ensure that the goals of the Provincial Strategic Plan 2012-2016 are met.

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## TUPED421

### LEAVING NO ONE BEHIND: AMPLIFYING VISIONS, VOICES AND PRIORITIES OF YOUNG MEN WHO HAVE SEX WITH MEN LIVING WITH HIV (MSM+) IN KISUMU COUNTY, KENYA

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**Background:** Research findings show high HIV prevalence among young MSM and are often unable to access HIV services, without facing stigma and discrimination based on age, gender, HIV status and sexual orientation as well as attitudes and norms around 'appropriate' sexual behaviour. Creating spaces to recognize the voices, visions and priorities of young MSM and meaningfully and directly engaging them in decision making on HIV, can increase their visibility, reduce their fear of isolation, increase treatment access and retention, and inform development of appropriate services.
**Description:** A group of 25 young MSM + between the ages of 17 to 24, were enrolled through patient support centers and support groups. They received training on advocacy and education and formed an advocacy network to conduct face -to-face dialogues with key stakeholders groups. The advocacy network called for policy makers to encourage and support young MSM to engage in the design, development, implementation, monitoring and evaluation of HIV programmes. They also called for training opportunities to enable young MSM+, to be become peer outreach workers, mentors and service providers themselves. They advocated decision makers invest resources in youth advocacy and support meaningful participation of young MSM+.
**Lessons learned:** "**Amplifying Visions, Voices and Priorities of Young MSM living with HIV**" has created spaces for increased involvement, increased their capacity to advocate, and better express their health needs. Programmatic evaluation indicated increased knowledge in meaningful involvement of communities' concepts, including young MSM+, along with transparency and accountability in health resource allocation and spending. Qualitative evaluation at the end of the campaign showed increased knowledge and practice related to establishment and access to youth friendly HIV services, status disclosure, partner testing and adherence.
**Conclusions/Next steps:** Empowerment of young MSM+ followed by advocacy campaigns has demonstrated opportunity to empower MSM+ to raise awareness about HIV, combat stigma / isolation, and inform development of services, and holistic approaches for their health. It has helped in reaching other young MSM+ in urban settings in Kisumu County.

## TUPED422

### THE "DRUG STOCK-OUT KILLS! STOP IT" CAMPAIGN: COALITION, DATA AND DIPLOMACY DRIVE RESULTS IN UGANDA

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**Background:** Between October and December 2015, due to a combination of unanticipated levels of patient enrollment and a weakening currency, Uganda faced a severe shortage of antiretroviral and anti-TB drugs. Approximately 250,000 patients were at risk of taking lower dosage drugs or none at all.
**Description:** The PATH-led USAID Advocacy for Better Health (ABH) project built a coalition of civil society organizations to elevate the looming stock-out crisis to the highest decision-making levels through an intensive, time-limited campaign. Key coalition activities included development of an up-to-date evidence dossier on district stock-outs; coordinated radio spots, press conferences and media tours; unique collaboration with the Inspector General of Police to organize face-to-face meetings with the Permanent Secretaries of Health and Finance and Speaker of Parliament; and strategic interface with advocacy champions, including representatives of the offices of the President and Prime Minister, First Lady, and a popular performing artist who publically disclosed their HIV status through the campaign. The government responded to the campaign with both short-and long-term measures. Ministry of Health redistributed drugs and front-loaded Global Fund budget for immediate purchase of drugs; Ministry of Finance and Parliament fast-tracked approval of a $200,000,000 loan and committed to increase the Ministry of Health's 2016/2017 budget. As stated by the Minister of Health, "The message had gotten home."
**Lessons learned:** Data and diplomacy were key to presenting the coalition as credible, collaborative, and solution-oriented. Evidence presentation was the focus of media and decision-maker outreach, while direct engagement with policymakers was perceived as yielding greater dividends than would have mass demonstrations. Consistent monitoring, data analysis and timely sharing of information ensured coalition members were armed with current findings and made message adherence and effective targeting possible. At the onset of ABH-project, decision-makers indicated that inaccurate information and combative approaches undermined CSO advocacy efforts. This intelligence informed ABH's choice of advocacy strategies.
**Conclusions/Next steps:** During short-term crises, campaigns cannot lose sight of long-term goals. Utilizing data and diplomacy, the campaign addressed the drug shortage, while positioning for ongoing decision-maker engagement, including securing commitments for quarterly dialogues as well as direct access to the Ugandan President if further stock-outs persisted.

## TUPED423

### PREVENTION LITERACY: COMMUNITY-BASED ADVOCACY FOR ACCESS AND OWNERSHIP OF THE HIV PREVENTION TOOLKIT

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**Background:** Critical technological advances have yielded a toolkit of HIV prevention strategies. To take full advantage of these strategies, contextual and historical reflection is needed to bridge the gap from clinical efficacy to community effectiveness (i.e., knowledge and usage) of existing HIV prevention options.
**Methods:** Between January 2015-October 2015, we conducted a literature review to define treatment literacy and health literacy and assess the current need for literacy related to HIV prevention. The review included searches in electronic databases including, MEDLINE, PsycINFO, Pubmed, and Google Scholar. Permutations of the following search terms were used: ''treatment literacy'' ''health literacy'' and ''prevention literacy''. Through an iterative process of analyses and searches, titles, abstracts and reference lists of retrieved articles were reviewed for additional articles and historical content analyses of grey literature and websites were additionally conducted.
**Results:** In contrast to treatment literacy (TL), a well-established concept, prevention literacy (PL) was scarcely referenced and undertheorized in the available literature. While TL emerged due to shift in emphasis from prevention to treatment as more effective antiretroviral therapies became available, PL is absent in recent surge of biomedical prevention strategies. Developed from popular pedagogy and grassroots efforts during an intense struggle for treatment access, TL addressed the need to extend access to underserved communities and low-income settings that might otherwise be excluded from access. Prevention efforts today include multimodal techniques, which jointly comprise a toolkit of biomedical, behavioral, and structural/environmental approaches. However, linkages to community advocacy and mobilization efforts are limited and challenges of HIV prevention parallel the history of treatment roughly 15 years ago (e.g., increasing biomedical options, inequitable access, and efficacy that improves with strategies used in combination). Success of prevention efforts depends on equity of access, community-based ownership, and multilevel support structures to enable usage and sustainability.
**Conclusions:** For existing HIV prevention efforts to be fully utilized, an urgent need exists to reflect on historical lessons and contextual realities (i.e., policies, financial constraints, biomedical patents), extend treatment access and treatment literacy, and to build a new struggle for prevention literacy and prevention access as integral to the global response to HIV.

## TUPED424

### ASSESSMENT OF CLIENT'S SATISFACTION WITH PUBLIC SERVICES: HEARING COMMUNITIES' VOICES

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**Background:** In 2013-2015 All-Ukrainian Network of PLWH implemented the project "Improvement of administrative services in social sphere in selected regions of Ukraine".
**Objectives:**
1. Building capacities of communities to monitor quality and integrity of public services.
2. Increase of civil society organization's (CSOs') capacities for building dialogue with state service providers on innovative approaches to services provision.

**Description:** The project covered 8 regions of Ukraine. Main activities:

1. Development of methodology and tools for assessing public services by representatives of HIV+ community.
2. Training of regional evaluators groups from local PLWH communities.
3. Assessment of recipients' satisfaction, data analysis, development of recommendations.
4. Creation of regional working groups for local opportunities and resources analysis to change service delivery in accordance with the evaluation recommendations.
5. Development and implementation of regional action plans that take into account local conditions and needs.

**Lessons learned:** Accomplishments of the project:
The methodology for assessing the quality of public services were developed, consisting of client's random interview to assess the satisfaction with services, on site assessment of services availability, mystery clients, and assessment of remote services delivery.
CSOs were involved in monitoring the government agencies. Evaluation of clients' satisfaction with public services was provided in 55 organizations, 5036 recipients of public services were interviewed.
Regional action plans were developed by the regional working groups for each project site. The groups consisted of the local authorities and CSOs representatives.
The developed regional action plans were adopted by the main stakeholders and taken as their development strategy basis.
The designed methodology of PLWH community involvement into services' quality evaluation is universal and can be applied in all areas related to the provision of public services.
**Conclusions/Next steps:** Plans for the future:

- Dissemination of the project results to other regions of Ukraine and in other areas of public services.
- Regular involvement of PLWH in public agencies monitoring.
- Implementation of mechanisms to improve the availability of public services through advocacy and collective representation of interests by PLWH community.

## TUPED425

### Where are the men? Addressing the global blind spot around heterosexual men in the HIV pandemic

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**Background:** A growing body of evidence shows that men—of all sexualities but in particular heterosexual men—are significantly underrepresented in HIV and AIDS testing and treatment services but overrepresented in morbidity and mortality data—both in Sub-Saharan Africa and globally. HIV infections among men make up 52% of all new HIV infections globally. Studies consistently show that men's testing is lower than women's in most settings. When men do not know their HIV status, they are more likely to engage in unsafe sex practices and are thus much more likely to transmit HIV to their partners. They are less likely to access and adhere to treatment and more likely to need ongoing care and support—burdens that detrimentally impact women as well as health systems. Men constitute almost 60% of AIDS-related deaths globally, and make up the majority of AIDS-related deaths in every region of the world. Young men are twice as likely to die an AIDS-related than HIV-infected adolescent women.
**Description:** Men's low demand for and utilization of HIV services is a combination of socio-behavioural and structural factors. If the UNAIDS goal of 90-90-90 by 2020 is possible, it is pressing to increase men's use of HIV services, and improve the supply and efficacy of HIV testing, treatment, and adherence services. Critically, this includes engaging men and boys in gender transformation. In this presentation Sonke Gender Justice will discuss evidence-based practices to increase men's use of and access to services, and propose policy and programmatic changes to promote.
**Lessons learned:** Key recommendations include the development of new policies and policy guidelines, community-based testing services, partner and workplace testing, self-testing, clinic navigators, male-only facilities or male-only hours, mass scale up of male circumcision, gender transformative small group and mass media interventions, and community mobilisation strategies.
**Conclusions/Next steps:** If the global community stands a chance of curbing the AIDS epidemic, it is critical to address the gender norms—and the structural manifestations of these norms—that deter men from seeking much needed HIV prevention, treatment and care services.

## TUPED426

### Regional concept notes: lessons from the first window of Global Fund submissions

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**Background:** Regional programs supported by the Global Fund to Fight AIDS, TB and Malaria provide a unique and critical space for advocacy for key populations. In 2015, ICASO and the Alliance synthesized lessons learned from regional concept notes (RCNs) submitted in 2014. The project documented case studies from three regions: Eastern Africa, Southern Africa, and the Middle East & North Africa and drew lessons learned and recommendations for improvement.
**Description:** This project was conducted between December 2014 and May 2015, including the concept note submission deadline of January 31, 2015. Desk research included reviews of relevant documents, such as draft and final concept notes, meeting minutes, and communications. Key informant interviews were conducted with a range of persons involved, including key population network representatives, proposed principal recipients, consultants, technical partners, and other stakeholders. An interview guide was developed and used for phone interviews. Once completed, the project increased understanding among key stakeholders of the time and financial investment involved in RCN development and highlighted the technical support needs for future submissions windows.
**Lessons learned:** Regional programs address contextual concerns such as reductions of HIV incidence and building the capacity of key population networks, and offer opportunities for civil society that may not be a given in national programs, especially where the political will does not exist to tackle stigma and discrimination. Yet the regional programs are burdened with the same requirements for concept note development, as those of national programs. The country coordinating mechanism/National AIDS Program endorsement requirement also presents a substantial drain. Overall, opportunities exist to increase efficiency, offset by the dire need to increase RCN-development funding allocations to better align the costs associated with the process. Finally, it should be recognized that few key population networks have the capacity to develop and lead RCN development. Capacity development for civil society organizations and key population networks should be integral to the RCN process.
**Conclusions/Next steps:** The regional program model fills an important gap and should be continued in the Global Fund's next strategy 2017-2022. Increased technical and financial support should be provided to key populations involved in RCN processes to truly enable their meaningful involvement.

## TUPED427

### Delivering HIV-related community, structural and service development interventions for men who have sex with men in Kenya, Tanzania, Uganda and Zimbabwe: an appraisal of the SHARP programme

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**Background:** In Kenya, Tanzania, Uganda and Zimbabwe, homosexuality is illegal, subject to severe social stigma and discrimination, and often coupled with state-sponsored violence. This environment hampers HIV prevention efforts among men who have sex with men (MSM), who are at a heightened risk of acquiring HIV. The Sexual Health & Rights Programme (SHARP) comprised a number of interventions that aimed to improve the social and political environment within which MSM live, and sensitise clinical services to the specific health and social care needs of MSM. This paper reports on a detailed appraisal of such interventions.
**Methods:** Adopting a rapid feedback approach, the study assessed each discrete intervention in relation to effectiveness, coverage, need, acceptability, feasibility, acceptability and cost. Data was collected via interviews and focus groups with staff and volunteers from seven SHARP-supported MSM-led community based organisations (CBOs) who deliver HIV prevention and care interventions to MSM and analysis of routine monitoring data. Triangulation was facilitated by interviewing other local stakeholders familiar with the interventions delivered and their integration with other health and social care systems.
**Results:** Recognising the need for credible allies, all CBOs in SHARP had, following in-depth sensitisation training, partnered with state sanctioned clinical care providers to allow safe referral pathways to MSM in their localities. This had improved accessibility of sexual health services, although the nature of syndromic-only screening still posed a risk of missed STI diagnoses. Many CBOs have also achieved success in their engagement activities by starting from a position of facilitating holistic well-

being; providing safe spaces for socialising and resilience building among MSM. While some success in policy and lobbying efforts to improve the legal environment has been achieved, significant challenges still remain in safely gaining access and maintaining relationships to key decision makers in shifting political climates.
**Conclusions:** MSM led organisations have earned the trust of large sections of the community and are well-placed to facilitate access to health and social services essential to the well-being of MSM. While essential to the HIV response, both the successes and shortcomings of policy and lobbying interventions should be considered within the broader, largely hostile, political environment for MSM.

## COUPLES- OR FAMILY-CENTRED APPROACHES

### TUPED428

### FAMILY CENTERED APPROACHES: REACHING SPOUSES, COUPLES AND FAMILIES FROM THE WORKPLACE

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**Background:** Workplaces in most sectors in Sub Saharan Africa are largely dominated by men. 90% of employees in companies supported by the Swedish Workplace HIV&AIDS Programme are male, thus resulting in disproportionate access to HIV & AIDS information and services among men and their spouses. Gender inequalities still largely exist. These inequalities result in women being economically dependent on men putting women & men at further risk. Economic dependency of women on men limits ability to negotiate for safe sex.
**Description:** The main objective of the Family centered approach was to close the gap in access to information, prevention services, access to HTS and treatment between the employed men with their spouses and children. When a shared understanding and awareness of HIV & AIDS was created among workers and their spouses, an enabling environment for discussing issues such as safer sex, partner counseling, Couple testing and voluntary disclosure of HIV status was created at family level.
**Lessons learned:**
1. The information gap between spouses/partners regarding HIV transmission, progression, prevention and management was significantly reduced.
2. Inclusion of families in family wellness days increased uptake of HIV & AIDS testing as well as couple testing. On average uptake of testing in SWHAP
3. Spouses volunteered and were trained as community Peer Educators and Community Psycho social Counselors.
4. Formation of spousal clubs which evolved into income generating projects receiving technical and financial support from the companies
5. Parents equipped with skills to encourage in sexual communication with their adolescent children promoting delayed debut and responsible sexual behavior
6. Ripple effects have included spreading of HIV & AIDS information at community level; Some of the trained spouses also volunteer their services at the local clinics

**Conclusions/Next steps:**
1. Inclusion of families into programs promote acceptability of workplace programs
2. Inclusion of families promote increased uptake of testing, treatment and uptake of supplementary/nutritional support to affected families
3. Inclusion of families results in greater openness and voluntary disclosure of HIV status
4. Trained spouses are also taking the lead in community outreach programs to further spread information on HIV and promote testing.

### TUPED429

### ACCEPTABILITY OF WOMAN-DELIVERED HIV SELF-TESTING TO THE MALE PARTNER: A QUALITATIVE STUDY OF ANTENATAL CLINIC-LINKED PARTICIPANTS IN BLANTYRE, MALAWI

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**Background:** High rates of HIV transmission within established sexual relationships in Africa call for high uptake HIV testing strategies that reach both partners. HIV self-test (HIVST) kits enable novel strategies, including partner-delivered kits to encourage testing as a couple at home. We explored the acceptability of using antenatal clinics (ANCs) as recruitment points, building on strong PMCTC programmes in Malawi. We sought the views of women attending ANC and their male partners concerning partner-delivered HIVST kits, either alone or with different approaches aimed at encouraging subsequent linkage into care or prevention.
**Methods:** A formative qualitative study to inform the design of a trial including five focus group discussions (2 men only; 2 women only; and 1mixed gender) was done with a total of 36 participants. Thematic content analysis was used to interpret the data.
**Results:** Providing HIVST kits to pregnant women to deliver to their male partners was highly acceptable to both women and men. Several men strongly preferred this approach to any alternative, as this allowed testing to fit into lifestyles that are characterised by extreme day-to-day economic pressures, including need to raise money each day for food. Both men and women disagreed that introducing woman-delivered HIVST would provoke intimate partner violence (IPV), stating that pregnant women should be culturally "immune" from IPV. Most men stated a preference to self-test alone, ideally followed by the opportunity to re-self-test as a couple.
Regarding interventions for optimising linkage, both men and women felt that fixed financial incentives of ~ USD$2 would increase linkage. However, there were concerns: potential negative consequences included a perceived undue reward for having multiple pregnant partners if financial incentives were too high. A lottery incentive was considered overly disappointing for those who receive nothing towards their evening meal in this extremely poor setting. Phone call reminders were preferred to short messaging service (SMS), given the frequency of "junk" SMSs in this setting.
**Conclusions:** Partner-delivered HIVST through antenatal clinic was acceptable to both men and women. Feedback on additional linkage enablers will be used to alter pre-planned trial arms. Lottery-based interventions may not be as effective in settings with extreme poverty.

### TUPED430

### PREPARING AND SUPPORTING CAREGIVERS IN THE HIV DISCLOSURE PROCESS TO INFECTED CHILDREN AND ADOLESCENTS: LESSONS FROM THE YËGËL PILOT INTERVENTION IN SENEGAL

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**Background:** In accordance with WHO guideline on HIV disclosure counselling for children up to 12 years of age (2011), we developed a pilot intervention (YËGËL) in Senegal to prepare and to support caregivers (i.e. parents and primary careers) throughout the challenging process of paediatric HIV disclosure to infected children and adolescents. The communication describes the family-based pilot intervention and four main lessons learned.
**Description:** Between April 2013-October 2015, following a socio-anthropological study identifying institutional and parental barriers to paediatric HIV disclosure, the YËGËL pilot intervention was designed and implemented in two paediatric services in Senegal.

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30 caregivers of children and adolescents aged from 9 to 15 years were included in the pilot intervention, which included four main components:

1. Over two 2-hour sessions, the preparation of caregivers in peer-groups, informing them about: reasons for disclosure, potential positive and negatives outcomes, negative consequences of non-disclosure, children's HIV awareness and their capacities for secrecy, potential reactions to disclosure, parental shame, fear of rejection and felt-stigma, as well as explanations of the disclosure process
2. Testimonies from parents and peer-adolescents with prior experience of disclosure
3. Parents' participation in a 2-hour child peer-group aimed at preparing them for disclosure, by using children's drawings, images and videos as visual supports.
4. With caregivers' consent, disclosure performed by professionals

**Lessons learned:** 24 caregivers (77% women) out of 30 total completed the four components and disclosed to children. The four main lessons learned were:

1. Synergic effects on caregivers' prepardness of the comprehensive approach, including parental information and support, disclosure performed by professionals and children's collective preparation for full disclosure
2. Peer-groups of caregivers and children fostered collective dynamics, social support and limited of isolation
3. Disclosure performed by professionals strongly helped untrained and emotionally affected caregivers to decide to inform children
4. Parent participation in children's peer-groups facilitated their acceptation of children's readiness to learn of their diagnoses and enhanced intergenerational communication on HIV/AIDS and antiretroviral treatment.

**Conclusions/Next steps:** The YËGËL project demonstrates the acceptability and feasibility of a family-based pilot intervention that prepares and supports caregivers during the all process of paediatric HIV disclosure in Senegal. Results should be evaluated at larger scale in randomized studies.

## COMPREHENSIVE SERVICES FOR THE PREVENTION OF VERTICAL TRANSMISSION, INCLUDING EARLY CHILDHOOD DEVELOPMENT, CHILD CARE AND NUTRITION SUPPORT

### TUPED431

#### EFFECTIVENESS OF A PREVENTION OF MOTHER TO CHILD TRANSMISSION PROGRAM AT BHARATPUR HOSPITAL, CHITWAN, NEPAL

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**Background:** Nepal has a low concentrated epidemic with about 736,000 pregnancies every year (Nepal Report, 2012). The primary cause of pediatric HIV infection is mother-to-child transmission (MTCT), which can be reduced significantly by interventions that include antiretroviral (ARV) therapy and prophylaxis. Prevention of mother-to-child transmission (PMTCT) programs serve as critical entry points for the provision of HIV testing and treatment, though few of these programs exist in resource-limited settings in Nepal.

**Methods:** Data was collected through a retrospective review of medical records of pregnant women who accessed antenatal and delivery services at Bharatpur Hospital from 2011-2015. In the study period, all 53,258 pregnant women registered in the Antenatal Care (ANC) accepted testing. A supplementary review of pregnant women with no prior history of HIV testing was conducted to evaluate HIV testing at delivery. Finally, an analysis of rapid testing and infant DNA Polymerase Chain Reaction (PCR) testing was conducted to assess rates of follow-up testing among HIV-exposed infants.

**Results:** High rates of antenatal testing resulted in early detection of HIV infection among pregnant women. There were high rates of ART initiation among mothers and ARV prophylaxis in infants. Out of 70 newborns registered, 3 died, 67 received 6 weeks of Neverapine prophylaxis and 63 babies completed the protocol. At 6 weeks from the birth, post DNA PCR testing was done among babies. Only 2 infants were HIV positive and both of these 2 infants started ART. And 61 were HIV negative and the MTCT risk was 2.98%. The study shows a good level of enrollment with good drug adherence.

**Conclusions:** Enrollment in PMTCT, high rates of HIV testing during pregnancy, early initiation of ART and prophylaxis to HIV exposed newborns proved successful during the PMTCT program. Linkage to service delivery at the ART center and NGOs resulted in minimum lost to follow up and higher testing among HIV exposed infants. It demonstrates that ARV regimens can be implemented in low resource rural settings with marked decreases of MTCT. Increasing the coverage of PMTCT programs remains the primary challenge.

## INCENTIVES, MICRO-FINANCE AND OTHER ECONOMIC SUPPORT

### TUPED432

#### THE PROMISE OF BEHAVIORAL ECONOMICS FOR HIV/AIDS TREATMENT AND CARE

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**Background:** New strategies are needed to motivate behavior change on the HIV treatment and care cascade. Behavioral economics (BE) offers potential innovative approaches. BE provides a realistic model to explain individuals' decisions by combining insights from psychology with microeconomic theory.

**Methods:** We conducted a rapid systematic review of studies evaluating the effectiveness of interventions using BE to improve uptake of HIV testing, linkage to care, retention in care, and antiretroviral therapy (ART) adherence among people living with HIV. We searched MEDLINE/Pubmed (2010-2015) for experimental or quasi-experimental studies or prior reviews of interventions using BE approaches, including: financial or in-kind incentives, contingency management, nudging, priming, and gamification. Our analysis focused on identifying the effectiveness and durability of BE approaches.

**Results:** We identified 27 eligible studies.

HIV testing: Three demand-side studies and one supply-side study examined the effect of financial incentives on HIV testing and all found significant positive effects.

Linkage to care: One study found that incentives significantly increased linkage to care.

Retention in care: Five studies examined the effect of BE applications on retention in care: one study using vouchers, one study of a comprehensive intervention that included food and transport assistance, two studies using food rations, and one study that changed the default structure for clinic visits. All five studies reported significant positive effects.

ART adherence: We found 20 studies: nine studies assessed financial incentives, and eleven assessed in-kind incentives (prizes (n=2), cell phones or cell phone plans (n=2), food rations (n=5), or community-based interventions including food and transportation assistance (n=2)). One intervention using financial incentives also incorporated gamification. Eight of the nine studies examining financial incentives had positive results, significantly increasing adherence. Studies examining food rations had mixed results. The six other studies had positive results. Seven studies on adherence assessed impact durability after incentives were withdrawn; two of them found positive effects post-intervention.

**Conclusions:** BE applications have demonstrated potential to enhance HIV treatment and care services. However, there is limited evidence about impact durability. Furthermore, most studies focused on financial and in-kind incentives; the full range of BE applications (e.g., priming, gamification, nudging) should be explored and incorporated in future interventions.

### TUPED433

#### CASH TRANSFERS FOR HIV PREVENTION IN YOUNG SOUTH AFRICAN WOMEN: WHAT DO THEY SPEND IT ON? HPTN 068 TRIAL

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**Background:** Worldwide, cash transfers have traditionally been paid to adult women. Evidence from programmes providing cash transfers to adults has suggested that payments to women are likely to be used for the greater good of households, while payments to men may result in negative outcomes. More recently, research has examined the potential for using cash transfers for HIV prevention among adolescent women in sub-Saharan Africa. In the context of concerns about social grants in South Africa, we explored how cash transfers are spent by adolescent women.

**Methods:** HPTN 068 was a 3-year randomized controlled trial to assess the impact of a cash transfer, conditioned on school attendance, on HIV incidence among young rural South African women. 2328 13-20 year old women were recruited and completed annual survey assessments.

A longitudinal qualitative cohort was created with a sub-sample of 71 women (38 from intervention arm). Female, local language-speaking fieldworkers interviewed

young women twice annually. Interviews were recorded, translated and transcribed for coding and analysis in Atlas.ti.
**Results:** At each survey visit, young women reported their cash transfer spending. Cash transfer was mainly spent on toiletries (55.5%). This was followed by clothes (34.5%), school uniform or supplies (29.9%), mobile phones/ airtime (29.3%), and hairdressing (28.9%). Spending on 'negative' items such as alcohol was very low (2.3%) and saving cash was rare. The qualitative data corroborated this information and suggested that 'snacks at school' was also a significant expenditure. There were almost no reports of negative impacts associated with receiving the cash. Indeed, the cash transfers were viewed as positive in terms of improving family relationships (especially with mothers), empowering young women through greater independence and facilitating peer acceptance through access to material goods.
**Conclusions:** Evidence from this study found no negative impacts of providing adolescent women with cash transfers; both in terms of spending and provision of cash to young women in impoverished environments. This corroborates previous research in which payment of social grants to adult women was not found to facilitate negative outcomes and suggests limited concerns with making payments to this young population.

## TUPED434

### MOTIVATING ADOLESCENTS TO TAKE POSITIVE RESPONSIBILITY FOR THEIR LIVES: LESSONS LEARNED FROM IMPLEMENTING A CONDITIONAL CASH-TRANSFER INTERVENTION IN THREE COUNTRIES IN SOUTHERN AFRICA

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**Background:** RHIVA is a school-based HIV prevention pilot project that aims to assess the effectiveness of two levels of intervention (Intervention 1: conditional cash transfer; and Intervention 2: conditional cash transfer plus enhanced life-skills materials) in changing adolescents' behavior regarding their sexual reproductive health (SRHR) and their economic future, and ultimately to reduce HIV infections among this vulnerable group.
**Description:** The RHIVA program was implemented in Mozambique, Namibia and Zambia from February 2014 to December 2015, and involved 3374 learners in Grades 9-12. Each year, learners received cash transfers of 20 USD for each of four milestones achieved, which include knowing their status (HCT) and academic performance. In addition, learners in Intervention 2 were exposed to "My life! My future!" materials that comprise youth-friendly SRHR and career development components.
**Lessons learned:** Although summative evaluation is currently on-going, preliminary evidence suggests that the incentive model is promoting a positive change in learners' attitudes and behaviors toward their sexual reproductive health and their future. HCT uptake was high in Namibia and Zambia, as demonstrated by the percent of learners who achieved the Know Your Status milestone (83% in Year 1, and 77% in Year 2). Success stories of learners point to significant life changes, such as ending intergenerational relationships, as a result of the cash transfer. Key lessons derived from the pilot include:
1) rigorous data management and compliance is critical for monitoring the HCT uptake among adolescents and assessing the impact of the intervention;
2) implementing in different settings requires additional care to the cultural nuances that affect successful implementation;
3) testing non-monetary incentives can assist in understanding what incentivizes adolescents to engage in positive behavior.
**Conclusions/Next steps:** Preliminary evidence suggests that cash incentives provide strong motivation to learners to take responsible action for their sexual reproductive health and for their schooling. However, the feasibility of funding a scaled up program poses a challenge for governments. More research is needed to determine the effectiveness of different incentive models, and whether the incentive model leads to prolonged behavior change after the incentives have stopped, thus resulting in a greater benefit for the investment made.

# SAFE HOUSING, SOCIAL PROTECTION AND OTHER CARE AND SUPPORT FOR THOSE AFFECTED BY HIV

## TUPED435

### HOUSING IS HEALTH: EVIDENCE OF THE IMPACT OF HOUSING ON HIV HEALTH OUTCOMES FROM A HARM REDUCTION HOUSING PROGRAM

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**Background:** Prior research has demonstrated that stable housing is a key social determinant of the health of persons living with HIV/AIDS (PLWHA). In the U.S. and other countries, economic and social factors (e.g. substance use and criminal justice system involvement) often contribute to homelessness and housing instability among PLWHA. This program analysis describes an innovative harm reduction housing program and its impact on HIV health outcomes for homeless PLWHA in a small U.S. city.
**Description:** The program, Caracole, provides a scattered site supportive housing to homeless PLWHA in Cincinnati, Ohio, USA. Two years ago, the program adopted a "housing first" harm reduction-based approach to promote housing stability. The housing team includes case management, specialized housing support, and optional mental health services. The team coordinates services with a variety of other providers to meet participants' holistic health and housing needs. These service partners include the local syringe exchange program, Planned Parenthood for testing and HIV education, medical treatment providers, mental health and substance abuse treatment agencies, shelters, outreach workers, and other housing programs.
**Lessons learned:** Program data demonstrates the importance of supportive housing for HIV health. Of 150 formerly homeless participants housed in the program between 2000 and 2015, the percent of participants achieving a healthy t-cell count (>500) increased from 40% at intake to 59% at last status. Participants achieving undetectable viral load increased from 62% at intake to 72% at last status. The majority of participants (72%) also maintained or increased income and decreased contact with the justice system. Adopting a harm reduction approach increased participants' housing stability and was associated with better HIV health. For example, average housing tenure for participants with a healthy t-cell count was 3.9 years, compared with 2.6 years for participants with low t-cell counts.
**Conclusions/Next steps:** Safe and supportive housing is key to the health of PLWHA. This analysis demonstrates that harm reduction housing programs may help individuals stay stably housed and improve outcomes along the HIV/AIDS treatment cascade. Further research-practice collaborations should examine best practices for increasing housing stability and the impact of these practices on HIV-related and other health and social outcomes.

## TUPED436

### HITS AND MISSES OF SOCIAL PROTECTION: FINDINGS OF A HIV-SENSITIVITY COMPARATIVE ANALYSIS OF GOVERNMENT AND CSO SOCIAL PROTECTION INTERVENTIONS IN KENYA

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**Background:** HIV Prevalence in Kenya has a dialectical relationship with socioeconomic vulnerability in sub-Saharan. A lack of resources compromises livelihood and survival systems; which in turn creates concurrent financial and structural drivers and barriers to prevention, care and treatment services. Social protection (SP) aims to create a safety net and reinforce socio-economic stability, breaking the link between poverty and HIV transmission while simultaneously ameliorating the financial impact of HIV and AIDS' on poor households. The Kenyan Government (GOK) promotes cash transfer-based-(CT) SP while NGO-led programs adopt the OVC livelihood strengthening(LS) strategy to support HIV/AIDS management among vulnerable households.
**Methods:** The analysis examined and compared government-led CT and CSO Livelihood support interventions in order to inform design of comprehensive HIV-responsive SP models for addressing vulnerability across HIV/AIDS prevention continuum among the poor.
This comparative analysis gathered qualitative data through 5 FGD with CT beneficiaries, community health volunteers; support groups; community leaders, and OVC caregivers using FGD guides. Program narrative reports from the APHIAPlus

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Nairobi Coast covering 5 Coastal counties (2013-2015) and extensive literature were included in the analysis using Nvivo software.

**Results:** GoK CT programs support vulnerable households- elderly, disabled and orphaned in general while CSO-led interventions promote livelihood support activities for HIV OVC caregivers irrespective of individual OVC differences. CT provides stipends on monthly basis to subsist basics needs. LS provides food, clothing and scholastic materials (direct support) and seed capital for initiating IGAs (care givers). Both approaches have improved capacity for basic needs provision for vulnerable households. Both ignore structural issues -GBV, stigma and discrimination affecting HIV/AIDS prevention and management hence are mildly sensitive to HIV-related vulnerability.

**Conclusions:** Both approaches to SP are inadequate in comprehensively addressing needs of HIV-related vulnerability. They lack comprehensive and integrated programming across the interventional continuum: protective-preventive-promotive-transformative; that focus on sustainability, short-term and long term-needs; exclusion, GBV, discrimination and stigma. Effective SP should focus on stigma, rights protection socio-economic livelihoods; accessible, quality and reliable preventive, treatment, care and supportive health services.

## DEVELOPMENT AND POVERTY ALLEVIATION

### TUPED437

### *FINDING THE LEADER WITHIN:* EXPERIENCE AT THE BOTSWANA-BAYLOR CHILDREN'S CLINICAL CENTRE OF EXCELLENCE (COE)

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**Background:** Due to widespread antiretroviral roll-out, children born with HIV are now surviving into adolescence and young adulthood. As they age, they are faced with new challenges including poor academic achievement and unemployment. In 2013, the Baylor COE opened the Baylor Bristol-Myers Squibb Phatsimong Adolescent Centre housing adolescent services, psycho-social support, library, computer labs and sports court - as a resource to support and rehabilitate adolescents with or without HIV using various interventions including *Finding the Leader Within*.

**Methods:** *Finding the Leader Within* is a year-long leadership program for out-of-school youth aged 16-25 years. The program was implemented in partnership with Stepping Stones International (SSI), a non-profit organization based in Mochudi, Botswana. The program ran four days a week and the curriculum was designed to give participants skills to gain meaningful employment (full-time, salaried). Participants completed lessons in leadership development, career and vocational development, healthy and productive lifestyle education, financial and business literacy, computer literacy, and optional English class. To graduate, participants were required to successfully complete at least 80% of the curriculum. Trainers included adolescent services staff, social workers, clinical psychologist and vocational facilitators. Seed funding was provided by SSI.

**Results:** In April 2015, a founding class of 38 out-of-school youth aged 18 to 25 (24 Female) were enrolled. Their highest education levels were: primary (1) ; junior secondary (21), senior secondary (14), and part tertiary (2). In the end, 28 of 38 (74%) completed a minimum of the required 80% of the curriculum..The 10 drop-outs left the program early without completing 25% of the curriculum for various reasons: found meaningful job (4), went back to school (1), became ill (1), and unknown (4).

**Conclusions:** *Finding the Leader Within* is an effective intervention for school drop-outs. Maximizing the outcomes of the Leadership Program calls for skilled facilitators, diversifying skills training, securing adequate funding, and employing a full-time coordinator, and developing connections with employers in the community.

### TUPED438

### COMMON THREADS: A PEER-LED INTEGRATED PREVENTION, TRAUMA-INFORMED AND VOCATIONAL DEVELOPMENT TRAINING FOR WOMEN LIVING WITH HIV

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**Background:** The objective of this presentation is to increase awareness and skills related to the need to implement trauma-informed vocational and HIV prevention interventions for African American women with HIV. Common Threads recognizes the impact of poverty and limited access to resource increase vulnerability to HIV transmission, especially for African American women who encounter numerous social and economic barriers. By addressing the underlying trauma and other economic and social vulnerabilities to HIV, the goals of Common Threads are to increase self-esteem, HIV self-management, and vocational skills. These goals are highly associated with increased engagement in care, reduction in HIV transmissions and reduced health disparities.

**Description:** Common Threads is an integrated HIV prevention and vocational intervention program for African American women living with HIV/AIDS, which respond to the impact of trauma on women living with HIV and their vocational development. In addition to providing an overview of the Common Threads program and research that supports this approach, this presentation will utilize interactive activities to support an engaging and positive environment.

**Lessons learned:** Both quantitative and qualitative data related to program outcomes will be shared. We will report quantitative data for an initial program evaluation that indicates that participants gained knowledge on health prevention, demonstrated a decrease in HIV-related stigma and increased engagement in health care. Participants also reported increased willingness to disclose their HIV status and share their life experiences with friends, family, and their community members. They also indicated increased financial and social stability.

**Conclusions/Next steps:** Current policies and initiatives call for further integration of social determinants of health into HIV/AIDS prevention and care interventions. Poverty, stigma, and the lack of social support are fueling the transmission of HIV, especially among African American women who face multiple medical, psychosocial, financial/legal and vocational vulnerabilities that limit their access to HIV care and the opportunity to pursue personal and financial empowerment.

## TACKLING STIGMA AND STIGMA REDUCTION INTERVENTIONS

### TUPED439

### "THINGS PEOPLE SAY:" ENHANCED STIGMA REDUCTION TRAINING REDUCES HIV-RELATED STIGMA AMONG HEALTHCARE PROVIDERS PROVIDING SERVICES TO YOUNG PEOPLE AFFECTED BY HIV IN BANGLADESH

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**Background:** HIV-related stigma can inhibit the uptake of critical HIV and sexual and reproductive health and rights (SRHR) services, particularly among young people. Working with health providers to reduce HIV stigma in the healthcare setting is an important strategy to improve service utilization and quality of care. The Link Up project—through partners Marie Stopes Bangladesh (MSB) and Link Up Bangladesh—implemented a stigma reduction training program for health providers, aiming to improve service quality for young people at higher risk (e.g. sexually active, sex workers, sexual minorities). The impact of these trainings on provider stigma was assessed.

**Methods:** A cohort of 300 MSB doctors, paramedics/nurses, and counselors were recruited, given a self-administered questionnaire measuring stigmatizing attitudes towards young populations at risk, and attended a two-day HIV and SRHR training (including a 90-minute session on gender and stigma issues). Six months later, the cohort repeated the survey and participated in a one-day supplemental training on stigma. The additional training was designed to encourage reflection on personal values, and to identify possible manifestations and negative impacts of stigma. A third survey was administered 4-6 months later. Additionally, a cross-sectional survey of MSB/Link Up clients age 15-24 was implemented before and after the second stigma training to assess client satisfaction.

**Results:** Stigma among MSB providers decreased significantly after both the initial HIV/SRHR training and after the supplementary stigma training. This included reductions in provider agreement that people living with HIV should be ashamed of themselves (35.3% to 19.7% to 16.3%; p< 0.001, Cochrane's Q test). Substantial reductions were also observed in providers who agreed that at-risk young people engage in "immoral behavior"—including sexually active young people (50.3% to 36.0% to 21.7%; p<0.001) and men who have sex with men (49.3% to 38.0% to 24.0%, p< 0.001). Young clients reported improvement in overall satisfaction with services after the second stigma training (67.8% to 97.8%; p< 0.001, Pearson's chi-square test).

**Conclusions:** Provision of a more intensive, supplementary stigma reduction training to MSB health providers resulted in significantly reduced stigmatizing attitudes towards young people affected by HIV. It is recommended that this training approach be scaled up substantially in Bangladesh.

## TUPED440

### MOVING TOWARDS A STIGMA-FREE LOUISIANA: A HOLISTIC APPROACH TO ADDRESSING LAYERED STIGMA AND DISCRIMINATION TO ENHANCE ACCESS TO HIV/STI SERVICES IN THE SOUTHERN UNITED STATES

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**Background:** In 2014, the Louisiana Public Health Institute in collaboration with 13 agencies from diverse sectors was funded by the U.S. Office of Minority Health to enhance access to HIV/STI services for young Black men living with and at risk for HIV infection; strengthen collaboration and referral systems among agencies; and address the social and economic barriers to services.

**Description:** As a result of Louisiana's high HIV/AIDS and social indicators (e.g., stigma, incarceration, and homelessness), this initiative in New Orleans and Baton Rouge:

1) provides care coordination and job supportive services for criminal justice involved Black men,

2) convenes Historical Black Colleges and Universities (HBCUs) in Louisiana to promote HIV awareness and stigma reduction efforts on college campuses;

3) conducts mystery shopping with housing providers to document housing discrimination experienced by young Black men;

4) implements anti-discrimination trainings with large employers; and

5) engages people living with HIV infection to lead and implement the HIV Stigma Index Project.

**Lessons learned:** Qualitative results revealed that the development of two integrated centers (one in New Orleans and Baton Rouge) consisting of 13 agencies has increased coordination and collaboration among partners to address the needs and barriers of young Black men. Initiative partners have developed formal relationships with employers to increase the number of Black men that are gainfully employed over time. It is important to conduct follow-up with young Black men in order to identify changing needs and barriers to services over time. The HIV Stigma Index project has built ownership and research capacity of PLWH to develop local approaches and solutions to HIV stigma and discrimination.

**Conclusions/Next steps:** Funding has been secured to connect the Orleans Parish Prison with the Greater New Orleans Health Information Exchange in order to enhance coordination and quality of care provided for former prisoners. Three hundred PLWH will be interviewed as part of the HIV Stigma Index Project to document their personal experiences of stigma and discrimination. The results will be used to develop local action plans. Mystery shopping with housing providers and convening of HBCUs will be conducted in 2016.

## TUPED441

### AN HIV STIGMA REDUCTION INTERVENTION FOR AFRICAN AMERICAN WOMEN: PRELIMINARY RESULTS FROM THE UNITY WORKSHOP TRIAL

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**Background:** AIDS has been a leading cause of death for African American women between the ages of 25 and 34 for the last 10 years. Stigma, reported at high levels among African Americans, can undermine optimal engagement in care, which is essential to reducing AIDS mortality.

**Methods:** In this first randomized controlled trial of an HIV stigma reduction intervention, the UNITY workshop, we examined stigma reduction among 239 African American women with HIV in Chicago and Birmingham before and after participation in one of two peer support group interventions: the UNITY workshop or a breast cancer awareness program (time-attention control). We examined change in stigma scores using the 14-item Stigma Scale for Chronic Illness for women in the two arms from baseline to (a) immediate and (b) 4 months post-treatment using mixed effects regression models. We also analyzed whether socio-demographic (age, education, years living with HIV) and mental health variables [alcohol use, posttraumatic stress symptoms (PSS), depressive symptoms] moderated the effect of treatment.

**Results:** Preliminary analyses of the 174 participants, who thus far completed a follow-up assessment, indicated a trend towards reduction in stigma scores from baseline to immediate post-treatment (*Estimate*=-1.2, *SE*=0.65, *p*=.06) that was maintained at 4-month post-treatment across both arms. There was greater post-treatment reduction in stigma scores in the UNITY group (-1.6 vs -0.5 points; not statistically significant). Examination of socio-demographic and mental health variables showed that PSS scores moderated this finding, and this effect was statistically significant. Women with higher PSS scores had greater reductions in stigma scores in UNITY compared to the breast cancer intervention immediately post-treatment (*Estimate*=-7.2, *SE*=2.9, *p*=.01).

**Conclusions:** Thus far, our results suggest promise for peer support interventions, such as the UNITY workshop, for African American women with HIV. Our preliminary findings suggest that post-traumatic stress symptoms may play an important role in whether or not African American women with HIV benefit from this peer support approach. A total of 239 women will complete follow-up assessments and 'booster' workshops, and further analyses of these data will contribute to our understanding of the potential benefits of this stigma-reduction intervention.

## TUPED442

### ADDRESSING THE INTERSECTIONAL ISSUES OF HIV AND AIDS THROUGH CAPACITY DEVELOPMENT OF ACADEMICS AND CURRICULUM

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**Background:** The Higher Education and Training HIV and AIDS (HEAIDS) is the flagship HIV prevention programme of South Africa's National Department of Higher Education and Training (DHET)**.** In aligning the programmes activities to the United Nations sustainable development goal number 16, HEAIDS received support from the country's National Skills Fund to develop the capacity of academics to use the higher education curricular to address social and development issues of the country.

**Description:** Twenty universities across the country received direct grants, to address capacity needs of academics. An analysis of their needs resulted in the development of 5 thematic areas which have been developed into capacity development workshops that are being facilitated across the universities. The Critical Diversity Literacy work implemented addressed the intersectional issues of HIV and AIDS.

**Lessons learned:** The Critical Diversity Literacy tool uses 8 analytical criteria to evaluate the presence of critical diversity literacy in any given social context. The workshop created a safe space to explore race, class, power and privilege thus addressing the many intersectional issues that pervade the HIV and AIDS and its persistence in society. Outcomes indicated that there were clearly psycho-social dimensions of the disease evident especially in the South African context. Participants were encouraged to confront their own biases and prejudices and develop an awareness of the role that that may play in perpetuating the challenges that we experience with respect to stigma and discrimination. In this particular context, academics are enabled to explore how their attitudes, perceptions and behavior may influence their teaching. This awareness is encouraged within the transformation agenda. While HIV and AIDS is the entry point, the workshop created a conduit to speak to the broader social justice issues.

**Conclusions/Next steps:** Providing academics with the tools to confront their own realities, biases and prejudices has proven to be a critical entry to defining the role that academics and exploring the agency of academics to use their curricular as a transformative tool in enabling their students to begin to shape and change the society that they live in and become better prepared to take their place as responsible and responsive citizens.

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## TUPED443

### FEASIBILITY, ACCEPTABILITY, PRELIMINARY EFFICACY OF A STIGMA MANAGEMENT INTERVENTION FOR SPANISH-SPEAKING HIV-POSITIVE GAY, BISEXUAL AND OTHER MEN WHO HAVE SEX WITH MEN

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**Background:** Globally, gay, bisexual, and other men who have sex with men (MSM) remain disproportionally affected by the HIV/AIDS epidemic. In Puerto Rico (PR), a third of all men with HIV are MSM and HIV incidence in this group has increased 126% since 2002. MSM are among the least likely to engage in HIV-related services, mostly due to the multiple types of stigma and discrimination experiences they are subjected to because of their sexual minority and HIV-status. Despite the evidence of the negative impact stigma has on populations affected by HIV/AIDS, limited attention has been placed to the development of interventions that address it. In this presentation we will discuss findings from the implementation of a stigma management intervention targeted to HIV+MSM.
**Methods:** *Contacto*, a six-week individual intervention targeted to Spanish-speaking HIV+MSM in PR, consists of three encounters with a health educator using motivational interviewing techniques. The intervention supports participants' management of the negative impact of stigma related to HIV-status and sexual orientation/identity, and was developed using a convergent parallel mixed methods research design. Data for feasibility was collected through the resources and materials needed for the intervention, data about recruitment and retention rates informed acceptability, and preliminary efficacy was tested using a pre-post assessment. Analyses were completed using SPSS v.22.
**Results:** 98 participants' charts were created and included materials used during the intervention (tools to assess readiness to take action, educational materials, worksheets for plan development, etc.). Of all participants approached, 56.2% were recruited. All of the participants have attended to at least one encounter with the health educator. Participants' retention rate is 96.2%. In preliminary efficacy assessment, lower levels of HIV-felt stigma ($p$-value< 0.001), gay stigma ($p$-value< 0.001) and internalized homophobia ($p$-value=0.002) were reported.
**Conclusions:** The pilot assessment of this intervention targeted to HIV+MSM evidences the feasibility of fostering skills to manage the impact of the interconnections of multiple sources of stigma, while building resilience to disclose HIV status and engage in care. The development of interventions to reduce the impact of stigma among diverse groups must consider the cultural context where implemented.

## TUPED444

### WHAT WORKS TO PREVENT AND RESPOND TO VIOLENCE FOR FEMALE SEX WORKERS (FSW), MEN WHO HAVE SEX WITH MEN (MSM) AND PEOPLE WHO INJECT DRUGS (PWID): A SYSTEMATIC REVIEW

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**Background:** Structural factors contextualize individual-level risks for HIV acquisition and transmission; especially within key populations. Despite their distinctions, key populations including MSM, FSW and PWID share social harms including criminalization and marginalization of occupation, sexual identity, and practices; together these factors hinder the coverage and uptake of effective HIV prevention and treatment responses. The need to prevent and respond to violence as a component of an effective HIV response is clear, though less is known about the content of these interventions.
**Methods:** We systematically reviewed the literature characterizing violence-related interventions for MSM, FSW or PWID across the three components of a comprehensive GBV response, including prevention, protection such as survivor support and services, and accountability such as legal and policy action. A comprehensive and systematic search protocol was iteratively developed including databases for both peer-reviewed and non-peer-reviewed reports. Our objectives were to characterize violence interventions, the level(s) at which they were implemented, and the quality of evidence of their success.
**Results:** Of 2980 (770 MSM, 1461 FSW, 749 PWID) peer-reviewed articles and 1040 (301 MSM, 476 FSW, 263 PWID) reports identified, 40 (15 MSM, 19 FSW, 11 PWID, not mutually exclusive) met inclusion criteria, representing 14 countries. Structural level interventions including safe environments for PWID and FSWs, and policy changes for MSM, enhanced safety. An integrated intervention for FSWs blending empowerment and police training improved safety and reduced violence. Individual level interventions included violence screening for MSM, and targeted violence response services for MSM and FSWs; where evaluated, rapid response mechanisms increased case reporting. Violence-related safety promotion and risk reduction counseling for FSWs reduced violence in some settings but not others. Quantitative evaluations were limited (18 total; 5 MSM, 9 FSW, 6 PWID).
**Conclusions:** Violence prevention and response interventions for MSM, FSWs and PWIDs span individual, community and structural levels, with qualitative evidence of promising practices at each level. Rigorous quantitative evaluations are limited. Implementation research approaches represent a potential methodology to facilitate the rigorous evaluations needed of promising practices to facilitate scale and assess improvements in HIV prevention, treatment, and human rights outcomes when adequate scaled.

## TUPED445

### A PARTICIPATORY THEATRE INTERVENTION PILOT STUDY TO REDUCE STIGMA TOWARDS LESBIAN, GAY, BISEXUAL AND TRANSGENDER (LGBT) PEOPLE IN SWAZILAND AND LESOTHO

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**Background:** Stigma and discrimination targeting lesbian, gay, bisexual and transgender (LGBT) people compromise health and human rights. It is critical to address LGBT stigma in Swaziland and Lesotho, the countries with the highest HIV rates in the world. Scant research has explored effective strategies to reduce LGBT stigma in Southern Africa. We developed and pilot-tested a participatory theatre intervention to reduce stigma towards LGBT people in Swaziland and Lesotho.
**Methods:** This was a multi-centre pilot study. We conducted in-depth interviews with LGBT people (Swaziland: n=50; Lesotho: n=50) to enhance understanding of LGBT stigma. Local LGBT and theatre groups worked with this data to create 3 short skits to demonstrate stigma experienced by LGBT persons in healthcare, family, and community settings. We used purposive sampling to recruit nursing students, community members, healthcare providers, and educators in Swaziland and Lesotho as participants. Participants conducted a pre-test (Time 1) followed by a 2-hour participatory theatre intervention. Directly following the intervention participants conducted a post-test (Time 2), and participated in a focus group to explore reactions to the participatory theatre. Participants completed a survey 6 weeks post-intervention (Time 3). Mixed-effects regression was conducted to determine changes in LGBT stigma between the time points.
**Results:** There were no significant differences in LGBT stigma between Lesotho participants (n=57) (mean age: 27.7, SD: 9.5; gender: men 35%, women 65%) and Swazi participants (n=49) (mean age: 26.7, SD: 6.5; gender: men 40%, women: 60%) at pre/post intervention so findings are combined across sites. LGBT stigma from Time 1 to Time 2 decreased 5.7% (95% CI: -9.2, -2.2; p< 0.01). The mean score change from Time 1 to Time 3 was 5.6% (95% CI -11.9, 0.7, p=0.08). Focus group participants discussed increased understanding of: LGBT stigma and discrimination; sexual and gender diversity; and increased self-knowledge of personal biases.
**Conclusions:** Findings reveal initial decreases in LGBT stigma following a participatory theatre intervention in Swaziland and Lesotho. Changes were not sustained at 6-week follow up, however, highlighting the need for booster sessions or alternative approaches to reinforce anti-stigma messaging. Qualitative findings suggest that participatory theatre holds promise in promoting understanding and self-reflexivity regarding LGBT issues.

## Traditional and complementary approaches

### TUPED446

#### Beyond the workplace: upscaling through supply chain and mentorship

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**Background:** The Swedish Workplace HIV/AIDS Programme (SWHAP) is a joint initiative by International Council of Swedish Industries (NIR) and Swedish industrial and Metal Workers' Union (IF Metall) and funded by Swedish International Development Agency (SIDA). The Program primarily targeted Swedish linked companies. The program is currently implemented in 10 countries in East and Southern Africa. 365 workplaces in 127 companies in 10 countries with 32 000 employees running workplace proms with average of 69% HTS uptake among partners.
**Description:** The current partners have developed extensive capacity and expertise in developing, implementing and managing their workplace programs. The next step was to extend the program to contractors and suppliers - Supply chain with HIV/AIDS workplace programs and mentor neighboring companies to have the same.
The main objective of the program was to develop the capacity to fight HIV/AIDS in the Swedish companies' supply chain, Minimize the risk to which Supply Chain company's and Swedish companies are exposed to in respect of HIV/AIDS in the workplace, Maintain the Swedish company's supply chain, Demonstrate leadership in the Southern Africa region in managing HIV/AIDS, Develop international quality practice on how the private sector responds to HIV/AIDS.
The role played by the mentor company was to take the lead role in the implementation of the programme. The mentor companies were responsible for coordination, logistics, training, monitoring and evaluation and continuously liaised with by service providers to support HTS.
**Lessons learned:** To date the SWHAP programme has supported 50 companies at 57 work sites and have reached 15 114 workers with HIV/AIDS information, developed policies, built capacity among P.Es and committees and conducted HTS.
1. The program has succeeded in minimizing HIV risk among the Swedish Companies Supply Chain .
2. Demonstrated leadership at national levels in private sector workplace program development.
3. mentorship process a progressive and innovative way to cascade learning's from workplaces and spread best practices.
**Conclusions/Next steps:**
- Supply chain programs have proved their impact and are very successful based best practice from the mentor company
- Replication of model to more companies
- Recommend to other development partners to take up similar initiatives.

### TUPED447

#### Complementary and integrative health (CIH) use in older adults with HIV

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**Background:** People living with HIV report higher CIH utilization than the general population but little is known about CIH use in older adults with HIV (OAWH). This study examines differences between OAHW CIH users and non-users, and examines if CIH use mediates the relationship between HIV-stigma and psychological well-being (PWB).
**Methods:** We used data from the Research on Older Adults with HIV study (ROAH; N = 914), which recruited HIV-positive participants aged 50 and older via New York City organizations in 2005 using a non-probability purposive sampling technique. PWB was assessed with Ryff's six dimensional measure (1989), stigma with the HIV Stigma Scale (Berger et al., 2001), and CIH use was self-reported. Data were analyzed for group differences using *t*-tests and chi-square analyses. Structural equation modeling (SEM) was used for mediation analysis.
**Results:** The ROAH sample was 71% male, the mean age was 55.5 years, 87% were racial/ethnic minorities and 34% were sexual minorities. Twenty-nine percent were using CIH, with body based methods (e.g., chiropractic) most frequent (14%), followed by alternative medical systems (e.g., acupuncture; 13%), biologically-based therapies (e.g., herbs; 12%), mind-body interventions (e.g., meditation; 6%), and energy therapies (e.g., reiki; 2%). CIH users were significantly more likely to have an AIDS diagnosis, be working, and identify as a sexual minority than non-CIH users. The SEM model showed a good fit; RMSEA=.058, 95% CI [.053, .063]. CIH use was positively associated with PWB (β = .09) and partially mediated the association between HIV-stigma and PWB. The negative relationship between HIV-stigma and CIH use was significant only for sexual minorities (β = -.18), while the positive effect of CIH use on PWB was significant only for heterosexuals (β = .12).
**Conclusions:** Finding that CIH use is associated with better PWB highlights the salience of developing and examining CIH interventions for OAWH. Given the negative association of HIV-stigma on CIH use in sexual minorities, ASOs are encouraged to provide CIH to mitigate the HIV-stigma clients may perceive outside ASOs. CIH providers can extend their outreach to OAWH by proving welcoming messages to counteract HIV-stigma such as including "HIV" in the list of conditions treated.

### TUPED448

#### The role of indigenous knowledge in HIV communication, prevention, treatment, care and support in Malawi

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**Background:** Indigenous knowledge (IK) is the basis for local-level decision making to solve local problems. In Malawi experience has shown that behavior change interventions, based on models of diffusion of knowledge, change and innovation using participatory approaches and common impersonal media have not been fully effective. A study was therefore conducted to assess the role of IK in HIV prevention, treatment, care and support.
**Methods:** This was a cross-sectional and qualitative study comprising in-depth and key informant interviews as well as focus group discussions. Data were collected in ten main cultural sites of Malawi including two suburban cultures from two major cities, Lilongwe and Blantyre. The secondary data collection was done through desk reviews of literature. The research focused on two major areas: Role of IK in
(a) HIV prevention, treatment, care and support; and
(b) Communication strategies.
**Results:** 98% of respondents accept that IK can play a role in HIV prevention. The study shows that 53% (78 of 146) maintain that respect for parents' and elders' counsel is primary in HIV prevention. In order to implement IK for HIV prevention there is need to manage westernization and modernization and eradicate negative behavioral patterns. A majority (101 of 146) of respondents identified one to one education and counselling as appropriate media and channels for communicating IK. Most people (121 of 146) believe herbs can be used to treat AIDS particularly boosting the immune system.
**Conclusions:** In order to implement IK for prevention, treatment, care and support there is need to manage westernization and modernization. There is also need to manage stigmatization of those who want to live by positive IK. To implement IK for HIV treatment a number of challenges need to be resolved. These include scarcity and cost of local herbs, religious beliefs and traditions, belief in modern medicine, stigmatization and denial among others.

## Voluntary counselling and testing programmes and other approaches to HIV testing such as community-based testing and self-testing

### TUPEE449

#### Investigating feasibility and acceptability of a rapid HIV self-testing device in adolescents and young adults

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**Background:** While HIV counseling and testing (HCT) are traditionally available from clinics and day hospitals in South Africa, most adolescents do access these and do not know their status. Adding HIV self-testing to the option menu may afford an opportunity to test for those who would otherwise delay testing. The objective of the current study was to investigate the usability and acceptability of an HIV rapid self-testing device in adolescents and young adults (16-25) at the Desmond Tutu HIV Foundation Youth Centre and Mobile Clinic.

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**Tuesday 19 July** Poster Exhibition

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**Methods:** Self-presenting adolescents and young adults were invited to participate in the study investigating the fidelity, usability and acceptability of the AtomoRapid HIV Rapid self-testing device. During the study 224 participants enrolled, where 155 (69,2%) were female. A healthcare professional demonstrated use of the device to participants. Participants then completed the self-test in the presence of the healthcare professional who rated the participants' accuracy of using the device. After completing the HIV self-test, participants rated the acceptability and usability of using the HIV rapid self-testing kit.
**Results:** Overall, fidelity was high; 216 (96,4%) participants correctly completed the test and read and interpreted the HIV test result. There were eight (3,6%) user errors; six participants failed to prick their finger even though the lancet fired correctly. These participants correctly completed the test and read their results correctly on a second attempt. There were two user errors where participants failed to use the device correctly by breaking the device capillary tube and not filling the capillary tube. Participants rated acceptability and usability highly, with debut testers giving significantly higher ratings for both. Younger participants gave significantly higher ratings of acceptability.
**Conclusions:** The results of this study show that HIV self-testing with the AtomoRapid device was highly acceptable and that adolescents and young people can accurately use the device. Further research may investigate how much further support is needed to ensure that self-testing is undertaken safely.

## TUPEE450

### SCALING UP STANDARDS, TESTING AND LINKAGE TO CARE: IMPLEMENTATION OF A PORTUGUESE COMMUNITY-BASED SCREENING NETWORK

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**Background:** Portugal has 60-65.000 people living with HIV, 20-25.000 are undiagnosed. Every year over 1.000 people are newly diagnosed with HIV and late presentation is very frequent (49,1% in 2014), making it one of the most expressive epidemics in Western Europe. Validity of the national surveillance data on Hepatitis has never been evaluated. Since 2011, NGO GAT provides tailored community-based counselling, testing and linkage to care in Portugal for HIV priority groups and, since 2012, engaged in a joint action with other community based structures to promote access to prevention, scale-up testing and to gather surveillance data for advocacy and funding. Neither national recommendations nor surveillance systems are established to monitor prevention, testing and linkage to care outside formal health structures.
**Methods:** Since May 2015, GAT is promoting the creation of a Community-based Screening Network, according to ECDC, UNAIDS and WHO recommendations, that enabled cooperative training, centralised laboratory supervision (partnership with São João Hospital Centre), integrated HIV, HBV, HCV and syphilis screenings roll-out and national open prospective cohort implementation (partnership with Institute of Public Health of the University of Porto).
**Results:** Since August 2015, 13 organizations were incorporated, totalling 24 testing points (including 7 mobile units). Over 65 people received training to offer and perform all 4 tests and collect surveillance indicators. During 2015 (pre and post network), 9786 HIV tests (206 reactive), 1962 HBV (37 reactive), 2467 HCV (71 reactive) and 4538 syphilis tests (168 reactive) were performed. Of the viral hepatitis and syphilis reactive results, 234 (84,8%) were HIV negative. From October to January 2015, 665 users of these community based testing services accepted to be enrolled in the cohort.
**Conclusions:** Integrated offer of the four tests allows for the identification of otherwise lost diagnostic opportunities, and thus should be made available whenever possible to maximize efficiency of screening programs. Articulation between Community, Academia and Public Health sectors offers the opportunity for the development of innovative solutions, both in terms of service delivery and in terms of surveillance systems. Lastly, community based testing continues to show its efficiency in reaching key groups and in finding undiagnosed infections.

## TUPEE451

### REACHING THE FIRST 90: INDEX CASE HIV TESTING AND THE ROLE OF A COMMUNITY MODEL OF CARE IN TETE, MOZAMBIQUE

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**Background:** Community-based HIV testing and counseling (HTC) is an essential WHO-recommended complement to facility-based testing. Médecins Sans Frontières and the Mozambican Ministry of Health in Tete introduced Community ART groups (CAGs), a community-based strategy to simplify ART access, in 2008. Since 2012, the CAGs potential to promote community testing through an index case strategy and linkage to care has been explored at the community-level. This analysis describes the outcomes of this approach.
**Methods:** Retrospective analysis of routinely collected data included persons tested in the community between July 2012 and December 2014. Positivity rate was stratified by age, sex and testing referral method: immediate CAG family member (spouse, sibling, child or parent), other CAG contact (non-immediate family member or neighbor), other referral (community leader, community health worker or activist referral) or self-referral.
**Results:** The analysis included 16,750 persons tested in the community; 61% were female and the median age of individuals was 20 [13-34]. HIV positivity of 5% was observed. Positivity dropped from 19% (69/355) in 2012 to 4% (418/11116) in 2014. The proportion of tests carried out on CAG family members decreased from 13% in 2013 to 6% in 2014.
Immediate CAGs family members had higher HIV-positivity rates (9%) compared to other CAG contacts (4%); among non- CAGs contacts, self-referrals had a higher positivity rate (8%) compared to other linkage to testing methods (4%).
Among youth (15-24), positivity was higher in females (4%) than males (2%). Among adults >25 years, positivity was higher among males (8%) than females (6%). 2% of children < 15 years tested positive overall; 4% among immediate CAG family contacts, 1% among other CAG contacts, 1% among other referrals and 3% among self-referrals.
**Conclusions:** Community-based HTC activities increased testing among populations who typically do not utilize health services. The strategy identifying relatives of CAG contacts and self-referrals is a simple way to identify a high-risk population, though saturation was reached relatively quickly. Further investigation of strategies promoting testing via CAGs and other groups of PLHA at community level is essential to increase the yield of community testing, HCT coverage, and linkage to care.

## TUPEE452

### SCALING UP HIV TESTING AND COUNSELLING AMONG INDIGENOUS RURAL DWELLERS USING VOLUNTEERS AS TESTERS AND COUNSELLORS: THE CASE OF HAF MOBILE HTC PROJECT IN EKITI STATE, NIGERIA

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**Background:** HIV testing and counselling (HTC) is the entry point into care, treatment and support for persons in need. Getting the needed human resource to support scaling -up remains a major challenge in Ekiti State. In 2013, in response to the HTC service gap, Ekiti State HIV program development project II through the fund from World Bank supported local government authority to rapidly scale up innovative approaches in HTC targeting the rural people.
**Methods:** The program was designed to compliment facility based HTC and to support Local Authorities to take HIV services to the door steps of rural dwellers using multivariate approach. The program was implemented in 16 local government Authorities in 43 rural communities using trained lay counsellors for mobile and house-to-house HTC between years 2013-2015. The team keyed into various socio-cultural events such as festivals, religious, Village square meetings and traditional ceremonies in the project communities to mobilize and increase access of the community members to HTC during the project period. Community outreach teams involving community head and opinion leaders were put in place to ensure the coordination and quality control of service delivered. Liquid hand wash elements and biohazard bags were used to ensure safety precautions. Lay counsellors and testers deployed paper-based HTC data, which later filled into a project electronic database to capture specifically the coverage and frequency of community based HTC services delivery for analysis using SPSS 2.0 soft ware.

**Results:** The project provided HTC service to 309,123 individual (123,859 males, 185,123 females) increasing rural HTC target by 43%. The project contributed to about 23% of individual in the state who knows their HIV status. A total of 547 advocacy visits were conducted, 394,165 (384,339 male, 9,756 females) individual were reached with condom program. 1,950 individuals links and enrolled into care including 352 pregnant women enrolled into PMTCT. A total number 2004 reactive cases were referred for care and treatment.
**Conclusions:** Community participation in HTC planning, implementation and monitoring promote access to HIV services. HIV programmes that offer community-based HTC with good referral system, as a link to care will compliment facility-based HTC.

## TUPEE453

### COMMUNITY-BASED RAPID HIV TESTING FOR KEY POPULATIONS IN BRAZIL: WHO ARE WE REACHING?

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**Background:** Brazil's HIV epidemic is largely concentrated among key populations whose HIV infection rates can be up to 20 times higher than those observed in the general population. Rapid HIV testing and counselling in community settings, delivered by trained lay peers, allows for easier access to HIV testing. Our goal was to present the percentage of positive HIV rapid tests and of first-time testers within the key populations targeted by the 'Live Better Knowing' programme, a nationwide initiative launched by the Brazilian Ministry of Health in close collaboration with NGOs.
**Methods:** Between January 2014 and April 2015, 53 Brazilian NGOs administrated rapid oral fluid HIV tests (DPP HIV-1/2 Bio-Manguinhos/Fiocruz) to sex workers (SW), men who have sex with men (MSM), transgender people and people who use drugs. HIV testing was offered in public places where these key populations commonly meet. Participants were interviewed by means of a brief questionnaire containing sociodemographic data and high-risk behavior for HIV.
**Results:** In total, 29,713 participants were tested; 46.8% of them had never been tested before (approximately 60% among people who use drugs [PUD], 55% among MSM, and 50% among male SW). Prevalence of HIV positive results was 10.7% in transgender people; 4.7% in male SW; and 4.6% in MSM. Among transgender people who were also SW, the percentage of positive results was 13%; among those who were also DU, it was 5.3%. Among MSM who were also SW, this percentage was 8.1%.
**Conclusions:** Community-based rapid HIV testing delivered by peers reached key populations that had not previously accessed HIV testing. SW and DU were observed in all key populations tested within the project and, as such, must be treated as transversal. Furthermore, the high number of reactive tests and of people who had never before been tested highlight the need to further expand this strategy.

| Key population | % HIV reagent results | % Never tested for HIV |
|---|---|---|
| Transgender people | 10.7 (1,612) | 36.0 (1,596) |
| Male SW | 4.7 (1,051) | 49.4 (1,034) |
| MSM | 4.6 (5,364) | 55.4 (5,303) |
| PUD | 2.4 (4,215) | 59.6 (4,172) |
| Female SW | 1.5 (5,577) | 24.7 (5,531) |
| Other people who were at places where testing occurred | 1.2 (11,892) | 54.9 (11,760) |
| Total | 2.7 (29,711) | 46.8 (29,396) |

*[Table 1. Prevalence of HIV tests in lifetime, HIV reactive results and Odds Ratio for HIV reactive results by category]*

## TUPEE454

### EXPRESS TESTING SERVICE FOR GAY AND BISEXUAL MEN DOUBLES THE VOLUME AND FREQUENCY OF HIV TESTING FREQUENCY IN SYDNEY, AUSTRALIA: A COHORT STUDY

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**Background:** HIV infection in gay and other men who have sex with men (MSM) is an international public health concern and increasing HIV testing frequency is an important prevention goal. We assessed the impact of introducing an express clinic at an existing large sexual health centre on tests done, infections detected and repeat HIV testing in MSM in Sydney, Australia. The express service enabled men to attend without appointment, self-complete risk information and self-collect samples.
**Methods:** We established a retrospective cohort of asymptomatic MSM attending the centre from 2011-2013. In the period when express was introduced we calculated the number of HIV/STI tests and infections detected in the express clinic, routine clinic and overall at the centre. As testing guidelines recommend high-risk men test every 3-6 months, we used bivariate and multivariate regression methods to assess the independent association between service type (xpress or routine), and repeat testing within 6-months in higher-risk MSM (>5 male partners in the preceding 3 months). Other co-variates included in the model included demographics and risk behaviours.
**Results:** The total number of HIV tests conducted in the 3-year study period was 14827 and 278 new HIV infections detected. Of these, 9121 HIV tests (62%) were conducted in the express clinic and 44 new infections were detected (0.48% positivity) (16% of all new HIV infections). Testing at the express clinic resulted in the centre increasing the total HIV tests done by over 2-fold; from 2908 in 2010 (year before Xpress was implemented) to 6470 in the final year of the express period. Among high-risk MSM, attending the express clinic was independently associated with retesting within 6 months of an initial test (adjusted OR (AOR)=2.59,95%CI:2.14-3.13, p< 0.001) compared to attending the routine clinic only.
**Conclusions:** In conclusion we found that introduction of an express testing service increased the capacity of the centre to offer substantially more HIV/STI testing, more infections were detected and higher-risk men were two-times more like to undergo HIV retesting. Optimising current services by introducing express testing services should be adopted more widely to help achieve public health goals of increasing HIV testing frequency and detection of infections.

## TUPEE455

### ACHIEVING UNAIDS FIRST 90: USER PREFERENCE'S FOR HIV TESTING IN UGANDA

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**Background:** Despite availability, many at risk of HIV cannot access prevention and care services due to low uptake of HIV Testing. Using trade-off (conjoint) analysis to inform relative preferences for the different modes of HIV testing, we estimated and simulated the probability of HIV test uptake in Uganda using stated preferences.
**Methods:** We surveyed 246 high-risk fisherfolk from western Uganda. We defined five important attributes of HIV tests and their levels (mode of HIV test and specimen collection method, location of HIV test service, price, availability of counseling services, timeliness and accuracy). A fractional factorial design was used to develop scenarios that consisted of combinations of attribute levels. Respondents were asked 10 questions about whether they would choose between 5 alternatives each, including 'none'. A multinomial conditional logit and hierarchical bayes model were used to estimate utilities for HIV testing attributes.
**Results:** Out of the 2,214 random choices presented, oral HIV self-testing using oral swab had the highest utility within the mode of testing attribute. A home-based location, no cost, talking to a counselor with access to immediate and accurate results all had the highest utility within attribute respectively. Importance in informing respondent preferences for HIV testing was highest with timeliness and accuracy (30.2%), price (29.7%) and counseling (17.5%) respectively. Compared to persons who had never tested, previous HIV testers had a higher mean attribute importance scores for mode of HIV test (12.1% vs. 10%, p=0.04) and test location (11.5% v. 9.1%, p=0.02) respectively. Mean attribute importance scores were no different by age, sex and income. Given no costs of service, a home-based HIV self-test had the

largest share of preference (24.5%), twice that of the rapid testing currently done at public clinics. The share of preference drops to 9.9% when a $2 fee is included.
**Conclusions:** HIV test timeliness and accuracy, price and counseling availability are key determinants of individual preferences for HIV testing in a high-risk community of fisherfolk in Uganda. An oral HIV self-test with highly accurate and immediate results offered at no fee with counseling support could increase HIV test uptake.

## TUPEE456

### PEER-BASED SERVICE DEVELOPMENT: A STRUCTURED AND TIMED EXPANSION OF COMMUNITY-BASED HIV TESTING FOR GAY MEN IN A HIGH-INCOME SETTING

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**Background:** Rapid HIV tests have been licensed for diagnosis and/or screening at the point of care in most countries for many years, but were first licensed for this use in Australia only in December 2012. With historically high levels of testing through laboratory tests it took significant advocacy to facilitate their approval in Australia. This provided an opportunity to not just trial a 'new' technology, but to also develop models of service delivery that increase the testing options for gay and bisexual men in New South Wales (NSW), Australia.
**Description:** A new multidisciplinary testing service incorporating trained peer educators and sexual health nurses was first developed in partnership by ACON, NSW's leading community-based HIV and LGBTI health organisation, and Sydney Sexual Health Centre, the largest publically funded sexual health clinic in NSW. Trained peer educators perform rapid tests and provide results, explain STI specimen collection, while the nurse provides clinical supervision and collects venepuncture blood specimens for parallel HIV laboratory. Since mid-2013, capacity has increased from 12 appointments per week, to 241 per week across four sites.
**Lessons learned:** A staged expansion was essential to the success of the service in order to develop partnerships between the services and ensure that resources were used efficiently. Expansion to new sites was largely predicated on the existing services reaching capacity and the need to increase geographic coverage. The service has performed close to 10,000 tests with an HIV positivity rate of close to 1% and approximately 10% of clients have had at least one STI. Client feedback surveys with 374 clients have showed that 99% of clients liked peer-led testing and would return and recommend these services.
**Conclusions/Next steps:** A careful, staged expansion has allowed a community based rapid HIV testing service to go from being niche to one of the biggest HIV testing services for gay men in NSW in less than three years. The peer-based approach with the backing of clinical governance and expertise from specialist sexual health services has provided a popular and successful new service model, with 8% of gay men in a community survey reporting having used the service in 2015.

## TUPEE457

### WORKPLACE-BASED WELLNESS PROGRAMMES PROVIDE ACCESS TO A SAFE SPACE FOR HIV TESTING

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**Background:** The KwaZulu-Natal provincial government employs approximately 195 294 employees, 68% of whom are female. Given the high burden of HIV in the country and this province, the Department of Public Service and Administration introduced a workplace based HIV Counselling and Testing Campaign Nationally to encourage all employees to know their HIV status with flexibility on how each department implemented the campaign. One option that was utilized was the integration of HIV testing into a general wellness screening programme.
**Methods:** On-site workplace place health screening was offered to all employees from April 2012 to March 2015. Voluntary and confidential testing was conducted by nurses using standard procedures and documented on health screening forms. All employees who tested positive were either referred to the employee health and wellness practitioner or a health care provider. Uptake of services was compared over a 3 year period: April 2012 - March 2013, April 2013 - March 2014 and April 2014 - March 2015.
**Results:** Over the three year period, a total of 35 283 (18.1%) employees participated in the programme, 26.7% (9444) of whom were female. Overall, 13658 (38.7%) employees had an HIV test, 34740 (98.5%) had a cholesterol test, 34709 (98.4%) had a blood glucose test and 34336 (97.3%) had their blood pressure checked.
Uptake of HIV testing by females in 2012/12, 2013/4 and 2014/5 was 74.1%, 66.3% and 67.3% respectively in comparison to males was 25.9%, 33.7% and 32.6%. The total HIV prevalence increased from 3.9% in year 1, to 5.1% in year 2 to 5.8% in year 3. The HIV prevalence rates in men (5%, 4.8% and 3.9%) and women (6%, 5.1% and 3.8%) was similar.
**Conclusions:** On-site workplace testing provides a platform for employees to access services and manage their health and wellbeing by conducting regular health screening. Further research needs to be undertaken to understand why the uptake of HIV testing was so low compared to other chronic health conditions.

## TUPEE458

### KNOW IN ORDER TO ACT: TAKING HIV TESTING SERVICES TO VULNERABLE WORKERS

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**Background:** In Zimbabwe, only half of those living with HIV know their status. Women and men in precarious informal employment typically work long hours and are unable to leave their operations to access health services unless they fall sick. This is particularly the case for men, who generally have poor health-seeking behaviour.
**Description:** A partnership between the private sector, civil society, and national service providers - under the ILO's VCT@WORK campaign - took voluntary HIV testing and counselling services (VCT) to hard-to-reach workers, using a sectoral approach to encourage workers to know their HIV status. The targeted sectors were agriculture and small-scale mining operations, where many informal workers are employed. The focus of the 3-month campaign was on:
- small-holder sugar farming estates in Mkwasine;
- operators in the informal economy who run individual small enterprises at designated sites in Harare; and
- small-scale mining operators involved in open-cast gold mining in the Bubi district.

Mobilization was done through dissemination of IEC material and "edutainment", using music and sport. Group education provided information on the importance of knowing one's HIV status, and on the modes of HIV transmission, prevention and treatment. Post-test counselling was done individually based on results. Workers welcomed the mobile VCT services at their workplaces, as illustrated by increased uptake of services. The campaign reached 31,060 workers with HIV prevention messages. A total of 13,368 workers undertook HIV testing, and 844 workers who tested positive were referred for care and support services.
**Lessons learned:**
1. The "one-stop shop" concept integrating HIV testing services with other health services is an effective and efficient way to reach farming, mining, and other communities in the informal economy.
2. Health education on HIV prevention focusing on perceived vulnerabilities, risks and perceived benefits increases uptake of HIV testing services.

**Conclusions/Next steps:** The partnership will work to strengthen linkages between marginalised working populations and the public health system for the extension of regular health services. In particular, the partnership will focus on integrating HIV testing services (HTS) with sexual and reproductive health rights and anti-drug abuse programmes, particularly for vulnerable young workers and women.

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## TUPEE459

### ADDRESSING HIV/HCV CO-INFECTION AMONG INJECTING DRUG USERS IN JAKARTA, INDONESIA, USING PEER-DRIVEN INTERVENTION

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**Background:** Co-infection with HIV and HCV is common among injecting drug users and can lead to various negative health outcomes, including long-term illness and death. In the Indonesian context, programme data indicates that HIV/HCV co-infection rates among IDU may range from 60% to 90%. In the absence of national surveillance data on HCV and HIV co-infection and low HCV testing and treatment rates, the Indonesian Drug Users Network implemented a peer-led intervention aimed at

1. Improving IDU knowledge of HCV,
2. Providing free HIV/HCV testing in a community setting, and
3. Improving access to prevention, treatment and support services.

**Description:** Peer-driven intervention is an outreach model that relies on existing peer networks to reach and educate one another. Between August and December 2015, IDUs were recruited from urban sites in Jakarta using a coupon-referral system by which an initial community participant ('seed'), after being recruited to the project, was then provided with recruitment coupons and trained to educate and enlist additional peers. Participants were interviewed by trained peer fieldworkers using a structured questionnaire, provided HIV and HCV prevention, treatment and care information and materials, and offered free HIV and HCV testing and counseling.
**Lessons learned:** Of a total 326 IDUs participating in the intervention, the majority were male (86.2%; N=281) and unemployed (57.6%; N=188). Among those who agreed to be screened for HIV (N=321), seropositivity was 52.6% (N=169), with slightly higher rates among men (53.9%; N=149) than women (44.4%; N=20). Nearly 9 in 10 participants (87.2%; N=282) were HCV antibody positive. Men had higher levels of HCV (89.5%; N=247) than women (77.7%; N=35). At least 1 in 2 male IDU (52.8%; N=146) and 1 in 3 female IDU (37.7%; N=17) was HIV/HCV co-infected.
**Conclusions/Next steps:** The PDI model effectively utilized peer networks to reach, educate and test IDU groups who had not previously accessed prevention services. This suggests that the active role of the drug user community in recruiting, educating and referring their peers is central to achieving better HIV/HCV service coverage, reducing injecting risk behavior leading to blood borne virus transmission, and improving treatment access.

## TUPEE460

### MOVING TOWARDS THE SECOND 90: LINKAGE TO CARE AND THE ROLE OF A COMMUNITY MODEL OF CARE IN TETE, MOZAMBIQUE

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**Background:** Community-based HIV testing and counseling (HTC) is an essential WHO-recommended complement to facility-based testing. Médecins Sans Frontières and the Mozambican Ministry of Health in Tete introduced Community ART groups (CAGs), a community-based strategy to simplify ART access, in 2008. Since 2012, the potential of CAGs to promote community testing and linkage to care has been explored at the community-level, including immediate connect of positive clients to CAG members and health facilities. The purpose of the analysis is to describe the linkage to care among individuals who tested positive in the community.
**Methods:** Retrospective analysis of routinely collected data included persons who tested positive in the community between July 2012 and December 2014. Individuals recorded in community testing registers were matched to electronic medical registers of facilities in Changara district. Linkage to care was defined as opening of a matched HIV file at a district facility within 6 months of test date. The linkage outcome was stratified by age, sex and testing referral method: immediate CAG family member (spouse, sibling, child or parent), other CAG contact (non-immediate family member or neighbor), other referral (community leader, community health worker or activist referral) or self-referral.
**Results:** Analysis included 772 positive persons, excluding forty individuals who had evidence of linkage prior to community testing. 77 % (597/772) linked within 6 months, including 82% in 2012, 70% in 2013 and 82% in 2014. 84% of children (< 15), 75% of youth (15-24), and 78% of adults (≥25) linked to care within 6 months. Self-referrals had higher linkage (85%) compared to patients referred by immediate family members in CAGs (79%), other CAG contacts (77%) or other referral (73%). Among 435 patients linked within 6 months and initiated on treatment before April 2015, the retention in care at 6 months was 88%.
**Conclusions:** Community testing with support from CAGs showed high levels of linkage to care regardless of approach to referral and has great potential to help achieve '90-90-90' targets. Further studies are needed to compare this approach with testing strategy at the health facility and community testing in areas without CAGs.

## TUPEE461

### DEMOGRAPHIC REACH AND COSTS ASSOCIATED WITH 3 MODELS OF COMMUNITY HIV TESTING IN RURAL KWAZULU-NATAL

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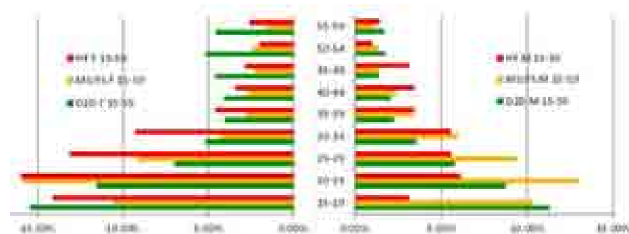
**Background:** The UNAIDS 90-90-90 targets demand HIV testing and counseling (HTC) for all sectors of the population at risk of HIV acquisition. Community testing modalities may offer better access than HTC at health facilities to some difficult-to-reach groups but at additional cost, which requires justification.
**Description:** MSF implemented 3 modalities of community HIV testing in uThungulu District beginning in 2012: Fixed Sites (FS), Mobile Sites, (MS) and Door-to-Door (D2D). An ingredients approach was used to analyze costs associated with these testing modalities for 2014. Client structures were analyzed for men and women 15-59 years of age for each testing modality, and compared to those of health facilities (HF).
**Lessons learned:** Costs per client varied from ZAR 192.55-249.70; D2D testing had the lowest cost per client (Table 1).

| Ingredients | | Fixed sites | Mobile sites | Door-to-Door |
|---|---|---|---|---|
| Total Tests (% positive) in 2014 | | 7065 (6.6%) | 11554 (3.3%) | 15112 (3.3%) |
| Category | Items | Cost/test | Cost/test | Cost/test |
| 1. HIV test supplies | Test kits HIV-/HIV+* | 7.9 / 24.9 | 7.9 /24.9 | 7.9 / 24.9 |
| | Testing supplies HIV-/HIV+ | 9.8 / 11.2 | 9.8 / 11.2 | 9.8 / 11.2 |
| 2.Salaries | Lay Counselor/ Community Health Agent(D2D) | 52.42 | 48.56 | 112.68 |
| | Support staff | 130.83 | 79.99 | 61.39 |
| 3. Logistics | Sensitization, phones, equipment, transport | 12.09 | 74.33 | 7.93 |
| Total cost | HIV- and HIV+ tests | 1,513,646.00 | 2,678,751.00 | 2,919,025.00 |
| Unit cost | Cost per test: HIV- / HIV+ | 212.95/ 231.44 | 231.21/ 249.70 | 192.55/ 211.04 |

*[Cost analysis for 3 modalities of Community HIV Testing. All costs in South Africa Rand (2014); *all have test 1, only HIV+ have test 2]*

HF testing costs ZAR 81.00-346.00 per client. The demographic reach of each modality differs. Both FS and MS see men and women of all ages, but age differs markedly depending on MS site: MS at commercial sites see similar clients to FS, but MS at high schools see predominantly younger clients up to 24 years of age (not shown). Both FS and MS are most effective at reaching men, especially 15-29, when compared with HF testing. Door-to-door testing reaches both sexes but with fewer men 20-34 than FS or MS commercial sites (Figure 1).



*[Client Structure of Community Testing Modalities compared to HF, proportion of all clients 15-59 for each modality; Female (left), Male (right) for HF]*

**Conclusions/Next steps:** Approaching the UNAIDS targets will require community testing modalities in addition to HTC at HF. Community testing increases testing of hard to reach and priority groups at affordable cost.

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## TUPEE462

### LESSONS LEARNT FROM HIV TESTING RAPID RESULTS INITIATIVE (RRI) CAMPAIGN, KENYA, 2014

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**Background:** The Kenya AIDS Indicator Survey (KAIS) 2012, showed that 53% of Kenyans with HIV were unaware of their HIV infection and a third of HIV-infected women, had taken their children for HIV testing. Targeted HIV testing is a key strategy that is outlined in the Kenya HIV Testing Guidelines (HTS).
**Description:** We conducted a 100 days rapid results initiative (RRI) campaign dubbed "Test and Link" that began in September 2014. Selected facilities throughout the country were purposively sampled based on programme HIV positivity yield data. HIV testing using rapid test kits was offered for all contacts of unknown status of index HIV-infected patients accessing HIV care clinics. HIV exposure was assessed for all infants accessing the Maternal Child Health (MCH) settings and subsequent collection of blood for Polymerase Chain Reaction (PCR) testing offered to all those whose exposure status could not be ascertained. Standard data collection tools were used to collect and collate data at facility level and transmit to the sub-county level and subsequently to the national level.
**Lessons learned:** HIV testing was carried out on 86% (n = 763,853) of the set target of 893,398 people. Of these, 67% (n = 601,032) comprised of contacts of index HIV-infected patients with 3.4% (n = 20,010) being HIV positive and 95% (19,017) of these being enrolled in care.
On average one contact was identified per index client and 38% of all identified contacts self-reported knowledge of their status. At the MCH setting, 17% (n = 150,287) mothers with unknown HIV status were tested with a positivity rate of 6%. Of the 1.5% (13,705) infants tested, 7.4% (n = 1,008) were HIV- infected and enrolled into care.
**Conclusions/Next steps:** The overall positivity rate from 2014 HIV testing programme data was 4.4%. Testing of contacts of index clients at the HIV care clinic yielded a lower positivity rate. However, testing of mothers with unknown HIV status accessing the MCH and infants with unknown HIV exposure status yielded a 36 - 68% more positivity rate than observed from the programme data. Testing at MCH setting should be optimized when implementing targeted testing at a health facility.

## GENDER-RESPONSIVE HIV PROGRAMMING

## TUPEE463

### GENDER INTEGRATION IN VMMC TO IMPROVE OUTCOMES: INVOLVING FEMALE PARTNERS

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**Background:** The USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project integrates gender as part of its work to strengthen health systems and build improvement capacity. Gender integration rests on the understanding that achieving sustained and equitable improvement requires a gender-sensitive approach that takes the different needs, constraints, and opportunities of women, men, girls, and boys into account and responds to them strategically in program design, implementation, and evaluation.
**Description:** ASSIST partner WI-HER, LLC developed an innovative and effective six-step approach to integrate gender throughout the program cycle to improve health outcomes. The approach has been tested in a variety of programs and improved outcomes. In VMMC programs, it led to female partner involvement in the form of group education, couples HCT, offering health services for women such as HIV testing, counseling and cervical cancer screening, and community mobilization and education. In looking at quality of care, our improvement approach allows for the consideration of cultural and gender norms, and helps to identify unintended negative results from changes introduced.
**Lessons learned:** In Uganda, ASSIST improvement efforts in VMMC led to adherence to international standards of care and procedures. Integrating gender by involving female partners resulted in increased adherence to the WHO-recommended 48-hour (98%) and 7-day (96%) follow-up and a decrease in adverse events. Our approach led to incorporating gender in VMMC assessment tools at the national level in Uganda and identifying the unintended negative consequences of prioritizing couples at VMMC services to encourage partner involvement (leaving single clients at a disadvantage), and newly circumcised boys dropping out of school (due to their new identity as men).
**Conclusions/Next steps:** Female involvement should become a standard aspect of VMMC programs, though more research is necessary to determine why we have not seen the same level of improvement for adherence to the 6-week visit or post-operative abstinence. Future improvement work must include consideration and research of long-term consequences like these, as well as issues of consent and coercion; by examining power dynamics and cultural and gender norms that influence circumcision, we can work to ensure the true consent of the client.

## TUPEE464

### "SOME OF THE THINGS I SAID...I WAS SAYING THEM FOR THE FIRST TIME": ADOLESCENT BOYS' EXPERIENCES PARTICIPATING IN A SPLIT-SEX HIV PREVENTION PROGRAMME IN SOUTH AFRICA

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**Background:** The importance of engaging adolescent boys in HIV prevention has come to the forefront of the global agenda. We explored adolescent boys' experiences and perceived relevance of participating in the Utshintsho programme, a split-sex curriculum focused on shifting male-dominant gender norms, implemented by the NGO Grassrooot Soccer and delivered by community facilitators in South African high schools.
**Methods:** As part of a larger process evaluation conducted alongside a cluster-randomised trial, six focus group discussions (FGDs), three each in Cape Town and Port Elizabeth township communities, were conducted with adolescent boys between October and December 2014. FGDs were conducted in Xhosa by local research assistants, audio-recorded, translated and transcribed. A thematic analysis approach was employed, transcripts were coded using an inductive and iterative process.
**Results:** Overwhelmingly, adolescent boys enjoyed the split-sex curriculum, saying that it provided a safe space where they could comfortably discuss and seek advice on issues that they were not otherwise able to talk about. However, they wished that the programme provided the opportunity for more joint sessions with adolescent females, so they could better understand female perspectives and exchange views and expectations regarding relationships. Topics that were cited as the most useful revolved around learning how to respect and interact with a partner, as well as developing more self-respect and self-efficacy. The most common suggestions for improving the programme included: increasing the length and number of sessions; starting earlier in their adolescent years; addressing other issues that they faced in everyday life such as gangsterism; and including the opportunity for parents and friends to be involved. Boys thought that these factors could increase the extent to which they could translate what they had learned in the programme into something meaningful for their lives.
**Conclusions:** This work builds on other literature that discusses the pros and cons of split-sex sexual and reproductive health education for adolescents. Boys perceived the split-sex curriculum to be engaging and relevant to their needs, but highlighted the need for it to include more space for dialogue with adolescent girls. Reaching adolescent boys at a young age with relevant, split-and-combined sex programmes is a critical opportunity.

## TUPEE465

### "HE CAN'T SAY A MAN'S STUFF TO A WOMAN..." MASCULINITIES AND MALE COMMUNITY HEALTH WORKERS IN CAPE TOWN, SOUTH AFRICA

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**Background:** South African men seek HIV treatment less and at a later stage, have lower testing rates, and are more likely to be lost to follow-up or die on antiretroviral treatment (ART) than women. Norms of masculinity make it harder for men to access care because it is seen as a sign of weakness and femininity. Institutional supply-side barriers also contribute to men's poor rates of testing and treatment.
Recent evidence demonstrates that many South African men prefer to go to male-friendly clinics where they can be seen by male nurses and counsellors. In spite of the growing literature on clinic-based male-friendly services, there is a paucity of research on masculinities and HIV community health workers (CHWs).
CHWs play a central role in the provision of primary health care in South Africa. The deployment of an additional 20,000 CHWs is planned as part of the roll-out of National Health Insurance.
**Methods:**
· Multiple in-depth interviews with CHWs (N=8, 2 female and 6 male) and HIV and masculinities community experts (N=2) over a six-month period;
· Work-shadowing of CHWs, including observational home visits;
· In-depth joint interviews with male clients and their CHWs (N=3);
· Literature review of academic and grey literature on masculinities and HIV health care provision.
**Results:** Many HIV-positive men may prefer gender concordant CHWs. Improved adherence and health outcomes was reported among men with gender concordant CHWs.
In agreement with the literature on male-friendly clinic services, the rationale for male client preferences for gender-concordant CHWs included:
(1) comfort in sharing intimate health information with another man, and in some cases,
(2) the perception of female CHWs as untrustworthy gossips.
**Conclusions:** This research contributes to the small yet critical body of literature on masculinities and HIV care work. It shines light on the potential of male CHWs to improve health outcomes among men living with HIV. In view of the impetus towards meeting the targets of '90-90-90' and the increasing use of CHWs in delivering primary care, this research makes a compelling case for the role of male CHWs in supporting HIV-positive men.

# MODELLING, DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF HIV-RELATED POLICIES

## TUPEE466

### GENERATING MICRO-LEVEL HIV/AIDS ESTIMATES IN NIGERIA: FEDERAL CAPITAL TERRITORY AS CASE STUDY

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**Background:** Estimates are generated to provide programme managers with approximation of persons needing certain services in a given population. In the face of dwindling resources to fight HIV/AIDS, many countries including Nigeria now focus intervention at the most burden populations. To achieve this, modelling of HIV estimates at micro-level has become necessary. In Nigeria, the burden of HIV differs from one location to the other. In many states of the country, the local government areas (LGA) have disproportionate burden of HIV due to the varying HIV prevalence and the population sizes. Presently, there are HIV estimates for all the states in Nigeria but they are not further disaggregated by the local government areas. Our focus was to generate local government estimates for HIV using the Federal Capital Territory (FCT) as the demonstration state.
**Description:** Using a Microsoft excel based model, we allocated the estimates generated from spectrum for FCT to the six area councils. HIV surveillance data from antenatal clinics and household surveys were used to generate estimates for FCT. The HIV prevalence trend generated from District Health Information System (DHIS) for PMTCT programme among women attending antenatal care in the six area councils were used to allocate the estimates for FCT to the area councils. Another variable that played key role in the model developed for allocation of HIV estimates to the area councils is the population size of each council.
**Lessons learned:** The estimated number of persons living with HIV (PLHIV) in FCT, number requiring ART and pregnant women needing PMTCT in year 2016 as allocated to the six area councils are shown in the table.

| Year 2016 | Adult 15+ | | Children (0-14) | | |
|---|---|---|---|---|---|
| | HIV+ | Need for ART | HIV+ | Need for ART | Need for PMTCT |
| *FCT* | *138,100* | *103,300* | *7,990* | *4,860* | *7,250* |
| AMAC | 85,600 | 64,000 | 4,950 | 3,010 | 5,050 |
| BWARI | 37,500 | 28,100 | 2,170 | 1,320 | 1,630 |
| KUJE | 6,300 | 4,700 | 360 | 220 | 120 |
| GWAGWA-LADA | 4,100 | 3,100 | 240 | 150 | 300 |
| ABAJI | 2,300 | 1,700 | 130 | 80 | 50 |
| KWALI | 2,300 | 1,700 | 140 | 80 | 100 |

*[FCT estimates allocation to Area Councils]*

**Conclusions/Next steps:** Micro-level estimates can be generated for the 36 states in Nigeria and FCT. These estimates will help to prioritize LGA most burden by HIV. Caution should be applied while programming based on the estimates since PLHIV access services across LGAs.

## TUPEE467

### HIV PATIENTS' BARRIERS TO START ANTIRETROVIRAL TREATMENT (ART): THE GREEK EXPERIENCE

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**Background:** To assess the degree of discordance of perceived barriers to treatment initiation between physicians and treatment-naïve HIV(+)individuals and to investigate possible physician and patient-described reasons for deferring treatment initiation.
**Methods:** Treatment-naïve HIV(+)individuals and their physicians from 8 sites in Greece completed independently a 59-item questionnaire about barriers and readiness to start/defer ART, assessing 11 domains. This is a sub-group analysis of the multi-national study of 442 patient-physician pairs in Australia and 9 European countries for the period 12/2011-10/2012. Regarding the readiness stages, concordance was measured using Kappa statistics. Answers were measured using a 5-point Likert-scale and discordance scores were calculated using the absolute difference between patient-physician answers. This score varied between 0(same answer) and 3(opposite answer). A score≥2 defined discordance. Logistic regression was used to analyze factors associated with discordance.
**Results:** Between 3/2012-10/2012, 138 pairs of patients' and physicians' questionnaires were completed. 127/138 patients (92.3%) were male and 54% completed the questionnaire between 1-5 years since first HIV-positive test (median age 37 ys-MSM 74%). Physicians were very experienced (82.4% cared for >50 patients and had>5ys of experience). In Greece patients had higher readiness to start medication (24.15% replied "don't need HIV meds at the moment" vs. 75.7% in total cohort, Fisher-exact 0.270) and concordance regarding patients' readiness was higher (Kappa:0.3421 vs 0.2736, indicates fair agreement). Most important reasons for patients not to start ART were "I am scared of the side effects it may cause" and "Worried my body shape might change if I start"(ART beliefs domain) and "I don't want to think about HIV". Discordance between physicians and IDUs was greater than that observed for MSM, stemming from health beliefs domain (similar to the total cohort) plus provider communication issues and social circumstances domains.

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**Conclusions:** Probable side effects and body awareness are the most common barriers to start ART for patients. Discordance between patients' views and physicians' perceptions regarding ART initiation was substantial, especially in IDUs. Communication and understanding between physician and patient is important to overtake obstacles regarding ART initiation, especially in the context of the local recent epidemiology and changes in guidelines concerning earlier ART initiation.

## TUPEE468

### MORTALITY ASSOCIATED WITH FASTER TRANSITIONS ALONG THE CASCADE OF CARE IN KWAZULU NATAL, SOUTH AFRICA

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**Background:** While major international HIV/AIDS agendas, such as UNAIDS' "90-90-90," call for quickening movement along the cascade of care, little is understood about risk of mortality differences among those who select into transitioning faster vs slower. While individuals who link to care faster are more likely to receive treatment, they also may be entering care due to already poor HIV-related health. There are therefore opposing "illness" and "treatment" effects with regard to the relationship between speed of transition and mortality.

**Methods:** This study utilizes the Wellcome Trust Africa Centre Demographic Information System in rural KwaZulu-Natal, South Africa, a longitudinal health and demographic surveillance system composed mainly of annual household and individual survey data linked with HIV-related clinical records and laboratory results. We utilized longitudinal data from individuals who were first tested positive in surveillance HIV testing from 2006-2011, and define linkage to care as the first time an individual has an HIV-related clinic visit, such as a CD4 test. We utilized survival analytic methods to estimate mortality differences among those who transitioned from first testing positive faster, slower, or never.

**Results:** 3,106 individuals met our criteria, with 410 recorded deaths among them. Contrary to expectations, those who were faster to transition had 1.34 (95%CI: 0.99-1.81) times the hazard of mortality compared to those care more quickly. However, the relationship between speed of transition and mortality is complicated. Those who were in the slowest to transition quartile had 0.62 (95%CI: 0.41-0.95) times the hazard of mortality compared to those who were never linked to care, while those in the fastest to transition quartile had 1.66 (95%CI: 1.16-2.38) times the hazard of mortality.

**Conclusions:** In this population, the illness effect outweighs the treatment effect in the relationship between faster transition to care with mortality. This suggests that improving and shortening linkage to care would have less of an impact on mortality among those who would not have otherwise self-selected into care. While this study is limited to mortality as an outcome, earlier linkage to care may have additional beneficial effects across other health and well-being outcomes.

## TUPEE469

### DO PATIENTS PREFER RECEIVING ANTIRETROVIRAL THERAPY AT A PRIMARY CARE FACILITY? EVIDENCE FROM A CHOICE EXPERIMENT IN NORTHEAST THAILAND

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**Background:** In Thailand as in many other countries, public hospitals play a major role in providing antiretroviral therapy (ART); however, it is becoming difficult for them to fully address the needs of the growing number of patients receiving ART. In order to continue expanding the coverage effectively, shifting a task of providing ART from hospitals to primary care facilities (PCFs) should be a policy option. It is not clear, however, whether patients prefer to receive ART at PCFs and what factors might promote them to have such preference. Information is necessary for designing the delivery system of ART. This study explored patients' preference for receiving ART at PCFs.

**Methods:** We conducted a labeled discrete choice experiment (DCE) with patients who were receiving ART at a tertiary hospital in northeast Thailand. DCE is an attributed-based survey method for measuring preferences. The patients were asked to choose between two scenarios of ART provision, at the hospital or at PCFs located in the vicinity of the hospital. ART provisions differed in five attributes: (1) type of clinic (special clinic for ART/general clinic), (2) service hours, (3) length of waiting time, (4) type of physician (general physician/HIV specialist), and (5) the amount of out-of-pocket payment. Data were analyzed using a conditional logistic regression model.

**Results:** Of 357 respondents, the average age was 41.2±7.5 and 52% were female. All attributes except service hours were significant in their decision to choose PCFs. Type of clinic, waiting time, and type of physician were relatively important attributes. Compared with a scenario comparable to the current situation where they have to wait for 4 hours to see an HIV specialist at the hospital, 43% of them prefer PCFs if a general physician can provide ART with less than 1 hour of waiting time.

**Conclusions:** This study showed that patients prefer to receive ART at PCFs, but their preference varied depending on the attributes of PCFs. Such information is valuable to facilitate policy making of shifting the task of providing ART from the hospital to PCFs in future.

## TUPEE470

### HOW INEXPENSIVE DOES PREP NEED TO BE IN ORDER TO DELIVER FAVORABLE VALUE IN RESOURCE CONSTRAINED SETTINGS

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**Background:** Pre-exposure prophylaxis (PrEP) has been shown to prevent HIV infection if taken consistently and adherence to PrEP has been demonstrated as feasible in resource limited settings. However, in spite its potential health benefit, PrEP is not implemented due to its cost. Our objective was to use a computer simulation to determine the cost necessary for PrEP to become cost-effective in limited resource settings.

**Methods:** We developed a deterministic computer simulation to inform HIV prevention decisions in Kenya. This simulation is composed of a probabilistic microsimulation of HIV progression and a deterministic compartmental model of HIV transmission in a hypothetical population. We conducted a simulation to estimate the health benefits, costs, and cost-effectiveness ratio over a twenty year time horizon for availability of PrEP compared to no PrEP for individuals with multiple concurrent sexual partners, explicitly considering adherence levels observed in clinical trials. In baseline analyses the cost of PrEP was estimated at $165/person per year, and in sensitivity analyses we identified the cost of PrEP necessary to bring the incremental cost effectiveness ratio (ICER) down to that of other programmatic priorities, in particular those consistent with WHO recommendations (willingness to pay threshold of $2,600/QALY).

**Results:** In the reference scenario the model predicted 1,513,474 new HIV infections over 20 years, with associated cost of care and treatment for all infected persons estimated at $9.7 billion ($0.49 billion per year). The implementation of PrEP would avert 788,560 new infections over 20 years, for a total of 1,248,164 QALYs gained. At its current cost of $0.42 billion per year, PrEP has lower value than other programmatic priorities (ICER $19,322). The cost of PrEP would need to decrease to $29 for it to have favorable value consistent with willingness to pay thresholds (ICER $2600/QALY). If targeted at those with the highest number of concurrent sexual partners (i.e. sex workers), PrEP would have favorable value at $57.

**Conclusions:** If the price of PrEP came down to $29, it would have favorable value and could become a key strategy for HIV prevention in East Africa. Further targeting to high risk groups would enhance its value.

## TUPEE471

### RESULTS OF TESTING COST-YIELD PRIORITIZATION MODEL FOR TEST AND TREAT IN BOTSWANA

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**Background:** The Government of Botswana is considering the adoption of a test and treat program that will achieve epidemiological control of HIV by 2020. The initiative will require treating an additional 129,000 patients by 2020, which amounts to retaining 95% of People Living with HIV (PLHIV) on treatment. In order to achieve this target it will be necessary to expand current HIV testing services (HTS) and in-

troduce HIV Self-Testing (HIVST), to intensify index testing, and to ensure universal routine HIV testing at key entry points.
**Description:** A comprehensive HTS model was developed and populated, drawing on government data and published literature to construct a cost per patient identified and linked to treatment using 20 unique testing approaches. The cost per patient linked to treatment was primarily a function of the expected proportion of positive test results (yield), the rates of linkage to care, and the cost per test under each testing approach. Testing approaches were prioritized based on their cost and efficiency with consideration for the maximum number of patients that could be identified using each testing strategy.
**Lessons learned:** In the first year, 2016, the cost per patient linked to treatment ranges from $17 to $282. Index testing, sex worker outreach, and TB screening all cost less than $21 per patient identified. The most expensive strategies are campaign and outreach for young woman and outreach to men who have sex with men (MSM). With declining testing yields as the number of patients on treatment increases, identifying and linking additional patients in later years will require more tests, even with the highest yield and most cost-effective strategies used. By 2020, the minimum cost per patient linked to treatment will rise to $44, with the maximum cost at over $1,000.
**Conclusions/Next steps:** Reaching the treatment targets by 2020 will require increasing the total number of HIV tests conducted in 2020 by 2.4 times from the number completed in financial year 2014-2015, from approximately 400,000 to 950,000. In order for the health system to conduct this many additional tests HIVST will need to account for nearly half of all HIV tests conducted by 2020.

## TUPEE472

### SIMPLE RULES FOR THE STRATEGIC ALLOCATION OF HIV PREVENTION INTERVENTIONS ACROSS GEOGRAPHIES

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**Background:** Geographical heterogeneity in the HIV epidemic provides the opportunity to tailor intervention choices to local epidemiology and prioritise resources to those at highest risk. Such geographical prioritisation is increasingly being deployed in an attempt to make HIV prevention spending more efficient. Here, we compare candidate simple rules for the allocation of HIV prevention interventions across geographies to inform application of this strategy.
**Methods:** We explore different methods for the allocation of male circumcision, behaviour change, early ART and PrEP interventions across counties and cities ('locations') in Kenya. These strategies include:
1. 'Restriction to priority locations'- locations are classified into prevalence categories (very high, high, medium and low prevalence) and all interventions are provided at maximum levels in locations of a prevalence category before moving to lower categories.
2. 'Simple division' approaches, where the total budget is divided across locations proportional to the number of PLHIV in each location. The subsequent intervention choices are either based on a national policy or tailored to the local epidemic.
We compare the impact of these geographically tailored strategies with a nationally uniform approach, i.e. identical interventions across all locations, at a number of prevention budget levels using dynamic transmission modelling. We assess whether such geographically specific approaches perform better than country-wide policies.
**Results:** The 'restriction to priority locations' approach may avert up to 39% fewer infections than the nationally uniform approach. This is as interventions are provided to only a small number of locations, restricting the impact that is possible through not gaining the benefits of highly cost effective interventions in lower prevalence areas. The 'simple division using national policy' approach performs similarly to the nationally uniform approach as intervention choices are not tailored to local epidemiology. In contrast, the 'simple division using local strategies' approach performs consistently stronger, with up to 15% more infections averted compared to the nationally uniform approach through targeting resources to high burden locations and tailoring intervention choices.
**Conclusions:** The greatest impact is achieved through the 'simple division using local strategies', suggesting that prioritisation should take into account local epidemiology and not be restricted only to a small number of priority locations.

## TUPEE473

### NEW CASE DETECTION THROUGH COMMUNITY HIV TESTING AND COUNSELING

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**Background:** Cambodia's Integrated Bio-Behavioral Survey (IBBS) in 2014 indicated that an estimated 75,000 people currently live with HIV. The Cambodian government has put efforts into ensuring that 90% of these individuals will know their HIV status by 2020. The current programme is facing challenges in reaching key populations (KPs), including MSM, TG, EW and PWID to receive HIV testing and counseling (HTC).
**Methods:** As part of the Flagship Consortium, KHANA collaborates with the National Center for HIV/AIDS, Dermatology and STD (NCHADS) of the Ministry of Health to deliver training for outreach workers from Implementing Partners (IPs) and Centers of Excellence. Joint monitoring visits from national counterparts and Flagship teams are conducted regularly to make sure IPs can perform HTC properly. Reactive cases are referred to complete confirmatory tests at health facilities and followed-up with support for enrollment in care and treatment. Both community and health facilities work together to detain PLHIV in care service till viral load suppression.
**Results:** Based on the programmatic report from Flagship and the Implementing Partners from January 2014 to September 2015, 71% of 37,185 of EW, 51% of 13,431 MSM, 29% of 1,829 TG, and 48% of 376 PWID were reached and provided with HTC (through community-based finger prick testing). It is of note that HIV positivity is (0. 5%, 0.5%, 1.9%, 5.5% among EW, MSM, TG, and PWID respectively). It is recommended that the client tracking system, information update on new HIV cases and new case detection procedure (including HTC) be swiftly improved, regularly monitored and widely disseminated among key stakeholders to ensure timely and effective response.
**Conclusions:** The number of KPs having access to HTC is still low due to some factors, such as mobility of KPs, perceived lack of trust in and confidentiality of HIV test results, and unwilling to disclose HIV status because of stigma and discrimination. NCHADS and IPs also introduce a new approach called "IRIR" (Identify, Reach, Intensify and Retain) aiming at reaching KPs to increase HIV testing, strengthens new case detection, and promoted health service update.

## TUPEE474

### RESULTS FROM A PROCESS OF EVIDENCE SYNTHESIS AND POLICY DIALOGUE FOR COMPREHENSIVE HIV PREVENTION AND CARE FOR TRANSWOMEN IN PERU: A CASE STUDY

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**Background:** Transwomen (TW) in Peru remain, by far, the community most affected by HIV, with prevalences over 20%, and low access to prevention, testing and care, resulting from stigma and social exclusion. However, a transition from traditional to combination prevention for key populations had not occurred. In 2014 an initiative emerged, consisting of a process of evidence synthesis for decision-making, and a policy dialogue among stakeholders, including the Ministry of Health (MoH), academia, civil society, TW leaders and international agencies, Such initiative supported the development and implementation of the first Plan for Comprehensive HIV Prevention and Care among TW in Peru.
**Methods:** A mixed-methods study to gather evidence for combination HIV prevention investigated stakeholders' perspectives on existing and novel HIV prevention methods, assessed health systems' needs and overall costs, and used mathematical modelling to estimate impact and cost-effectiveness of specific intervention combinations to reduce the HIV incidence burden among TW, with emphasis on sex workers, taking the system's capacity into account. A community-led mapping of TW sex work settings was also conducted.
**Results:** Information about combination prevention is limited among communities and providers alike, and misconceptions lead to resistance to change; health facilities require improved processes to respond to new needs. The Mathematical Modeling predicted higher effectiveness and cost efficiency for various combinations of prevention strategies. Policy dialogue was fostered through a National Consultation which allowed for discussion of new evidence and avenues for change. From this platform, a new plan was devised, which includes new National Guidelines for HIV prevention, care and support; and country-level investment in infrastructure and equipment. In addition to biomedical strategies (i.e. enhanced testing linked to care, test and offer, improved condom provision; potentially PrEP), the plan ac-

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knowledges the need of, and incorporates, structural strategies (community capacity building; advocacy for official recognition of name/gender of choice; dedicated TW clinics offering complementary services).
**Conclusions:** This study shows how evidence-informed political will and multisectoral collaboration can lead to policy change based on sound public health and human rights principles, aiming to tackle the HIV needs and other health and social burdens that still characterize the experience of transgender women in Peru.

## TUPEE475

### USING MATHEMATICAL MODELING TO INFORM POLICY PLANNING, IMPLEMENTATION AND MONITORING: THE EXAMPLE OF VMMC SCALE UP IN EASTERN AND SOUTHERN AFRICA

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**Background:** Modeling can be a critical tool for HIV program planning, allowing users to estimate outcomes, such as HIV incidence, that are otherwise impossible to measure. In 2007, in light of evidence that voluntary medical male circumcision (VMMC) reduces HIV acquisition in men, WHO and UNAIDS prioritized 13 countries for rapid scale-up to 80% MC prevalence. Since then, models such as the Decision Maker's Program Planning tool (DMPPT) and the DMPPT 2 have been used to describe the epidemiologic impact and cost associated with MC scale-up. The authors explore the influence of these models on VMMC policies and programs at country and global levels.
**Description:** In 2011, results from the DMPPT, a Microsoft-Excel-based modeling tool, demonstrated that VMMC scale-up would result in substantial reductions in HIV infection and lower health system costs. The analysis informed advocacy that led all priority countries to commit to reaching this goal, and was incorporated into the WHO-UNAIDS Joint Strategic Action Framework for VMMC in December 2011. In response to questions arising from implementation experience, a revised model (DMPPT 2) enabled analyses of impact and cost-effectiveness by age group and subnational region starting in 2013. Results were incorporated into operational and strategic plans in Tanzania, Malawi, Uganda, South Africa and Swaziland, and informed global guidance from PEPFAR and UNAIDS. A new version (DMPPT 2.1) allows countries to better monitor their progress by generating targets, assessing impacts to date, and disaggregating estimates by age and district. This information is critical to countries to move from scaling up VMMC to maintaining coverage levels, and to PEPFAR for Country Operational Planning.
**Lessons learned:** Modeling can be an effective tool for advocacy as well as strategic planning and monitoring. It is most useful when it is conducted in collaboration with country teams and addresses country-generated questions. Country ownership helps to ensure model results are incorporated into national strategies and implementation plans.
**Conclusions/Next steps:** Models can be used to mobilize, strategically implement, and monitor key programmatic elements in an HIV response. The ways in which modeling has informed VMMC programs and policy may be applicable to other HIV program areas and interventions.

## TUPEE476

### PEPFAR IN NIGERIA: PROMISE, PITFALLS AND POLICY

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**Background:** Approximately 3.5 million Nigerians live with HIV and only about 27% of individuals who need HIV medication get them through the US government funded PEPFAR program . Many reasons have been adduced for the inability of Nigeria to support the medication needs of its PLWHA.
With the recent rebasing of the Nigerian economy, Nigeria is now a middle income country with the potential to raise local funds and self fund its HIV programs but this is not happening yet. The US government has supported Nigeria's PEPFAR program since 2004 but questions have been asked about how long the support would continue. There is also an ongoing aid effectiveness policy debate with regards to HIV/AIDS. The recent drop in oil prices has also raised questions about the ability of Nigeria to begin to transition to self fund its HIV/AIDS programs.
**Description:** Using questionnaires and conducting Interviews with critical stakeholders such as the Ministry of Health, Development Partners, Donors, and Non-Governmental Organizations, we analyze the PEPFAR program in Nigeria. We also conducted a critical review of relevant literature involving PEPFAR donations to Nigeria. We also reviewed literature on the reports of donors, Country Aid Effectiveness reports and evaluations with a focus on Nigeria, From these we analyse the promise and pitfalls of the PEPFAR program in Nigeria. We also suggest policy change with regards to HIV/AIDS policy
**Lessons learned:** From our analysis, we suggest effective coordination and accountability efforts which can help to transition from a PEPFAR supported program to a locally owned and directed program. More specifically,we highlight the technical, managerial, and political capacities required for effectively developing a self funded program for HIV/AIDS medications in Nigeria.
**Conclusions/Next steps:** Nigeria must begin to pay attention to domestic and alternative sources of raising funds to fund its HIV/AIDS programs and depend less on donors. This would potentially lead to improved access for people living with HIV/AIDS who need medication.

# PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

## TUPEE477

### USE OF AN HIV AND AIDS COMMODITY MANAGEMENT TOOL (DASHBOARD) TO IDENTIFY THE RISK AND PREVENT STOCK-OUTS OF ARVS IN WEST AFRICA: THE TOGO EXPERIENCE

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**Background:** Alerts on stock-outs of lifesaving antiretrovirals (ARVs) emerged in a number of countries in the West African region in 2012/2013. Several root causes have been identified, such as the lack of tools to improve the sharing of HIV and AIDS commodity information among stakeholders for faster decision making. Togo lacked the tools to estimate the number of patients at risk of missing their ARVs when stock-outs occurred.
**Description:** The USAID-funded SIAPS Program has developed and deployed the HIV and AIDS dashboard known as OSPSIDA in six West African countries. In December 2014, Togo was alerted to the risk of a stock-out of ARVs. SIAPS supported the National AIDS Control Program to use the dashboard to incorporate patient and commodity data to assess the impact of a potential stock-out on patients receiving ARVs.
**Lessons learned:** Updating OSPSIDA with 2014 data revealed that 71% of ARVs in use at Togo were at high risk of stock-out at the national level (months of stock was less than six months) putting 96% of patients at high risk of treatment interruption. The data in the dashboard showed that this risk should have been identified 6-9 months earlier. The improved use of data for decision making using this dashboard has resulted in detection of impending stock-outs up to six months earlier. The percentage of patients at high risk of treatment interruption (table 1) was reduced from 96% to less than 1% in November 2015.

| Month | Dec 14 | Jan 15 | Feb 15 | Mar 15 | Apr 15 | Jun 15 | Aug 15 | Sep 15 | Nov 15 |
|---|---|---|---|---|---|---|---|---|---|
| % of ARVs at high risk | 71 | 69 | 59 | 53 | 33 | 24 | 11 | 11 | 5 |
| % of patients at high risk | 96 | 92 | 88 | 79 | 74 | 61 | 2 | 2 | <1 |

*[Table 1. Risk Assessment in Togo]*

**Conclusions/Next steps:** Deploying OSPSIDA in Togo has significantly enhanced the visibility of supply chain data for timely and evidence-based decisions that have contributed to the increased availability of HIV and AIDS products within a year. We strongly encourage other countries to use the dashboard as a tool to assess the number of HIV positive patients at risk of missing their ARVs to make the right decisions at the right time to prevent the hurried choices that are frequently made when a stock-out occurs.

## TUPEE478

### "SELF-INITIATIVE SCM STRENGTHENING" APPROACH USED IN DECENTRALISATION OF ARV MANAGEMENT TO DISTRICT LEVEL TO INCREASE ACCESS OF ART FOR PEOPLE LIVING WITH AIDS: PILOT IN TWO PROVINCES IN INDONESIA

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**Background:** Since the National HIV/AIDS Program's establishment in the 1990s, the ARV supply chain for 14 drugs was managed at the central level. To expand coverage throughout this large country and address the growing number of service points, the HIV/AIDS Program launched the "SUFA" activity in 2013, which decentralised the HIV/AIDS Program to the district level. A Pilot was initiated in 2014 to insure ARV SCM good practices at the district level.
**Description:** Critical issues regarding ARV decentralization were anticipated, including the need for:
1) strong district health office (DHO) commitment,
2) proper staff technical capability, and
3) standard drug storage facilities to manage 14 types of ARVs.
These critical issues must be addressed for smooth ARV decentralisation. In 2014-2015, the MOH initiated a Pilot in two provinces, Bali, on one island, and Riau, on eight islands, covering 12 districts, to identify methods for good ARV district decentralisation.
The Pilot used a locally developed "Self-Initiative SCM Strengthening" approach (SI-SCM-S) that is now institutionalized at the MOH as one means to strengthen SCM good practices.
This SI-SCM-S approach starts with building commitment among DHO staff for SCM. Second, a joint district SCM self-assessment by drug management and HIV Program staff is undertaken to identify SCM strengths and weaknesses. Third, the SCM self-assessment results are placed in a joint SCM "Corrective Action Plan" (CAP), consisting of planned activities to address SCM problems. Lastly, a training workshop is held to provide knowledge to address key SCM problems.
**Lessons learned:** The SI-SCM-S approach did increase awareness and commitment of senior officers at DHOs for decentralisation of ARVs, included immediate improvements to storage facilities, and breakthrough policies regarding insufficient SCM human resources.
Also, a SI-SCM-S approach has significant, positive impact on the SCM good practices.
Finally, the SI-SCM-S can strengthen coordination and communication among staff.
**Conclusions/Next steps:** DHOs with high commitment will more likely establish necessary coordination among program and drug managers, maintaining good SCM practices.
SI-SCM-S helped all 12 Pilot districts achieved 80% of the Pilot indicators for SCM good practices and is now being used in other districts.

## TUPEE479

### SUPPLY CHAIN CONSIDERATIONS WHEN ROLLING OUT 'TEST AND TREAT' APPROACHES: A CASE STUDY OF UNIVERSAL TREATMENT FOR CHILDREN UNDER 15 YEARS IN UGANDA

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**Background:** Following a review of the 2013 WHO recommendations and national data in August 2013, Uganda decided to treat all children under 15 years - or 'Test and Treat' - regardless of CD4 count or WHO staging. A total of 21,000 children in chronic care became newly eligible for treatment. The country also adopted Abacavir-based regimens as the preferred first line therapy for HIV-infected children. CHAI set out to support the MoH to roll out these guidelines with minimal stock disruptions.
**Description:** The pediatric ARV quantification methodology was revised to include age and weight band breakdown thereby generating a more accurate forecast. Orders were placed in September 2013 in order to have stock in-country in time for the start of the roll out in June 2014. Training was conducted at facilities rather than in workshop settings which cut costs and ensured that more health workers received the information. Health facilities used the 'pull' method during the regular warehouse order schedule to obtain stock. Patient numbers to order for were derived using a tool developed by CHAI to mitigate prescriber preferences. A free online survey tool was used to monitor the number of facilities trained and this information was correlated with facility orders.
**Lessons learned:** There were no stock outs of pediatric formulations at national level between June and December 2014. Stock availability at facilities ranged between four and seven Months of Stock. Over 10,000 children in Pre-ART had been initiated on treatment by September 2015. Furthermore, these children were initiated on the preferred Abacavir formulations as compared to Zidovudine in line with the national quantification as shown by an increase in the number of packs consumed.
**Conclusions/Next steps:** It is feasible to forecast accurately and mitigate prescriber preference by providing targeted quantification data to facilities. Where data isn't available, consider collecting information from high-volume facilities that drive consumption. This is important where large numbers of people are expected to be put on treatment in a short time such as in 'Test and Treat' policies. Commodities for patients in care and anticipated to start treatment should be in-country before roll out to avoid stock outs.

## TUPEE480

### INVENTORY MANAGEMENT SYSTEM- LEVERAGING IT BASED PLATFORM TO STRENGTHEN SUPPLY CHAIN: EXPERIENCE FROM INDIA

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**Background:** ART programme in India is currently providing free ART to 919141 PLHIV. Commodities are centrally procured and supplied to 1584 service delivery sites. Diverse geography, varying logistics infrastructure and technology among different states poses challenges to maintain effective supply chain of ARV drugs.
**Description:** In 2013, NACO conceptualized a technology based initiative for improved access to HIV commodities for patients across India. The Inventory Management System (IMS) leverages bar-coding and web-based technologies to introduce an asset light, scalable solution for addressing the supply chain issues. It tracks inventory from supplier to individual patient dispensation in real time. The system has been successfully implemented across all ART centers, State ware houses and Suppliers.
**Lessons learned:** The implementation of IMS at the ART centres has positive impact not only on procurement and supply chain but also on patient management. The system has provided programme more visibility till grass root level.
Consistent usage of IMS across all inventory points, including dispensation has provided significantly improved understanding of inventory requirements across the country. With data on consignment through the inventory points, programme has a better appreciation of constraints faced in logistics and distribution of HIV commodities. Programme is now in the process of optimizing storage space and inventory handling processes to strengthen logistics.
The availability of patient appointment, dispensation and regimens details can be effectively used to predict requirements and recommend effective relocation to minimize losses and wastage. Demand forecasting also can be done more efficiently by developing forecasting algorithms based on inventory classification, rate of consumption, drug criticality and inventory replenishment policies.
The real time visibility to standardized data of 2.1 million patients has been leveraged by programme to get insights into retention cascade analysis, regimen based analysis, treatment effectiveness through adherence analysis, survival analysis, impact on treatment due to patient migration etc.
**Conclusions/Next steps:** To achieve targets of 90-90-90 and ending AIDS as public health threat by 2030, maintaining uninterrupted supply chain and adherence becomes a necessity for any HIV programme. Use of IT based platforms can have a huge impact on resolving issues around supply chain, maintaining and monitoring adherence and patient portability.

## TUPEE481

### BIG DATA ANALYTICS FOR CONTRACT MANAGEMENT: STRENGTHENING MEDICINE SUPPLY SECURITY IN THE WORLD'S LARGEST HIV TREATMENT PROGRAM

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**Background:** The South African National Department of Health (NDOH) manages the suppliers of antiretroviral medicines for the largest antiretroviral therapy programme in the world. The RSA Pharma-Database, a web-based reporting platform,

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enables standardised reporting of all transactions from these suppliers. This information is used to generate supplier performance score-cards to inform proactive, remedial contract management actions.

**Description:** In 2013 the NDOH initiated routine contract management meetings with antiretroviral suppliers, creating a platform for transparent communication and problem-solving. This initiative soon expanded to include all pharmaceutical suppliers. The NDOH team identified the need for a standard system with which to measure and report on supplier performance. In support of this initiative, a standard reporting template was developed for suppliers to submit. Monthly reports of all transactions for 11 'clients' on over 1000 line items were submitted in excel from approximately 89 suppliers. These reports were cleaned and collated in a time-consuming manual process.

To address this challenge, in 2014 NDOH developed a web-based system to automate the reporting process. Three supplier score cards were then developed to assess supplier compliance with

a) delivery lead-times,

b) delivery on time in full (OTIF) and

c) reporting requirements.

A composite scorecard was also developed incorporating the three performance measures. Thresholds were developed for each measure by reviewing the distribution of baseline performance.

**Lessons learned:** The standardised performance tools have allowed the contract management team to engage proactively and assertively with pharmaceutical suppliers, both during supplier meetings and in the instance of supply challenges. The use of the scorecards has also resulted in improved co-operation from suppliers, with greater acceptance of responsibility and accountability.

In December 2015 the composite performance scores for the nine contracted antiretroviral suppliers were:

| Poor (Red) | Average (Amber) | Good (Green) |
|---|---|---|
| Three | Five | One |

*[Antiretroviral supplier performance, December 2015]*

**Conclusions/Next steps:** The availability of 'big data' has enabled the implementation of objective supplier performance scorecards. With these tools the NDOH contract management team can engage suppliers proactively regarding poor performance that impacts on medicine availability.

## TUPEE482

### USING MHEALTH TO IMPROVE MEDICINE AVAILABILITY AND SUPPLY CHAIN RESILIENCE: THE CASE OF LOPINAVIR/RITONAVIR

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**Background:** The National Department of Health (NDOH) manages the contracted suppliers of antiretroviral medicines for the largest antiretroviral therapy programme in the world. Guided by international recommendations, the NDOH is creating a Visibility and Analytics Network (VAN), to provide end-to-end visibility in the public sector medicine supply chain. The Stock Visibility System (SVS), a mHealth intervention, provides visibility in the 'last mile' of this supply chain and contributes to the overall VAN project. The objective of SVS is to access real-time data regarding medicine availability at primary health care (PHC) clinics. This enables proactive medicine supply management for improved supply chain resilience, and medicine availability.

**Description:** The SVS is a mobile application used to communicate data regarding the availability of antiretroviral and antituberculosis medicines, and vaccines at PHC clinics into a web-based platform. This information can be used in standardised or dynamic reports at National, Provincial and District levels. The SVS project initiated in 2014 and is active in KwaZulu-Natal, Gauteng, Limpopo and Eastern Cape Provinces at 1 249 PHC clinics, servicing an estimated 1,4 million ART patients.

**Lessons learned:** During October-December 2015 NDOH used SVS to respond to nation-wide supply constraints of Lopinavir/Ritonavir. By triangulating stock-on-hand data from SVS with other data sources, 245 priority clinics were identified for expedited direct-deliveries of the limited supply. A hotline number for reporting supply challenges was also disseminated to PHC clinics through SVS. The hotline communicated with 171 clinics in SVS provinces, where any reported supply challenges were resolved within an average of 3.75 days.

**Conclusions/Next steps:** The SVS provided NDOH information to support targeted remedial action in the face of nation-wide supply constraints. It also provided a platform for bi-directional, real-time dissemination of emergency information. In the future SVS will be expanded to all PHC facilities, and monitoring will include all PHC medicines on national contracts. Reports and escalation protocols are under review to improve usability, and acceptability. These changes will improve data availability, and progress towards the realisation of a fully functional VAN. The SVS has contributed directly to improved supply chain resilience and medicine availability.

# STRATEGIES TO IMPROVE UPTAKE AND OUTCOMES IN HIV-INFECTED CHILDREN AND ADOLESCENTS

## TUPEE483

### IMPLEMENTATION OF AN ACTIVE CASE MANAGEMENT NETWORK TO IDENTIFY HIV-INFECTED INFANTS AND ACCELERATE THE INITIATION OF ANTIRETROVIRAL THERAPY, THAILAND 2015

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**Background:** Early initiation of antiretroviral therapy (ART) among HIV-infected infants can reduce HIV/AIDS associated morbidity and mortality. In Thailand in 2012, only 52% of HIV-infected infants received ART in the first year of life. We implemented a National Active Case Management (ACC) Network to promote early ART initiation in August 2014.

**Methods:** Thailand's 2014 HIV Treatment Guidelines recommend that HIV-exposed infants have HIV PCR testing at birth, 1 and 2-4 months. When an HIV-infected infant (HIV PCR+) is identified, lab staff sends the result to the hospital. In addition, as part of the ACC, lab staff alert a regional case manager (CM) who contacts hospital staff to provide technical support, ensure prompt ART initiation, and support ART adherence among HIV-infected infants and mothers. We analyzed national data collected on HIV-infected infants by the ACC Network.

**Results:** During August 2014-December 2015, 101 infants had at least one positive HIV PCR. Mean age at first positive PCR was 93 days (range: 0-424) and 60 (59%) were female. Thirteen (13%) had a positive PCR result at birth; mean age 2.5 days (range: 0-8), and 88 (87%) had a positive result at other visits; mean age 106 days (range: 26-424). Among the 101 infants, 83 (82%) had received ART as of December 2015; 19 (23%) started ART before 2 months, 67 (81%) before 6 months, and 79 (95%) before one year of age. Among 18 infants not receiving ART, 9 (50%) died, 6 (33%) lost to follow-up, and 3 (17%) were diagnosed HIV infection in December 2015. Mean age at ART initiation was 31 days (range: 15-52) for those HIV PCR positive at birth, and 129 days (range: 35-465) for those HIV PCR positive at other visits. The mean time from blood collection to notification of a regional CM about the positive result was 16 days (range: 0-41) and from notification of the CM until the infant started ART was 15 days (range: 0-140).

**Conclusions:** The ACC network has been successfully established and initial results suggest the Network is promoting early ART initiation. This Network may be adaptable to other settings.

## TUPEE484

### INDEX CASE FINDING INITIATIVE FACILITATES IDENTIFICATION AND LINKAGE TO CARE OF CHILDREN AND YOUTH LIVING WITH HIV/AIDS

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**Background:** Less than a quarter of children with HIV in low- and middle-income countries are receiving lifesaving HIV treatment. Identification of children and youth remains a significant barrier to improving access and increasing coverage. We evaluated the impact of a novel family-centered, index case finding strategy to identify and link HIV-infected children/youth aged 1-24 years to care.

**Methods:** The program was implemented July 2014 to April 2015 at Mponela Rural Hospital, a government-funded facility in Malawi. HIV-infected patients (index cases) enrolled in HIV services at the facility were screened, and those who reported untested household members were offered home or facility-based HIV testing and

counseling (HTC) by a community health worker (CHW). Household members found HIV-infected were enrolled in a follow-up program offering one-on-one home and facility-based follow-ups by CHWs.
**Results:** There were 461 (44.8%; 461/1030) index cases who reported untested household members, of which 431 (93.5%) consented to household HTC. Of these index cases, 140 (32.5%) were male, median age (IQR) was 37 (36.2-38.5), 264 (65.5%) were on antiretroviral treatment (ART) for more than one year, and 279 (64.7%) reported an untested child/youth. CHWs newly diagnosed 28 (yield 4.0%; 28/711) HIV-infected children/youth and identified an additional two HIV-infected not in care. Characteristics of tested children/youth are shown in the table.

| Characteristic | 1-9 years (n=339 (%)) | 10-24 years (n=372 (%)) | Total 1-24 years (n=711 (%)) |
|---|---|---|---|
| **Location of Test** | | | |
| Home-Based | 320 (94.4) | 359 (96.5) | 679 (95.5) |
| Facility-Based | 19 (5.6) | 13 (3.5) | 32 (4.5) |
| **Gender, Male** | 182 (53.7) | 165 (44.4) | 347 (48.8) |
| **Mean age, years (IQR)** | 5 [illegible] | 15 [illegible] | 11 (10.5-11.4) |
| **Relation to Index** | | | |
| Biological Child | 219 (64.6) | 171 (46.0) | 390 (54.8) |
| Sibling | 13 (3.8) | 17 (4.6) | 30 (4.2) |
| Spouse | 0 (0.0) | 9 (2.4) | 9 (1.3) |
| Other | 107 (31.6) | 175 (47.0) | 282 (39.7) |
| **Rapid Test Result** | | | |
| Positive | 15 (4.4) | 13 (3.5) | 28 (3.9) |
| Negative | 323 (95.3) | 357 (96.0) | 680 (95.6) |
| Inconclusive* | 1 (0.3) | 2 (0.5) | 3 (0.4) |

*Inconclusive: [illegible]

*[Table: Characteristics of children and youth HIV tested aged 1-24 years]*

Of the 30 identified, 23 (76.6%) enrolled into HIV services and 18 (90%; 18/20) of those eligible started ART. Median time (IQR) from identification to enrollment into HIV services was 4 days (2.6-18.7) and from identification to ART start was 6 days (2.5-23.1).
**Conclusions:** Our study demonstrates that almost half of HIV-infected patients enrolled in treatment services have untested household members. A family-centered, index case finding approach, coupled with home-based testing and tracked follow-up is acceptable and feasible, and facilitates the identification and timely linkage to care of HIV-infected children and youth.

## TUPEE485

### REMINDING ADOLESCENTS TO ADHERE: ONE-YEAR RESULTS FROM A RANDOMIZED TRIAL OF TEXT MESSAGING FOR IMPROVING ART ADHERENCE

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**Background:** The rapid adoption of mobile phones in low-income countries has made SMS a low-cost and scalable tool for health providers to remind/encourage patients to take their medications. While two studies show positive effects of SMS reminders for adherence to antiretrovirals (ART) among adults, the approach has not been tested for youth. In this study, we investigate whether SMS messages improve adherence to ARTs among HIV-positive Ugandan youth, and whether the option of responding to the messages (as opposed to just receiving them) has an added effect.
**Methods:** Starting in April 2014, 332 youth between ages 15-22 in two HIV care facilities in Kampala were randomized into three groups: control, treatment 1 (reminder message only) and treatment 2 (reminder + response option). We use 1 year of adherence data measured using Medication-Event-Monitoring Systems (MEMS) caps, in an intent-to-treat analysis using adherence measures established in the previous literature to allow for comparability with the existing studies.
**Results:** We find no difference in adherence across the treatment and control groups. Mean adherence is 72.1% [95 CI: 67.6, 76.5] for control, 69.9% [95 CI: 65.0, 74.7] for treatment 1, and 71.0% [95 CI: 66.5, 75.5] for treatment 2, with no statistically significant difference across the three categories (p=0.81). 34.6% [95 CI: 30.3, 38.8] of participants in the sample have adherence over 90%, with no statistical difference between groups (p=0.98). Similar results hold when we adjust means for baseline covariates that may be associated with adherence. Furthermore, we find no differential impact by socioeconomic status and age, which we hypothesized to be associated with greater mobile phone use.
**Conclusions:** As SMS is increasingly becoming a popular tool for health practitioners to encourage healthy behaviors, it is critical to assess its effectiveness for different populations, which may have different barriers to adherence and levels of engagement with technology. This study provides evidence that - contrary to the promising results in the literature for adults - standard text messaging did not significantly improve adherence to ART for youth, suggesting the importance of careful targeting of such interventions, and adopting them to address perceived needs of recipients.

## TUPEE486

### ACCESS TO ANTIRETROVIRAL INITIATION AMONG HIV-INFECTED CHILDREN AGED 0-19 YEARS IN THE INTERNATIONAL EPIDEMIOLOGIC DATABASES TO EVALUATE AIDS (IEDEA) GLOBAL NETWORK, 2004-2014

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**Background:** We performed a global analysis of the pre-ART retention cascade of HIV-infected children from HIV diagnosis to antiretroviral therapy (ART) initiation within the IeDEA network, from 2004 to 2014.
**Methods:** We pooled data from cohorts of the IeDEA network in the Asia-Pacific, sub-Saharan Africa, and Latin America. We included all HIV-1 infected children, aged 0-19 years and ART-naïve at enrolment into HIV programs. We described the proportions of children initiating ART and the missed opportunities for ART initiation (death, loss to follow-up [LTFU], transfer) since program entry: enrolment or date of confirmed HIV diagnosis if this occurred second. We computed the cumulative incidence functions (CIF) for ART initiation and analysed the determinants, accounting for death and LTFU as competing risks until 24 months.
**Results:** Among the 115,549 children included, 78,374 initiated ART (67.8%), 2.0% died, 4.5% were transferred-out, and 20.8% were LTFU before ART initiation. The 24-month CIF for ART initiation per region was 52.0% (95% Confidence Interval [CI]:50.6-53.3) in Central-Africa, 57.8% (CI:57.1-58.5) in East-Africa, 60.6% (CI:59.5-61.7) in West-Africa, 66.7% (CI:66.4-67.1) in Southern-Africa, 76.2% (CI:74.8-77.6) in the Asia-Pacific, and 76.9% (CI:74.4-79.2) in Latin-America. Median age at ART initiation varied across regions: 5 years in the Asia-Pacific and West-Africa, 7 years in East-Africa and Southern-Africa, 8 years (IQR:3-16) in Latin-America, and 10 years (IQR: 5-15) in Central-Africa (p< 0.01). Median CD4% at ART initiation varied from 10% in the Asia-Pacific, 13% in West-Africa, 14% in Central-Africa, East-Africa, and Southern-Africa, to 15% in Latin-America (p< 0.01). Children aged 15-19 years and those aged < 1 year were those with the lowest ART initiation rates compared to other ages, with an overall CI of ART initiation of 54.3% (95%CI:53.6-55.0) and 61.4% (95%CI:60.6-62.1), respectively. In the adjusted analysis, girls, all regions compared to Latin-America, ages< 10 years and >15 years, enrolled< 2010, low-middle income countries, and CD4≥500 cells/µL were less likely to initiate ART.
**Conclusions:** In 2014, many obstacles to ART initiation remain with substantial inequities. Girls and those at the youngest and oldest ends of the paediatric age spectrum need more effective and targeted interventions to improve their access to ART initiation.

## TUPEE487

### THE IMPACT OF INCENTIVES ON UPTAKE OF HIV TESTING AMONG ADOLESCENTS IN A HIGH HIV PREVALENCE SETTING

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**Background:** Adolescents face substantial barriers in accessing HIV testing and nearly 70% of HIV-infected adolescents are undiagnosed. Incentivised testing has shown to increase uptake of HIV testing in marginalised groups. We investigated the impact of incentives on HIV testing uptake in adolescents aged 8-17 in Harare, Zimbabwe.
**Methods:** This study was nested within an anonymised community-based HIV prevalence survey. Households with children aged 8-17 years who had not previously undergone HIV testing were referred to primary healthcare clinics for diagnostic HIV testing. Participating households were randomised to receiving nothing (standard of care) or to either enter a prize draw (USD 10, USD 5 or nothing, probability of

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picking 0.06, 0.07, 0.9, respectively) or receive USD 2 if they accessed diagnostic HIV testing. HIV testing was carried out with guardian consent for those aged < 16 years and participant assent. Uptake of HIV testing was compared across the three groups.
**Results:** A total of 2841 children (79% of all eligible) from 2050 selected households participated. Median age was 12 (IQR 10-15) years and 53% were female. Of those eligible 98% (2796) were referred for diagnostic HIV testing, and of these 35.7% attended for testing.

| | SOC | USD2 | Prize draw |
|---|---|---|---|
| Households randomised | 649 (32%) | 740 (36%) | 661 (32%) |
| Children randomised* | 735 (26%) | 1155 (41%) | 906 (32%) |
| Attended clinic | 110 (15%) | 554 (48%) | 336 (37%) |
| Diagnosed positive | 0 | 4 (0.3%) | 7 (0.8%) |

*[Summary of results]*

*All children aged 8-17 years in a selected household were eligible
**Conclusions:** Overall uptake of HIV testing remained low but significantly more adolescents underwent HIV testing when monetary incentives were offered. Our findings show that incentives may be an effective strategy to improve uptake of HIV testing. These need to be combined with efforts to engage adolescents and their guardians.

## TUPEE488

### ADDRESSING SUPPLY-SIDE BOTTLENECKS TOWARDS 90-90-90 TARGETS FOR PEDIATRIC HIV IN WESTERN AND CENTRAL AFRICA REGION (WCAR): A MULTI-COUNTRY SITUATION ANALYSIS (2014-2015)

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**Background:** Only 13% of children under 15 years living with HIV were receiving ART in 2014 in West and Central Africa Region (WCAR). To identify bottlenecks to pediatric ART, we conducted a multi-country assessment of the program's enabling environment, supply and demand-side bottlenecks. We report on the supply-side bottlenecks and programmatic implications.
**Description:** : During 2014-2015, data collection was conducted in 11 WCAR countries (Cameroon, Congo, Cote d'Ivoire, Gabon, Ghana, Guinea-Bissau, Liberia, Nigeria, Democratic Republic of Congo (DRC), Chad, and Togo) using standardized tools. We applied the Tanahashi framework to identify program bottlenecks across the cascade of comprehensive pediatric HIV programming (case-identification; linkages and ART initiation; retention and transition). Data collection included key informant interviews and data abstraction from registers in a sub-sample of purposively selected health facilities.
**Lessons learned:** A total of 399 health facilities were surveyed in 11 countries. Coverage of early infant HIV diagnosis (EID) services ranged from 1.0% in Chad to 35.4% in Cameroon. Proportion of ART sites providing pediatric ART ranged from 2% in Chad to 56% in Togo. PMTCT was the main entry point for early pediatric HIV case identification (99.5% of all DBS samples in Togo and 93.5% in Ghana). Median turnaround time for EID ranged from 2.2 months in DRC to 3.5 months in Ghana. Coverage of PCR machines was inadequate in most countries (from none in Liberia and Guinee Bissau to 23 in Nigeria). Assessment of final HIV-status at 18 months ranged from 24% in Ghana to 41% in Nigeria. Lack of pediatrics HIV integration within routine Child Health services
(e.g. immunization and hospitalization), adult ART treatment program were reported.
**Conclusions/Next steps:** Low service coverage (both diagnosis and treatment) and lack of integration pediatric HIV interventions into routine MNCH services seem to be the major bottlenecks to pediatric ART. PMTCT remains the main entry point for pediatric HIV case-identification with poor retention by 2 years. Based on these findings, countries' National Pediatric HIV programs are prioritizing pediatric HIV case-finding beyond PMTCT/EID entry points to optimize the yield, while increasing availability of quality ART services through decentralization, task-shifting and linkages with care and support interventions at community level.

## TUPEE489

### ACCELERATING PEDIATRIC HIV CARE AND TREATMENT IN COTE D'IVOIRE FROM LESSON LEARNED TO ACTION PLAN

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**Background:** In 2014, 40,000 children aged 0 - 15 were estimated to be living with HIV in Cote d'Ivoire. Pediatric ART coverage was very low at 18% while adult ART was at 76%. Identify and analyze the bottlenecks of the HIV pediatric program to design an acceleration plan to improve access to ART for children living with HIV in Cote d'Ivoire.
**Description:** A cross-sectional survey was conducted in 2015 to collect data and information related to the management of pediatric HIV program with a participatory evaluation. The survey covered the three levels of the health pyramid with 28 facilities (3 tertiary hospitals, 12 general hospitals and 14 health centers). An analysis of the survey data was done using SPSS software.
**Lessons learned:** The number of children on ART has slowly increased from 5,190 in 2010 to 6,932 in 2014. Access to Early Infant Diagnosis (EID) is low with 33% of facilities offering PMTCT services providing DBS sample collection for EID and 3 laboratories performing the PCR test but located in the capital city, Abidjan. Pediatric ART services is limited to 43 % of all PMTCT sites. In the sample of health facilities surveyed, a total of 4,172 children living with HIV were registered in care with only 2,900 (69.5%) on ART. Retention in care at 12 months among children on ART was estimated at 59%. Over two thirds of these children (70%) were followed at tertiary level. Main bottlenecks linked to HIV Pediatric program identified were low decentralization of EID, and pediatric ART, lack of qualified trained health workers, limited integration of pediatric HIV case-findings in other **entry points** than EID/PMTCT.
**Conclusions/Next steps:** The low coverage of Pediatric ART in Cote d'Ivoire is likely due to limited service coverage (both diagnosis and treatment) and lack of integration of pediatric HIV interventions into routine MNCH services. The country is developing an acceleration plan that will prioritize task shifting and decentralization of EID and ART services, while optimizing case-finding of children (< 15 years) through high yield entry points (adult ART program, malnutrition, immunization, hospitalization and tuberculosis program) and engaging parents and communities to improve the performance.

## TUPEE490

### YOUTH ART ADHERENCE CLUBS: OUTCOMES FROM AN INNOVATIVE MODEL FOR HIV-POSITIVE YOUTH IN KHAYELITSHA, SOUTH AFRICA

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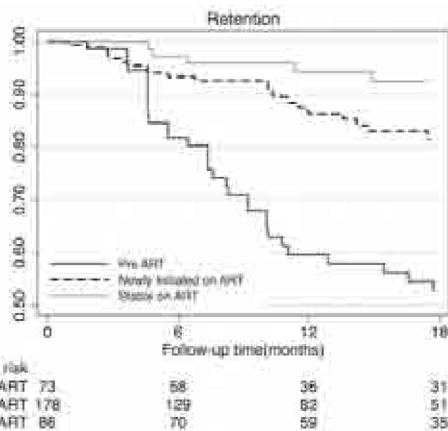
**Background:** Retaining youth, both anti-retroviral treatment (ART) ineligible and those on ART, remains challenging with higher rates of loss to follow-up (LTFU) than their adult counterparts. Adjusting the ART adherence club model for youth, enrolling ART ineligible youth to expose them to peers on ART and integrating family planning (FP), may address this challenge.
**Methods:** From March 2012-May 2015 HIV positive youth at a youth clinic (12-25 years old) were enrolled in Youth Clubs (YCs). Those ART-ineligible, newly initiated and stable on ART were combined in groups of ~20. Separate groups were formed for younger school attending and older youth. YCs were facilitated by a lay counsellor with structured session guides. ART supply, FP and HIV clinical management were integrated within the model. We conducted a retrospective cohort analysis with LTFU defined as no YC or clinic contact from June-August 2015. We describe characteristics and retention outcomes using Kaplan-Meier methods stratified by enrolment category.
**Results:** 337 youth (21.7% ART-ineligible, 52.8% newly initiated and 25.5% stable on ART) enrolled in YCs contributing 414.8 person years to the analysis [median 1.2, interquartile range (IQR) 0.5-1.9]. The majority were female (85.76%) with median age at YC enrolment of 22.3 years (IQR 20.3-23.7). 58 (17.2%) attended school clubs. Overall retention at 12-months was 81.7% [95% confidence interval (CI) 76.4-86.0] and varied by enrolment category (p-value< 0.001): 52.9% (95% CI 40.0-64.2) ART-ineligible, 86.4% (95% CI 78.7-91.4) newly initiated and 94.3% (95% CI 85.4-96.8) stable on ART (Figure 1). Over the study period, 1 (3%) died, 101 (30.0%) transferred

out (60 of whom graduated to adult care), and 71 (21.1%) were LTFU. 18 initiated ART and 84 became stable on ART.




*[Retention 18m KM]*

**Conclusions:** The YC model supported high rates of retention among young adults on ART. ART ineligible youth remained difficult to retain despite integration into groups with youth on ART.

## TUPEE491

### DEPRESSION, ANTIRETROVIRAL THERAPY (ART) ADHERENCE (BY PARENTAL REPORT AND PLASMA ANTIRETROVIRAL LEVELS), AND ART RESPONSE IN YOUTH ENROLLED IN THE ADAPTED BLASINI DISCLOSURE INTERVENTION (ABDI) IN HAITI AND DOMINICAN REPUBLIC

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**Background:** Disclosure of their HIV status to perinatally HIV-infected (PHIV) youth is important for transition to independent living, ART adherence and prevention of further HIV transmission. Worldwide, however, few PHIV youth know their status. To assess the impact of structured disclosure using aBDI in PHIV ART patients in Haiti and Dominican Republic (DR), outcomes were compared pre- and post-disclosure in aBDI "completers", and to outcomes in youth who discontinued aBDI participation before disclosure.

**Methods:** Data on depression symptoms using the Child Depression Inventory (CDI) and on ART adherence were collected in one-on-one interviews with 10.0-17.8 year-old non-disclosed youth and their caregivers at enrollment and 3-6 months post-disclosure in three centers (one DR children's hospital and one DR and one Haiti center serving patients of all ages). Plasma efavirenz, nevirapine or lopinavir levels were quantified at enrollment and post-disclosure. Viral load and CD4 count measurements were collected by medical record review at enrollment and 3-6 months post-disclosure (in aBDI "completers") or post-aBDI discontinuation.

**Results:** Of 115 caregiver/youth pairs enrolled, 93 (80.9%) accepted disclosure and were assessed post-disclosure; 22 declined disclosure ("aBDI discontinuation"). At enrollment, 23.3% of youth (34.9% of Haitian, 15.0% of DR youth [P=.02]) met CDI depression criteria. Median viral loads pre- and post-disclosure were higher in youth with sub-therapeutic than those with therapeutic antiretroviral levels (15,509 copies/ml versus < 40 copies/ml; P< .0001), and in youth whose caregivers reported missed doses during the last month than in others (8,614 copies/ml versus 49 copies/ml, P=.04), but did not differ by "perfect" adherence. Depressed youth had higher viral loads (median=5,560 copies/ml) and lower CD4 counts (median=480 cells/mm$^3$) than non-depressed youth (median < 40 copies/ml, P=.049; median=608 cells/mm$^3$; P=.089). Among youth who completed aBDI, depression prevalence was lower post-disclosure (13.4%) than at enrollment, not differing significantly by country (14.3%, Haiti; 12.8%, DR). Median viral load tended to be higher post-aBDI discontinuation than post-disclosure (790 copies/ml versus < 40 copies/ml; P=.19, NS); this difference was statistically significant only in participants in the two non-pediatric centers (38,533 versus 195 copies/ml; P=.016).

**Conclusions:** aBDI completion may be associated with decreased depression and improved viral suppression in pediatric ART patients.

## TUPEE492

### ADDRESSING THE LOW COVERAGE OF PEDIATRIC ART IN TOGO: FINDINGS FROM A NATIONAL SITUATION ANALYSIS, 2014

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**Background:** In Togo, there is still a wide gap in access to antiretroviral therapy (ART) between children (16%) and adults (45%). We assessed barriers to pediatric ART in view of informing strategic priorities towards 90-90-90 for children in Togo.

**Methods:** We applied the following pediatric ART program pillars: case identification, linkages and ART initiation, retention and transition. Within each pillar, we assessed gaps, and explored when applicable the barriers related to enabling environment, supply-side, demand-side, and quality of care and treatment services. Standardized questionnaire was used to abstract qualitative and quantitative data. To assess children's outcomes on ART and quality of care, we abstracted data from 26 health facilities purposively sampled from all six regions. Strategic priorities were identified during a validation workshop.

**Results:** Nationally, in 2013, less than 14% of infants exposed to HIV were tested for HIV within their first two months of life. Children (0-14 years) represented 4% of the 254,199 HIV tests registered. Early infant HIV diagnosis (EID) was limited to 28% of the 864 MCH facilities, while routine provider-initiated HIV testing and counseling among sick children and adolescents was performed in only 20 out of 864 MCH facilities. Only 56% of 250 ART health facilities were providing pediatric HIV treatment. In the 26 sites surveyed, children represented 9.4% of all patients on ART. Compliance with national treatment protocols was 100%. Average age at ART initiation was 99 months and 24-month survival on ART was estimated at 61% pointing to late identification and initiation of treatment. Shortage of trained staff for HIV testing and ART management, frequent stock-outs of HIV test kits, limited geographic availability of pediatric ART centers, and complex procedures for enrollment in ART programme were identified as major bottlenecks.

**Conclusions:** Increasing geographic coverage of pediatric HIV testing, care and treatment services is a strategic priority to fast-tract pediatric ART coverage. Scaling-up integration of pediatric HIV case-finding into child care (immunization and hospitalization) and into adult ART program is critical. Strengthening task shifting for ART initiation and improving retention in care are additional priorities.

## TUPEE493

### REACHING OUT TO CHILDREN OF PEOPLE LIVING WITH HIV/AIDS WITH HIV TESTING, CARE AND TREATMENT: PRELIMINARY RESULTS OF THE ACTIVE SEARCH FOR PEDIATRIC HIV/AIDS (ASPA) STUDY IN CAMEROON

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**Background:** The World Health Organization (WHO) recommends index case HIV testing as a priority approach to increase uptake of HIV testing amongst children of people living with HIV/AIDS (PLHW). We assessed the acceptability, feasibility and yield of this strategy in a health facility in Cameroon.

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**Methods:** From July 2015 to December 2015, we invited PLHW receiving care in the Limbe Regional Hospital (South West-Cameroon) and having children aged 6 weeks to 19 years to participate in the ASPA study. Consenting parents were enrolled in the study together with their children. Socio-demographic data were collected and HIV testing was provided for children with unknown HIV status either in the hospital or at home.
**Results:** All of the 327 eligible parents agreed to enrol in the study, the majority (78.9%) were females and the age ranged from 20 to 58 years with a median of 39 years. Almost all (96.3%) parents were on ART. Altogether, parents reported 696 children below the age of 19 years, of those only 253 (36.3%) had ever been tested for HIV prior to the study and 8 (3.1%) of them tested HIV positive. All parents (n= 231) having children with unknown HIV status accepted to have their children tested and the large majority (93.3%) preferred the hospital as testing site. Amongst children with unknown HIV status (n=437), the study was able to test 302 (69.1%) and 5 (1.6%) of them tested HIV positive. Reasons for failure to test all children with unknown HIV status included: missing consent of one parent to test their child, fear of disclosure, lack of time by parents to bring children to the hospital, lack of transportation means to the hospital, children going to school or living elsewhere.
**Conclusions:** Although the acceptability of the index HIV testing strategy for children was high amongst PLHIV, the feasibility of this active case finding approach is challenged by several barriers. There is need to elucidate these obstacles through qualitative research and address them accordingly in order to optimize the implementation of this strategy.

## Partnerships involving donors, NGOs, and government

### TUPEE494

#### Improving access and ensuring health rights for key populations by setting up a technical support unit for key populations by Ministry of Health, Government of Kenya

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**Background:** Key populations (KPs) contribute 33% (MOT 2008) of 100,501 (NACC 2014) new HIV infections. HIV prevalence rates among female sex workers (FSW), Men having sex with men (MSM) and people who inject drugs (PWIDs) is 29.3 %, 18.2 % and 18.3 % respectively (NASCOP 2013). In resource-limited settings, Government structures fell short in providing technical support to programs as they were overstretched across multiple priorities and lacked human resources in capacity and numbers.
**Description:** Through Private-Government partnership, a Technical Support Unit (TSU) was set up in 2012 within Ministry of Health (MoH), Government of Kenya to support MoH in delivering effective and efficient HIV prevention programs for KPs. The TSU conducted a national mapping of KPs, field program improvement visits of more than 1500 days in 33 counties where KP programs exist, in 82 partner locations. National KP implementation guidelines were developed, KP population forums were established and friendly microplanning and outreach services were put in place. TSU set up a KP reporting system to cover all implementing partners across country.
**Lessons learned:** KP program reporting increased from zero to 100% (September 2015). Quarterly outreach contacts increased from 33% to 78% among FSWs, 32% to 78% among MSMs and 54% to 70% among PWIDs during 2013-2015. Similarly, quarterly HIV Counselling and testing also increased from 12% to 35% among FSWs, 10% to 32% among MSMs and 17 to 23 % among PWIDs. Screening services improved from 14% to 33% among FSWs, 9% to 33% among MSMs and 6% to 27% among PWIDs. STI positivity dropped from 21% to 8% for FSWs, 22% to 11% for MSMs and 17 % to 4% for PWIDs during the same period. This was achieved against the national program targets covering 142,529 FSW, 16,227 MSMs and 11,415 PWIDs.
**Conclusions/Next steps:** Embedding TSUs within Government structures improves efficiency and effectiveness of KP programming and provides in house quality managerial and technical talent. As Kenya AIDS Strategic Framework (2014-2019) is being implemented, the role of TSUs will be vital in maintaining the intensity of KP programming and contribute in halting and reversing the epidemic in Kenya.

### TUPEE495

#### Early lessons learnt from monitoring and evaluation of the medicine donation program in the New Horizons Pediatric HIV Care Collaborative

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**Background:** The New Horizons Advancing Pediatric HIV Care Initiative is a collaborative effort of Janssen, Elizabeth Glaser Pediatric AIDS Foundation, Partnership For Supply Chain Management, Imperial Health Sciences (IHS), and others to enhance access to sustainable and appropriate HIV care for treatment-experienced children and adolescents in sub-Saharan Africa and least-developed countries. Currently Swaziland, Zambia, Kenya, Lesotho, and South Africa are participating, after an Expression-of-Interest and selection process.
One component is a medicine donation program for PREZISTA™ (darunavir) and INTELENCE™ (etravirine). To avoid conflict with the national health systems, the donation is distributed through the respective national HIV/AIDS distribution channels.
As emphasized in the WHO Guidelines for Medicine Donations, regular monitoring and evaluation (M&E) of the program is an essential component within the New Horizons Initiative (NHI). A summary of the evaluation approach is provided here along with challenges and opportunities identified during early implementation.
**Description:** A unique framework has been developed to ensure that the logistical process and the M&E procedures are in line with the following guidelines: WHO Guidelines for Medicine Donations, Good Distribution Practices for Pharmaceutical Products, Good Storage Practices, Good Transportation Practices, Good Pharmacy Practice. A simple one-page M&E tool was designed for the NHI program based on these guidelines and additional efficiency measures have been included.
First M&E assessments were undertaken in 2015: in Kenya, Zambia, and the interim warehousing in South Africa by IHS.
**Lessons learned:** All recipient countries were actively engaged in the M&E process. The framework was beneficial in better understanding recipient and donor challenges and collaboratively developing necessary remediation or continuous improvements.
While different challenges were described in each country, some common opportunities for improvement were: forecasting and quantification of medicine needs, clearing customs, temperature monitoring and cooling, patient confidentiality, providing sufficient storage space, and managing shipment packing lists.
**Conclusions/Next steps:** Overall, M&E proves essential in shaping and reinforcing relationships between stakeholders thus strengthening the collaborative program. The New Horizons medicine donation M&E framework revealed opportunities and enabled partners to develop shared tools and individual action plans. Shared tools included a forecasting quantification tool and a utilization tool.

### TUPEE496

#### Leveraging-off existing programs to deliver services to broader communities: a case of a rural school-based sexual reproductive health and rights program in South Africa

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**Background:** Youth and their households living in high HIV-prevalence areas often experience deprivation at multiple levels such as geographic, education, economic, health and basic human-rights. Improving access to social protection services can mitigate the impact of the HIV epidemic as well contribute to strengthening HIV prevention and care among marginalised groups.
**Methods:** As part of the school-based clinic-linked SRH&R program implemented by KhethImpilo, a school-end initiative involving various partners, mobilized to deliver a one-day Health and Welfare jamboree. Learners, educators and the broader community were invited to participate in a school cultural program Adolescent-Friendly Primary health Clinic. The SRH&R activities involved debates, dances, poetry and plays simultaneously with 14 services providers onsite to screen, educate, and treat with service-referral. Program staff together with various partners coordinated the logistics. Uptake of services was tracked through data registers at each service point measuring, age, gender, type of service accessed. Qualitative data was collected through interviews and video clips.
**Results:** The SRH&R Jamboree involved learners from 4 secondary schools, educators and community members in a rural district in Kwa-Zulu Natal.
A total of 1164 in- and out-of-school youth attended the SRH&R education program. A headcount of 1355 accessed formal services at the various stations. A total of

395 children <5 years accessed services comprising of growth, nutrition support, immunization (43.7%), social-protection (30.6%) and documentation (14%). Adult headcounts (n=614) by serviced accessed included TB screening (14%), minor-ailments (32.7%), hypertension/diabetes (22%). 67.2% of 177 BMI screening were adults. Amongst youth (1164), 29.8% accessed SRH&R services (n=346), comprising of family planning (25.7%) HCT (22%), VMMC (n=42), pap-smears (n=5) and 6% were referred for nutritional support.
**Conclusions:** The findings suggest that health and welfare service uptake by leveraging-off existing platforms benefitted the youth and broader community members. These initiatives strengthen inter-sectorial linkages, community partnerships and more importantly educate and enable service uptake by communities experiencing multiple deprivation communities.

## TUPEE497

### ROLE OF CIVIL SOCIETY IN IMPLEMENTING CLIENT-CENTERED INTEGRATED SRHR AND HIV SERVICES IN BOTSWANA, MALAWI AND SWAZILAND 2011-2015

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**Background:** The critical role of civil society in implementing health programmes is widely recognized, including in the provision of integrated SRH and HIV services. In Southern Africa, 7 countries piloted integration of SRHR and HIV between 2011 and 2015. This study presents the results of an assessment of civil society participation in 3 of the 7 countries implementing the programme, in particular the role of civil society organization (CSOs) in SRHR/HIV integration.
**Methods:** A qualitative study was conducted between March and September 2015 and included fieldwork in Botswana, Malawi, and Swaziland. Data was collected through desk-research and face-to-face semi-structured interviews with 24 key informants representing civil society, Government, and UN agencies. Five focus group discussions were conducted with 20 participants representing civil society. Data was recorded in the form of notes and tape recorders, and later transcribed. Transcripts were imported into Atlas ti. for data coding and analysis. Data was analyzed following a thematic analysis approach.
**Results:** CSOs had a critical value-added role in the implementation of SRH and HIV integration, particularly in the following areas:
*1. Advocacy:* CSOs had an important role in advocating for formulation and adoption of policies on integration of SRH and HIV. Equally, they also had an important role in holding governments to account and advocating for the implementation of these policies.
*2. Demand generation for integrated services:* Community outreach events, distribution of pamphlets, and direct interactions communities and community based organisations, was critical for reaching the marginalized and underserved, including young people.
*Service provision:* CSOs were vital partners to supporting the Government in demonstrating efficient and effective models of integrated service delivery that successfully provides a broad range of SRH and HIV services.
**Conclusions:** Civil society has a critical role in implementation and scaling up of SRH and HIV integration through advocacy, demand generation, and direct service provision. In an era of dwindling resources, it is vital to make the most of these synergies by strengthening partnerships between the Ministry of Health and civil society.

## TUPEE498

### MAKING 90-90-90 A REALITY: BUSINESS UNUSUAL IN SOUTH AFRICA

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**Background:** South Africa was one of the first countries to adopt ambitious 90-90-90 targets for HIV and TB by 2020. To fast track action, an innovative, bottom-up District Implementation Planning (DIP) process was introduced using a participatory approach to identify root causes of poor performance against 33 tracer indicators. The outcome is costed HIV and TB plans, per district, which consolidate all available resources and guide all stakeholders to ensure that funds flow to priority interventions, locations and populations. The process has unified action and strengthened collaboration between government, donors and implementing partners.
**Description:** 90-90-90 targets were developed and disaggregated across the provinces and districts down to facility level. Each province selected its twelve worst performing indicators across HIV, TB and PMTCT. Tools based on results based management were developed to promote analysis and use of data, facilitate concrete action planning, cost and budget the plans, and monitor progress towards the targets. Cascade analyses, indicator dashboards and bottleneck analysis tools were utilized during participatory workshops aiming to empower health workers and facility managers and ensure their experience informed planning of interventions to yield highest impact. Facility plans were consolidated up to district level and submitted for review by Provincial and National Departments of Health.
**Lessons learned:** Including all partners and stakeholders in a participatory process is complex but worthwhile. All 52 districts have submitted DIPs and these are guiding the funding allocation to be based on needs rather than historical performance. Health care workers and facility managers are mobilized and informed of their targets which strengthens motivation and accountability. All partners are informed of the DIPs and efforts are underway to align targets, planning and budgeting cycles at all levels.
**Conclusions/Next steps:** The DIP process is a concrete example of how ambitious global level targets can help countries to implement "business unusual". It has revolutionized planning, brought all partners together, and is merging top down and bottom up approaches. While it was initiated by NDOH and is currently health driven, the objective is to expand the core indicators to include structural drivers and promote data driven action for the multi-sectoral response going forward.

## TUPEE499

### THE 'TRINITY ALLIANCE' APPROACH IN PROMOTING ACCESS TO MEDICINES IN MAURITIUS, BOTSWANA AND ZIMBABWE

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**Background:** Due to the lack of enabling Intellectual Property (IP) laws and policies, many SADC countries continue to experience consistent stock outs and are experiencing rising costs of second and third line HIV, TB as well as Hepatitis C medicines. This challenge presents itself in the face of dwindling donor support to some countries due to their graduation to middle-income status. The revised SADC Pharmaceutical Business Plan (SADC PBP) provides an opportunity for civil society to form better alliances with their governments as well as IP experts, in an effort to drive policy implementation that could yield sustainable availability and access to affordable, quality, safe, efficacious essential medicines.
**Description:** From November 2014 to December 2015, the AIDS and Rights Alliance for Southern Africa worked with partners in Botswana, Mauritius and Zimbabwe on Phase 1 of this Programme. Through mixed interventions, including preparation of Policy briefs from contextual situational assessments conducted, gaps were highlighted and 'low hanging fruit' for advocacy identified. Gaps included lack of coordination between ministries of Health, Trade and Finance in terms of where the Intellectual property and access to medicines agenda lies, coupled with outdated IP legislations and lack of knowledge about the opportunities the TRIPs flexibilities presented. At a regional level, the revised SADC PBP is being used as leverage.
**Lessons learned:** So far, alliances between civil society, their relevant government stakeholders (as mandate holders), as well as IP experts have been stabilised. Through the formation of the 'trinity alliance' civil society now have expanded reach into the inner workings of their ministries - in order to push for coordinated action. National plans have been developed to promote 'quick-and-dirty' advocacy to expedite IP legislative reform, and litigation strategies are in place to expedite action.
**Conclusions/Next steps:** By leveraging on the use of beneficial provisions in the TRIPS Agreement; and with a applied strategies towards strengthening of 'trinity alliances' between civil society, government and experts, work is underway to reform IP laws and formulate national IP policy frameworks.

## EFFECTS OF PUBLIC-PRIVATE PARTNERSHIPS, INCLUDING WORKPLACE PROGRAMMES AND POLICIES

## TUPEE500

### WEAVING HIV, FAMILY PLANNING AND SEXUAL AND REPRODUCTIVE HEALTH (SRH) SERVICES FOR FEMALE FACTORY WORKERS IN CAMBODIA THROUGH PRIVATE PARTNERSHIPS

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**Background:** Garment manufacturing is the single largest industry in Cambodia which employs the most female workers. Mostly rural-urban migrants, these women are invisible and lack access to health information, quality SRH services, and supportive policy.
The Reproductive Health Association of Cambodia (RHAC) through Japan Trust Fund for HIV and Reproductive Health (JTF) provided HIV and SRH information and free services to women working in garment factories in three major cities.
**Description:** RHAC established partnerships with 30 factories. RHAC staff delivered interactive and fun lunchtime SRH and HIV information sessions.
RHAC trained factory clinic staff on providing health education including contraception and STI testing, and on client rights and basic clinical skills.
A voucher system was introduced and the women obtained a range of free SRH services including contraception, post-abortion care, HIV tests and cervical cancer screening at the closest RHAC clinic.
RHAC also adapted its clinic hours to open on Sundays during the workers' time off.
During the 2 year project lifetime, 18,283 VCT services and 51,829 STI treatment services were provided to female factory workers.
The provision of services increased exponentially, as shown by the indicators (quantitative) in the Table.

| Indicators | Baseline (2012) | Target (100% increase) | Actual: May 2013 - April 2015 |
|---|---|---|---|
| No. of clinic visits by female factory workers | 70,540 | 147,252 | 126,316 (86%) |
| No. of factory workers received STI services at RHAC clinics | 29,476 | 57,400 | 53,559 (93%) |
| No. of factory workers received family planning services at RHAC clinics | 3,612 | 6,700 | 7,426 (111%) |
| No. of female factory workers received post abortion care services at RHAC clinics | 979 | 1,900 | 2,780 (146%) |
| No. of factory workers received HIV counselling and testing (VCCT) | 10,394 | 25,582 | 21,582 (84%) |
| No. of factory clinic staff trained and provide quality RH services (in the second year) | 0 | 60 | 43 (73%) |
| No. of clinics in factory provide SRH services for workers | 0 | 30 | 30 (100%) |

*[Project Achievements, May 2013 - April 2015]*

**Lessons learned:** RHAC was able to generate more discussions among the factories, Garment Manufacturers Association of Cambodia, Ministry of Labour & Vocational Training and the Ministry of Health on the need to have a clear standard service package provided by the factory clinics.
This project is proof that women are able to attain the highest standard of health if we address SRH issues holistically.
**Conclusions/Next steps:** Through private partnership, RHAC reduced access barriers to HIV/SRH services, improved link to access to quality HIV/SRH services, and enhanced human resource capacity of factory health staff, contributing to the growth of manufacturing industries, as well as social development.
We aim to develop private partnership financing models that will sustain SRH information and service provision for the long term.

## TUPEE501

### BRAZILIAN STRATEGY FOR UNIVERSAL AND EQUAL ACCESS TO THE HIV-1 GENOTYPING IN THE UNIFIED HEALTH SYSTEM

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**Background:** In 2002, the Brazilian Ministry of Health (BMoH) implemented the National HIV-1 Genotyping Network (Renageno), in order to carry out genotyping of those living with HIV/AIDS in antiretroviral therapy that presented resistance to the drugs, and a Genotyping Network Information System (Sisgeno) with online access, that stores the genotyping results and enables monitoring from the day of the sample collection on.
Between the years of 2002-2015, there were 86,920 Trugene® tests distributed to 23 public laboratories for an average price of US$210 per unit, until the Trugene® kit was discontinued by its manufacturer.
**Description:** Due to the lack of another kit for Renageno Genotyping with commercial authorization in the country, the BMoH acquired, in December 2015, a genotyping exam conducted in-house, in a private laboratory, with a cost of US$127 per unit. This laboratory was hired to collect samples in 709 health services within 3 business days, carry out the Genotyping and release the results on Sisgeno within 12 business days, regardless of which municipality the sample came from. A Sisgeno analysis of in January 2016, one month after the implementation of the contract, demonstrated a reduction from 35 days in 2015 to 11.5 days in 2016 in the release of the Genotyping.
**Lessons learned:** This promising strategy minimizes regional disparities, some health services took 40 days to submit the samples for genotyping in Renageno, it allows agility in the analysis of possible resistance encountered and in the proposal for a new antiretroviral regimen, as well as therapeutic success for those living with HIV/AIDS. Another advantage is the 40% savings on the cost of Genotyping at a private laboratory in relation to the Trugene®.
**Conclusions/Next steps:** Brazilian health care policy granting free access to diagnosis, treatment and monitoring for those living with HIV/AIDS through viral load and CD4, with the possibility of using the agility of the private sector and government funding, ensuring the expansion, reduction in cost and shortest delivery time of genotyping, are important advances to reach a greater number of HIV infected people with undetectable viral load and decrease the number of new infections.

## TUPEE502

### IMMUNOLOGICAL AND RETENTION OUTCOMES FROM A COMMUNITY-SUPPORTED PUBLIC-PRIVATE HIV TREATMENT PROGRAM IN IN YANGON, MYANMAR

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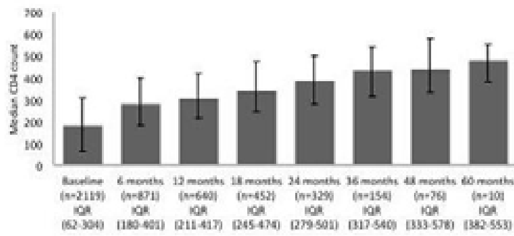
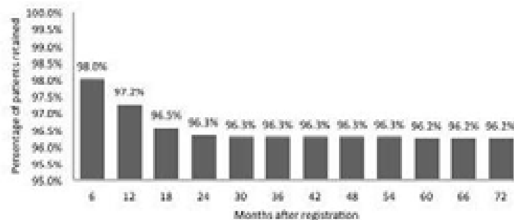
**Background:** This abstract describes immunological and retention outcomes within a public-private partnership between private sector general practitioners and community-based local non-governmental organization, the International HIV/AIDS Alliance in Yangon, Myanmar.
**Methods:** Retrospective analysis was conducted of 2,119 unique patient records dating from March 2009 to April 2015. The primary outcomes assessed from the date of enrolment in care were linkage to care, immunological response, retention and loss to follow-up, all-cause mortality, and survival. Follow-up time was calculated from the date of enrolment to date of death, loss to follow-up, transfer out or, if still alive, in the program until April 2015. The Cox proportional hazards model was used to identify predictors retention endpoints in bivariate and multivariate analysis.
**Results:** The median number of patients for each of the 16 general practitioners was 42 (IQR: 25-227) and the median follow-up period was 13 months. The median age was 35 years (IQR 30-41), 56.6% were men, 62% and 11.8 % % were in WHO stages III and IV at registration respectively, median CD4 count at enrolment was 177 cells/mm$^3$, and 90.7% were on ART) in April 2015. During follow-up, patients' CD4 counts increased from a median of 177 cells/mm$^3$ to 274, 307, 387, 432, 439 and 482 cells/mm$^3$ at 6, 12, 24, 36, 48 and 60+ months respectively. Patient retention was 98.9% at six months, and remained over 97% for up to 72 months.




*[Figure 1. Trends in immunological recovery during follow up]*




*[Figure 2. Good retention levels were observed during the follow up]*

Overall, 3.3 % patients were lost to follow-up, 4.2 % were transferred out to other health facilities, and 8.3% died during the follow-up period. Retention was associated with older age (aOR 0.934; 95% CI: 0.89-0.97%, p=< 0.001), being on ART (aOR 0.0101; 95% CI: 0.003-0.014%, p=< 0.001).

**Conclusions:** Effectively supported private sector general practitioners successfully retained patients on antiretroviral therapy in Myanmar, suggesting that community-supported public-private partnerships can contribute to expansion of HIV treatment.

## WORKING WITH COMMUNITY-LED ORGANIZATIONS, INCLUDING OF KEY POPULATIONS, FAITH-BASED GROUPS, AND TRADITIONAL HEALER ORGANIZATIONS, AND WITH COMMUNITY LEADERS

### TUPEE503

#### HIV-RELATED KNOWLEDGE AND PRACTICES AMONG TRADITIONAL HEALERS IN MAPUTO, MOZAMBIQUE: IMPLICATIONS FOR SCALING UP HIV CARE AMONG COMMUNITIES RELIANT ON "TRADITIONAL" MEDICINE

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**Background:** "Traditional" or spiritual healers provide the majority of healthcare in some of the most highly HIV-endemic regions. Despite their central roles in affected communities, their HIV-related knowledge, practices and relationships with biomedical providers are largely unknown. This dearth of knowledge limits efforts to mitigate the HIV epidemic in these resource-limited contexts.

**Methods:** We employed ethnographic methods of minimally-structured interviews and participant-observation to gain information regarding "Traditional healer" treatment practices, HIV-related knowledge and attitudes towards biomedical resources. Between February and May 2016, 40 healers from Maputo City participated in the study. Interviews and observations were analyzed using content analytic methods to identify significant themes. The KQ-18 scale was also administered to all participants to quantitatively measure HIV-related knowledge. Socio-demographic information collected from all participants included age, gender, practice volume, geographic location and highest level of formal education.

**Results:** HIV-related knowledge varied by geographical location of healers (urban versus rural district), as well as healers' age. Practices of cutting, burning or blood-letting, associated with risk of spreading HIV were uncommon among our participants. The theme of *marginalization* was common among traditional healers as it related to their position as healthcare providers for their clients. Relationships between healers and biomedical providers involve mutual distrust, though healers are open minded about the possibility of working with allopathic providers in the future in order to improve access to HIV care for their clients.

**Conclusions:** Mozambican traditional healers play a central role in community health, yet some scored poorly on the HIV-related knowledge scale. Relationships with biomedical facilities are mutually distrustful, which impedes the processes of referral for HIV testing and/or ART medication treatment for those who are HIV-infected. Efforts to scale up HIV care and testing should involve traditional healers in order to have the greatest reach in this highly endemic area. Our data suggest that healers are open and willing to collaborate with biomedical providers in these efforts.

### TUPEE504

#### A CHILD HEALTH AND PROTECTION SYSTEM BORN OUT OF AN HIV/AIDS PILOT IN CHINA

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**Background:** An equity-based pilot for inclusive social support and protection services is implemented in eight rural counties hard-hit by HIV/AIDS of southwest China. It aims to promote timely access and utilization of HIV testing and counselling, treatment adherence for Prevention of Mother-to-Child Transmission (PMTCT) and treatment of HIV-positive new-born. These counties are inhabited by ethnic minority groups, migrant workers and are mostly poor. The Ministry of Civil Affairs, the National Health and Family Planning Commission and UNICEF have designed a child welfare model to enhance equitable access under the overarching rights-based framework.

**Description:** The pilot supports link-up of the most vulnerable children and women to social support and protection services, including timely HIV/AIDS diagnosis, counselling and treatment. A community level barefoot social worker network is established, one worker for each community to provide a range of services, foremost, birth and civil registration. Without an identity and the necessary papers, these families cannot access medical subsidies and social services. The barefoot social workers identify vulnerable children in their community, conduct household visits, monitor that subsidies are spent as intended, and provide referral to PMTCT and treatment. They also work with HIV-positive support groups in peer support.

**Lessons learned:** Between 2011 and 2015, over 90% of children without Hukou or civil and birth registration in the eight project counties were given IDs and received needed social services. Over 75% of infants exposed to HIV/AIDS had received early infant diagnosis (EID) in 2015 compared to zero in 2011. Data from a project county showed over 90% of pregnant women tested for HIV, and 65% of them treated at the early stage of pregnancy in 2015, a significant increase from 20% in 2011. Key policies were developed to facilitate Hukou registration, cash transfer, and timely follow up for the most vulnerable women and children.

**Conclusions/Next steps:** Between 2011 and 2015, timely diagnosis and treatment rate of pregnant women tripled following introduction of the newly developed PMTCT and EID implementation policies. The number of children without access to social support and protection services also dropped significantly as a result of these interventions and the newly developed social protection policies.

### TUPEE505

#### INVOLVING COMMUNITY LEADERS AND CBOS FROM DESIGN PHASE LEADS TO STRONG RESULTS IN ADDRESSING GBV AND HIV PREVENTION

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**Background:** : In Mozambique, HIV prevalence is 13.1% for women, 9.2% for men, 1 in 3 women experience physical violence; 12% of women over 15 experience sexual violence. Risk factors include early marriage, transactional sex, and male dominance in decision making. Under the PEPFAR Gender-based Violence Initiative, USAID/Mozambique supported the Capable Partners Program (CAP) to scale up GBV prevention within their capacity building program. When six community-based organizations (including one faith-based organization) (CBOs) identified the influence that gender and GBV had on HIV vulnerability in their communities, CAP provided training and technical assistance to help these CBOs engage community leaders, design and implement social and behavioural change communication activities that address gender norms/GBV and HIV together.

**Description:** In collaboration with community leaders, CBOs organized series of 8-12 small group debates addressing gender-based risk factors and barriers to HIV prevention and testing. CAP provided support in ensuring quality implementation and produced videos on gender and HIV to spur reflective discussion of these sensitive topics. Interventions aimed at preventing sexual transmission of HIV and pro-

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moting HIV testing reached 70,892 women and men ages 15-49 in four provinces during 2012-2015. A 2014 quantitative cross-sectional endline population survey interviewed 1531 men and women aged 15-49 about HIV prevention knowledge, attitudes and behaviors, comparing people exposed to CAP to those not exposed. This survey found a positive association between participation in interventions, and more balanced community gender norms and increased preventive behaviors

**Lessons learned:** A team of consultants interviewed CBO representatives and outreach workers to document the process and identify key factors that lead to this success. This qualitative case study identified the following success factors:

1. communities identified gender norms as a factor in HIV transmission;
2. sound, relevant methodologies,
3. comprehensive capacity building,
4. resources invested for long-term results,
5. ownership of interventions by CBOs and community leaders.

**Conclusions/Next steps:** When communities and leaders are engaged in identifying the issues and supported to shape interventions that are meaningful, change in seemingly intransigent norms can happen.

## TUPEE506

### A STRATEGIC RESPONSE TO TB AT THE WORKPLACE: CALL FOR A PUBLIC-PRIVATE-CIVIL SOCIETY MIX

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**Background:** Tuberculosis (TB) is affecting the most economic productive part of the South African population and it has serious socio-economic implications to the business sector. Some of these implications are related to lower productivity through series of absenteeism and presenteeism, direct and indirect costs, succession planning, and overall wellness in the workplace. Workplaces are also directly linked to communities and households which should form part of a comprehensive, integrated health and wellness workplace program.

**Methods:** The South African Business Coalition for Health and AIDS (SABCOHA) in collaboration with the TB CARE II Project funded by the United States Agency for International Development (USAID) and implemented by University Research Co., LLC (URC) and the University of South Africa (UNISA) hosted a series of twelve provincial and national round table discussions to develop a national strategic response framework to TB management at the workplace. Different role-players and stakeholders, including community-based organizations, government departments, workplace health care practitioners, managers and peer educators, and trade unions were amongst the participants of these sessions. Participants were asked to answer five strategic questions providing the needed evidence for the framework development. Key findings were analyzed using theme-analysis to code.

**Results:** The participants identified 5 common priorities for the development of TB in the workplace strategic framework. These include intensifying TB knowledge, awareness and education interventions, collaboration between workplaces and communities, deal with TB treatment defaulters and resistance in a more comprehensive and preventative way, develop and strengthen multi-stakeholder strategies to address the link between HIV and TB in the workplace, communities and households; and strengthen monitoring and evaluation activities. Key lessons learned included the importance of workplace peer educators as key drivers of prevention, case detection, treatment adherence and importance of mobilizing workplace leadership response at all management levels to address TB within a social ecology understanding.

**Conclusions:** Workplaces must integrate TB management within a comprehensive employee health and wellness program3. Optimal care and prevention can only be achieved through a multi stakeholder approach and strong public-private-civil society partnerships are needed to curb the TB epidemic and to reduce stigma related to HIV and TB within workplaces, communities and society.

# SEXUAL AND REPRODUCTIVE HEALTH AND HIV SERVICES: DELIVERY MODELS AND COSTS

## TUPEE507

### INTEGRATING SEXUAL AND REPRODUCTIVE HEALTH (SRH) SERVICES IN COMMUNITY HCT OUTREACHES CRITICAL FOR HCT UPTAKE BY YOUNG PEOPLE: LESSONS FROM NAGURU TEENAGE INFORMATION AND HEALTH CENTRE (NTIHC), KAMPALA, UGANDA

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**Background:** Recent reports indicate that adolescents and young people remain extremely vulnerable to acquiring HIV infection with over 35% of new infections being among young people 15- 24 years. HIV counseling and testing (HCT) has been advanced as a key prevention strategy for early diagnosis to reduce the risks of transmission and promote early treatment. However, HCT services are underutilized among young people consequently leading to increase in the number of new infections in this age group. The aim of this paper is to share the importance of integrating SRH services into HCT services on HCT uptake among young people (10- 24 years).

**Description:** In July 2014, NTIHC started integrating SRH services including Family planning and STI management into HCT outreaches in the community. Prior to this, only HCT services were provided during the outreaches. Data was collected for the period and the numbers of young people reached with HCT services during outreaches in the period before integration (July 2013- June 2014) was compared with data for the period after integration (July 2014 to June 2015).

**Lessons learned:** There was a significant increase to attendance for services during outreaches from 30 young people per outreach to an average of 80 per outreach. The number of young people who received HCT services doubled from 3200 (266 monthly attendance) before integration to 6218 (518 monthly attendance) after integration. Over 50% of the young people who came for other SRH services ended up taking an HIV test.

**Conclusions/Next steps:** Integrating HCT with other SRH services during outreaches can lead to increase in numbers of young people who take up HCT services. Young people who come for Family Planning or STI treatment present an opportunity for the service provider to discuss HCT hence increasing utilization of HCT services.

## TUPEE508

### ASSESSING KNOWLEDGE AND PREFERENCES OF SEXUAL AND REPRODUCTIVE HEALTH SERVICES AMONGST YOUNG PEOPLE AND ADOLESCENTS IN HIV CARE IN RURAL AND URBAN CAMEROON

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**Background:** Young people and adolescents still remain at risk of contracting HIV and other STIs. In Cameroon, the prevalence of HIV/AIDS amongst young people is 1.4% which constitutes about 46% of all new infection amidst the efforts of international, national and local AIDS control programs. Though a lot of focus is laid on abstinence and delaying sexual initiation, adolescents are still engaging in risky sexual behaviors. Youth need accurate, culturally relevant, age-appropriate, youth friendly, non-judgmental information about HIV transmission and infection, as well as, information on how to protect themselves, their partners, including abstinence, contraception, safer sex practices and where to get tested. HIV education and SRHR services must complement each other and be made readily available to all youth, regardless of level of education or sexual activity. This study aimed to assess knowledge of and preferences for SRHR services among adolescents and young people accessing HIV care services in rural and urban Cameroon.

**Methods:** The study involved one rural and one urban community. A self reporting structured questionnaire which sought to assess knowledge of existing SRHR services within the health facility, and preferences for SRHR services were administered to 100 young people and adolescents attending HIV treatment centers in both communities.

**Results:** 85% of our participants were young girls with an average age of 23years. The 15% of young boys had an average age of 27years. 87% of our participants did not have any knowledge of existing SRHR services within the health facility. Of the 13% who knew/used SRHR services, 80% of them were in the urban setting and preferred seeking such services from other health facilities due to the fear of being

judged. All of our participants admitted to needing youth friendly SRHR services and 92% of them did not know exactly where to find them.
**Conclusions:** This survey provides strong evidence of how low knowledge of SRHR services are to young people in HIV care in urban and rural Cameroon. This study reinforces the role of the health facility in incorporating age-appropriate SRHR services when delivering HIV prevention, treatment and care to young people and adolescents.

## TUPEE509

### CHALLENGES AND OPPORTUNITIES FOR SCALING UP AN INTEGRATED SEXUAL REPRODUCTIVE HEALTH SERVICES IN REFUGEE SETTLEMENT OF MBARARA PROVINCE, UGANDA

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**Background:** In 2015, following the influx of Burundian refugees in Nakivale, Uganda, Reproductive Health Uganda (RHU), implemented the Minimum Initial Services Package (MISP) in humanitarian crisis for three months (August - October 2015). The project benefitted over 45,500 refugees through 20 service delivery points in four areas of Nakivale province, providing sexual, reproductive health services including family planning, HIV counselling and testing, and sexually transmitted infections management along with community sexual and reproductive health awareness sessions.
**Description:** The programmatic review of this study was conducted through primary and secondary data collected through SPRINT project reports, observations, field visits, case studies and semi-structured interviews with the beneficiaries, project staff and other stakeholders. To assess the quality of care component, tools such as client exit interviews and RH camp assessment tool were applied wherein fourteen client exit interviews and two Reproductive Health camps were assessed.
**Lessons learned:**
- The work-load was quite high, based on the observation approximately 250-300 clients were provided Maternal and Child Health services per day
- Low community awareness and knowledge about HIV and its impact on health increased their exposure to HIV due to their high risk behavior and sexual networks
- With close collaboration with the Government and UN agencies, this project has the scope of integrating their existing activities including capacity building of village health team on MISP
- Though all family planning services were available, these were under-utilized due to cultural barriers
- Multi-linguistic translator not from the local community and sensitive to the refugees' needs
- Specific counseling skills for GBV and HIV positive cases
- Involvement of adolescent and youths as volunteers
- Transfer of skills to the existing medical team on cervical cancer screening and management.

**Conclusions/Next steps:**
- In protracted crisis, with well-established health service delivery structure, provision of services like cervical cancer screening, which are beyond MISP activities, helps in community mobilization and health seeking behavior
- Crisis involving refugees from different countries needs special attention in terms of culturally sensitive apart from multi-linguistic service providers
- Well coordinated and collaborated activities among the partners help in effective utilization of resources and transfer of skills.

## TUPEE510

### FACTORS INFLUENCING THE IMPLEMENTATION OF PROVIDER-INITIATED TESTING AND COUNSELING (PITC) AMONG STI CLIENTS IN SOUTHERN MALAWI: A MIXED METHODS STUDY

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**Background:** Provider-initiated-testing-and-counseling (PITC) is critical to identify new HIV infections among high-risk populations. While routine PITC is recommended in generalized epidemics, the implementation of PITC outside antenatal services is limited. This paper uses data from a mixed-methods study to identify factors that influence the implementation of PITC among STI clients in southern Malawi.
**Methods:** Five health facilities ranging in size, location, and models for STI service delivery were purposely selected. Exit surveys were conducted with 299 clients seeking STI services. In addition, 18 in-depth interviews with service providers and participant observation over a 5-month period were conducted to further examine barriers to policy implementation.
**Results:** Two models of care were identified:
(i) specialized services (providers only offered STI services in designated STI rooms) and
(ii) integrated services (services offered alongside other outpatient services in non-specific consultation rooms).
61% of clients requiring PITC were not informed about HIV testing, with significant differences between specialized (38.83%) and integrated (79.17%) models of care. Neither model provided HIV testing during STI consultations. Clients told about testing were expected to independently seek out HIV services after completing STI consultations. As a result, being told about testing rarely translated into same-day testing.
Younger and older clients were less likely to be told about testing (AOR 1.45, 95%CI 1.04-2.00; AOR 0.99, 95%CI 0.99-0.99). When controlling for individual characteristics, specialized models of care (AOR 6.31, 95%CI 2.99-13.29) and comprehensive STI services (AOR 1.96, 95%CI 1.31-2.93) were associated with providers' discussing HIV testing with clients.
Several factors were identified as to why providers in specialized models were more likely to discuss testing than those in integrated models: providers received comprehensive training on STI services; had greater knowledge of STI service protocols; felt less overwhelmed by client loads; and felt more responsible to complete STI registers.
**Conclusions:** The organization of PITC had significant implications for policy implementation. Importantly, both integrated and specialized models did not provide testing during STI consultations, largely negating the potential impact of PITC. To achieve the maximum benefits of PITC, HIV testing should be fully integrated into routine consultations. Providers also need regular trainings on PITC protocols.

## TUPEE511

### HIV-POSITIVE WOMEN'S SEXUAL AND REPRODUCTIVE HEALTH NEEDS AND HEALTH SEEKING BEHAVIORS IN JOHANNESBURG, SOUTH AFRICA

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**Background:** South Africa has committed to achieving universal access to sexual and reproductive health (SRH). Given the country's HIV prevalence, special consideration is required regarding how to address HIV-positive women's SRH needs.
**Methods:** We aimed to assess HIV-positive women's SRH needs and care access patterns. From June-November 2015 trained interviewers approached HIV-positive women presenting for treatment at a large, public HIV-treatment facility in Johannesburg, South Africa. Women, approached using a systematic random sample, were eligible for a semi-structured interview if aged 18-49. We analyzed closed-ended interview responses descriptively in Stata (v14.0). Open-ended responses were analyzed using thematic analysis.
**Results:** We approached 369 women, and 192 (52%) were eligible/enrolled. Median age was 39.6 (IQR 35.0-43.6). The majority were Black African (94.8%) and married/cohabitating (40.6%). 39.1% made 6-10 visits to health facilities per year for their HIV and other health conditions; 25.0% reported more than 10 visits per year. The majority (n=160, 83.3%) currently used modern contraception. Two-thirds (n=117, 61.3%) wanted no (more) children, but of those, 23 (19.7%) were not using a method. Table 1 illustrates other SRH needs and health seeking behaviors in the last year.

| | Pap smear | Breast exam | Menstrual problems | STI symptoms | Fertility problems | Menopause symptoms | Gender-based violence |
|---|---|---|---|---|---|---|---|
| | *n=192* | *n=192* | *n=192* | *n=165 sexually active women* | *n=13 who tried to fall pregnant* | *n=146 women >34 years old* | *n=192* |
| Had problems or symptoms | N/A | N/A | 70 (36.5%) | 26 (15.8%) | 9 (69.2%) | 38 (26.0%) | 24 (12.5%) |
| Of those with problems, sought help at a health facility | 168 (88.0%)* | 36 (18.8%)* | 34 (48.6%) | 18 (69.2%) | 7 (77.8%) | 14 (36.8%) | 6 (25.0%) |

*[HIV-positive women's SRH needs and health seeking behaviors in the last year (*=ever had)]*

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Fear of “bad” results prevented women from doing Paps and breast exams. Women also said they had not had a breast exam because they did exams at home and did not know where to go to obtain one. Lack of information on where to get help also frequently prevented women from obtaining care for menopause symptoms. Women with STI symptoms who didn’t seek care said they self-medicated or that the problem “went away.” Women with menstrual problems mentioned that the problems were transient, that they were “normal,” and that there was “no reason” to go to a doctor. 89.1% of women wanted information on SRH to be spontaneously offered at all visits to health facilities regardless of the reason.
**Conclusions:** Many HIV-positive women in care have unaddressed SRH needs. Health care providers should view each patient visit as an opportunity to provide education and support on SRH issues.

## TUPEE512

### INTEGRATION OF HIV AND REPRODUCTIVE HEALTH SERVICES IN PUBLIC SECTOR FACILITIES: ANALYSIS OF CLIENT FLOW DATA OVER TIME IN KENYA

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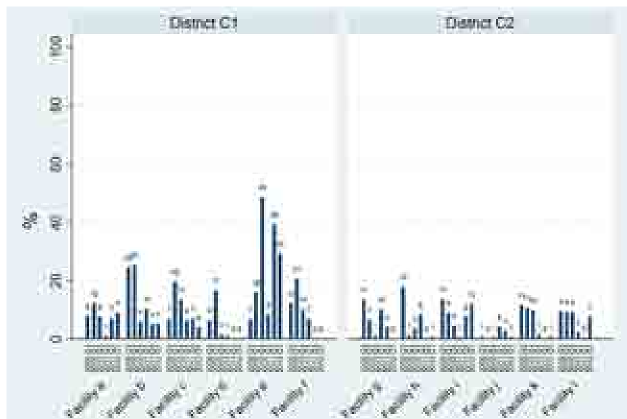
**Background:** Integration of HIV/AIDS services with reproductive health (RH) care is expected to increase the uptake and efficiency of services, yet little is known about levels of integration in practice. We assessed the extent and nature of service integration in government facilities in Kenya, before and after an intervention designed to improve integration.
**Methods:** Between 2009-2012, client flow assessments were conducted at six time points in 24 facilities, purposively selected as intervention or comparison sites. A total of 25,539 visits were tracked: 15,270 in districts where 6 of 12 facilities received an intervention to strengthen HIV/STI service integration with family planning (HIV-FP); and 10,266 visits in districts where 6 of 12 facilities received an HIV-PNC intervention, 2009-2010.
Main outcome measures: The proportion of all visits in which an HIV/STI testing, counselling or treatment service was received with an RH service (family planning counseling or provision, antenatal care, or postnatal care); the proportion of visits in which individual HIV counselling was received.
**Results:** Levels of integrated HIV-RH services and HIV counseling were generally low across facilities and time points. An initial boost in integration in most intervention sites subsequently declined after the first follow-up.




*[Figure 1. Proportion of visits in which integrated HIV-RH services were received, by facility, round and intervention (HIV-FP model in District C1)]*

Integration was driven by temporary rises in HIV counseling. The most consistent combination of HIV/STI services was with antenatal care, except for the initial increase in intervention facilities, which was driven by integration with FP counseling and provision. HIV/STI services were least often received with PNC.
**Conclusions:** The initiative demonstrated a short-term boost in integration, with family planning services providing a good opportunity to expand integration. Without the direct support and supervision of the intervention, integration was not sustained. Declines across time and sites may reflect changes in staffing and redeployment due to district boundary changes, inconsistent commodity supply, and challenges in supervision and team communications necessary to deliver integrated care.

## TUPEE513

### INTEGRATING HIV AND SEXUAL AND REPRODUCTIVE HEALTH SERVICES IN CLINICS IN ZIMBABWE: EVOLVING VIEWS OF END-USERS AND PROVIDERS

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**Background:** Access to cervical cancer screening (CCS) and family planning (FP) services in Zimbabwe is sub-optimal and may be increased by integration with HIV programs. Population Services International Zimbabwe (PSI/Z) has integrated CCS and FP into existing HIV testing and treatment services. We used serial qualitative interviews to explore evolution of client and healthcare worker (HCW) views on service integration.
**Methods:** At three PSI/Z directly-managed clinics and one public-private partnership clinic, in-depth interviews were held with clients in November/2013-March/2014 (Phase 1), November/2014-March/2015 (Phase 2) and December/2015-January/2016 (Phase 3). HCWs were interviewed in-depth in phases 1-2 and had focus group discussions (FGDs) in phase 3. Data were analysed thematically.
**Results:** 32, 37 and 33 clients aged 18-52 years were interviewed in Phases 1, 2 and 3 respectively. 26 and 20 HCWs were interviewed in Phases 1&2; 34 undertook 4 FGDs in Phase 3.
Across phases, clients and HCWs viewed integration positively because
(i) it improved access to all provided services;
(ii) co-location of services saved travel time and money; and
(iii) it promoted awareness of services - client awareness of CCS improved from phase 1-3. Additionally, clients thought having a single waiting room for various services protected against stigma associated with accessing HIV-related services (Phase 3).
Most clients were satisfied with service quality; a few felt HCW were overwhelmed, leading to provision of selective information and long waiting times.
More HCWs were trained in CCS and LARCs over the 3 phases however some knowledge gaps remained. HCWs reported that integration allowed professional growth particularly for those with clinical backgrounds (all phases). Internal referrals, effective in promoting linkage to care, worked best between HIV and CCS services and less so for clients primarily seeking FP. HCWs’ challenges included
(i) sub-optimal coordination between departments;
(ii) difficulties tracking referred clients;
(iii) demand for services exceeding capacity (space and equipment);
(iv) difficulty achieving service targets; and
(v) inaccurate information-sharing amongst clients.
**Conclusions:** Integration has increased access to, uptake of and awareness of HIV and SRH services. Interventions aimed at capacity strengthening, team-building and dissemination of accurate information to clients are likely to further improve implementation and uptake of services.

## TUPEE514

### “4 SMART YOUTH” MOBILE APP REACHING VULNERABLE YOUNG PEOPLE IN MYANMAR WITH HIV/SRH INFORMATION

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**Background:** Link Up Myanmar aims to increase health seeking behavior and uptake of joined up and tailored HIV/SRH services among young people affected by HIV, especially those living with HIV, MSM, sex workers, people who use drugs and transgender young people (YKP), aged 10-24. Rapidly emerging mobile technology is being widely used by young people. Link Up is reaching hard to reach, hidden YKPs by using a mobile application (app) as a HIV/SRH education tool. “4 smart youth” education tool was released in July 2015, with high community acceptance and uptake.
**Methods:** Development of “4 smart youth” involved YKP throughout the planning and implementation. The project began with a YKP consultation to better understand their buy-in and information needs and design parameters. The final version includes live chat and forum where YKP can ask questions publically or privately about HIV/SRH. Trained Link Up counsellors respond and refer individuals onto services. Offline features include a catalogue of HIV/SRH information and a directory of HIV/SRH prevention and treatment services, which can be sorted by location and types of services. Links to HIV/SRH information website in Burmese and the official Link Up Facebook page are also provided.
**Results:** Putting YKP at the centre of developing this tool has ensured that it is addresses their HIV/SRH information needs and has established a strong youth-adult

partnership. The app brings HIV/SRH information and support directly into young people's hands and gives them options about how to access information. To date over 2000 YKP have used the app with over 33% as return users. This all-in-one education tool is very convenient and has the potential to reach more hard to reach youth than traditional IEC materials and health education.
**Conclusions:** 4 smart youth" has shown the potential of effective youth-adult partnerships for developing innovative technology. The process can be applied to developing other youth-friendly health and well-being programmes and technologies. The tool can also be used by peer educators and in the field. Additional work is needed to ensure that the app itself is easily updated and can respond to the challenges of slow internet speeds for online users.

## TUPEE515

### PATIENT PREFERENCES FOR SAFER CONCEPTION SERVICE DELIVERY: FINDINGS FROM A DISCRETE CHOICE ANALYSIS

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**Background:** There are increasing calls for expansion of safer conception services (SCS) for HIV-affected couples trying to conceive. However little evidence exists regarding what service attributes patients prefer most to inform SCS scale-up.
**Methods:** A discrete choice experiment (DCE) was conducted with patients attending various services at a large primary healthcare clinic in Johannesburg, South Africa. Eligible individuals were ≥18 years, planning to conceive within 12 months, and in a relationship in which either/both partners were HIV-positive or of an unknown status. The DCE design informed by qualitative work assessed how different service delivery attributes affected preferences for attending a safer conception clinic (Figure 1). Conditional logistic regression and partial log-likelihood comparisons were used to examine the importance of attributes on service delivery preference.

| Attributes | Levels |
|---|---|
| Type of healthcare worker | An HIV lay counsellor who is trained to provide HIV testing and counselling, ARV treatment support and safer conception counselling |
| | A Professional nurse |
| Operating days | Two week days per week, no Saturday clinic |
| | Two week days per week, including one week day and every Saturday |
| | Five days per week, no Saturday clinic |
| | Five days per week , including four week days and every Saturday |
| Type of counselling to deliver information about how to get pregnant safely | Each couple would not receive face-to-face counselling but would be given written information to take home and read together. You will have an opportunity to ask your healthcare provider questions at your next visit. |
| | A trained healthcare worker will provide group counselling for several couples at the same time (men and women in one room together) |
| | A trained counsellor will provide group counselling for women in one group and men in a separate group - men and women will not be counselled together. |
| | A trained healthcare worker will provide couple counselling in a private room with you and your partner being seen together |
| Total time spent at the clinic | 2 hours |
| | 4 hours |
| | 6 hours |
| | 8 hours |
| Consistency of healthcare provider | You may see a different healthcare provider at each visit |
| | You will see the same healthcare provider at every visit |

*[Figure 1: Attributes and levels choices for the service delivery discrete choice experiment]*

**Results:** Overall 505 participants (69% female) enrolled into the DCE between September 2015-January 2016. The median age was 33 years [IQR:28-37]. Participants were in seroconcordant (n=191, 38%), serodiscordant relationships (n=105, 21%), and unknown status relationships (n=209, 41%). Combined DCE results indicate the type of counselling sessions offered was the most important attribute driving SCS preferences. Participants displayed greatest preference for couples' counselling, followed by group single-sex counselling, then group co-ed counselling and lastly informational leaflets. Continuity of healthcare providers across visits was the second most important attribute, followed by type of healthcare worker (nurse preferred over counsellor), weekend operating hours, shorter time spent at clinic and lastly number of operating days per week. In sub-group analyses, women's most valued attribute was method of counselling, followed by type of healthcare worker, whereas men similarly valued the method of counselling, followed by weekend hours.

**Conclusions:** Considering client preferences for private couples' counselling, effective SCS implementation will rely on sufficient consultation time and physical space availability. Given challenges engaging men in care, weekend hours should also be considered to maximize SCS uptake.

## TUPEE516

### IMPACT OF COMMUNITY MODELS IN SRHR AND HIV FOR YOUNG PEOPLE

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**Background:** Centre for Youth Empowerment and Civic Education (CYECE) has been implementing an SRHR project called Unite Against Child marriages in Dedza district which focused on addressing harmful, cultural and religious beliefs which fuel child marriages among adolescent girls funded by the Dutch Government through an organization called CHOICE for Youth and Sexuality. The main object of the project was to reduce cases of child marriages by creating an enabling environment for girls SRHR using community based models.
**Description:** CYECE created and implemented a *Cultural Model* as follows;
1st Phase: Community Mobilization & capacity building: Traditional leaders were mobilized and trained on the SRHR issues for young people to make them champions of child marriages within their communities.
2nd Phase: Whole community awareness dangers of child marriages: CYECE conducted Community Dialogue Sessions facilitated by the trained traditional leaders on the dangers of child marriages.
3rd Phase: Joint community action to sustain interventions against child marriages: CYECE conducted interface forums with community stakeholders and children to lift cultural and religious practices which fuel child marriages.
**Lessons learned:** The project achieved the following outcomes;
- Improved knowledge and skills on SRHR among girls
- Girl's ability to deny and report forced marriages
- Increased girls enrolment in formal education
- 48 girls withdrawn from child marriages
- Modified/changed cultural practices
- Community leaders supporting girls SRHR and education
- Enforcement of bye laws against child marriages
- Girl child friendly policies and laws in place

**Conclusions/Next steps:** CYECE is very much convinced that community led approached to curb child marriages are the only tool for a successful and sustained community intervention. Empowering community leadership to champion SRHR interventions is very crucial and sustainable. The project managed to develop community Bye-Laws to end child marriages.

# ANALYSES OF CHANGES IN POLICY AND PRACTICE

## TUPEE517

### NATIONAL SURVEY OF UNITED STATES HIV HEALTHCARE PROVIDERS ABOUT AFFORDABLE CARE ACT KNOWLEDGE AND ATTITUDES

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**Background:** The Affordable Care Act (ACA) has changed HIV healthcare delivery in the United States. The objective was to explore HIV providers' knowledge and attitudes about the ACA across the nation.
**Methods:** HIV providers were emailed a weblink to a survey. The survey assessed sources of ACA information, knowledge about the ACA as well as attitudes about the ACA.
**Results:** Of the 253 survey respondents, 16.2% were fellow physicians, 4.0% were PAs, 13.8% were NPs, and 66% were attending physicians. The respondents were from 35 of the 50 United States and the District of Columbia. 60.1% respondents were from Medicaid expansion states. In terms of sources of ACA knowledge, 63% reported using websites, 62.8% reported using newspapers/magazines, 44.7% reported using clinic case managers, and 34.8% reported using the radio. The majority of respondents (60.5%) answered all 4 knowledge questions correctly. Approximately one-third of respondents answered "I don't know" to at least one question. 70.8% knew whether or not their state had elected to expand Medicaid. On a scale

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rating the ACA's impact from 1-5 with 5 as the best, the mean response for improving national health outcomes was 3.95 (SD: ±.95), for improving their patients' HIV outcomes was 3.61 overall (±.92; for Medicaid expansion: 3.78 (±.83), for Medicaid non-expansion: 3.37 (±1.00); Mann-Whitney U Test p =.002), and for improving their patients' non-HIV outcomes was 3.93 (±.90). In multivariate logistic regression, controlling for years of experience, sources of ACA information, and ACA attitudes, factors associated with correct ACA knowledge include: provider type (p=.011), provider in Medicaid non-expansion state (aOR 2.57; CI 1.30-5.10; p=.007), obtaining knowledge from
1) clinic case managers (aOR 2.88; CI 1.35-6.13; p=.006),
2) the radio (aOR 2.31; CI 1.02-5.23; p=.044),
3) newspapers/magazines (aOR 2.20; CI 1.00-4.81, p=.049), and
4) websites (aOR 2.12; CI 1.00-4.50; p=.050), and a positive attitude towards the ACA's effects on the United States' health outcomes (aOR 2.81; CI 1.58-5.02; p< .001).
**Conclusions:** Without Medicaid expansion, to protect people living with HIV with the lowest incomes, providers anticipate worse HIV outcomes. This survey reveals that providers retain accurate information about the ACA from the media and clinic case managers.

## TUPEE518

### HIV PCR TESTING AT BIRTH: EXPERIENCES FROM A REGIONAL HOSPITAL IN ETHEKWINI, KWAZULU-NATAL, SOUTH AFRICA

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**Background:** eThekwini district, KwaZulu-Natal (KZN),(population 3,4 million; ANC HIV sero-prevalence, 39%), South Africa has promoted PMTCT of HIV since 2002 and achieved an infant 1st PCR test positive around 6 weeks rate of 1.1% in 2014. However, HIV is still a significant contributor of < 5 mortality. Intrauterine infections present highest risk of rapidly progressive disease and death, and can be detected by birth HIV PCR testing. Survival benefit has been demonstrated when infected infants are initiated on ART before 14 weeks of age.
**Description:** In April 2015 KZN Department of Health adopted PCR testing within 6 hours of birth for all HIV-exposed infants and ART initiation within 7 days of diagnosis. This was communicated to facility management at a provincial workshop and district quarterly meetings, and facilities were requested to develop implementation plans. Review of a regional hospital June 2015 data by District Clinical Support Team (DCST) and MatCH, a PEPFAR-funded NGO, showed poor compliance - only 14% of eligible neonates were tested. Additional support visits were provided by DCST; and training and mentoring by MatCH on the amendment and PCR testing technique. Subsequent improvement in testing was noted with facility achieving up to 97% coverage (Table1).

| | June | July | August | September | October | November |
|---|---|---|---|---|---|---|
| Live birth to HIV positive woman | 234 | 249 | 221 | 163 | 181 | 216 |
| Birth PCRs tests | 33(14%) | 161(65%) | 191(86%) | 128(79%) | 176(97%) | 203(94%) |
| Birth PCR positive test | 0 | 1 | 8 | 3 | 0 | 0 |

*[Table1. Birth PCR testing at regional hospital (2015)]*

**Lessons learned:** National guideline was poorly adapted at facility level with lack of commitment from key role players. Guideline implementation needs to be incorporated into quality assurance processes and review mechanisms at facility level for prompt identification, using institution data as a foundation for quality improvement. Routine feedback mechanisms need to be in place to assess compliance to guidelines at district level with timelines specified.
**Conclusions/Next steps:** *Field and Lohr emphasized that 'guidelines do not implement themselves' (1992).* Advance planning for guideline dissemination will ensure better implementation of policies with specific roles and responsibilities clarified at facility level. Targeted intervention plans need to be in place with ongoing training and mentorship programmes to promptly address gaps identified.

## TUPEE519

### DOES INCREASED IN-FACILITY VERBAL TB SCREENING RESULT IN INCREASED TB CASE-FINDING? YES...AND MAYBE

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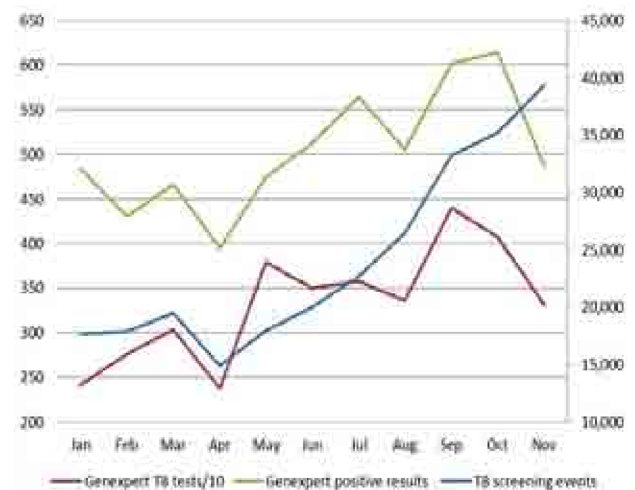
**Background:** The District Health Services of the Western Cape made a concerted effort to increase TB verbal screening in PHC facilities in 2015. To facilitate the process, mid-level managers were required to focus on this activity; tools were developed for recording screening events and provincial monitoring systems were enabled. The results from one rural district are reported.
**Description:** In the Cape Winelands district the number of recorded verbal TB screening events in 2015 changed from an average 18,300 per month in the January-to-March period to an average of 35,900 in September to November, reflecting a 96% increase in the number of TB screening events.
Over the same periods, the number of recorded Genexpert tests changed from an average of ~2,700 per month to ~3,930 per month (44% increase), and the average number of positive Genexpert results changed from 460 per month to 568 per month (23% increase). Figure 1 elucidates:




*[Figure 1. TB screening vs TB testing vs positive TB results]*

Table 1 summarises the results per sub-district (all changes compare January-March to September-November):

| | Proportional increase in verbal screening events | Proportional increase in TB tests | Proportional increase in positive TB results |
|---|---|---|---|
| Sub-district 1 | 45% | 94% | 67% |
| Sub-district 2 | 412% | 22% | -7% |
| Sub-district 3 | 6% | 29% | 13% |
| Sub-district 4 | 143% | 21% | 21% |
| Sub-district 5 | 201% | 50% | 41% |
| WHOLE DISTRICT | 96% | 44% | 23% |

*[Table 1]*

**Lessons learned:** 23% more TB was diagnosed in September-November compared to January-March (an additional ~100 cases per month). Laboratory diagnosed TB cases correlated better with the number of tests submitted than the number of screening events.
**Conclusions/Next steps:** Increased verbal screening appears to increase laboratory TB diagnosis but further analysis is required to elaborate the relationship of both to the intermediate step of TB testing at facility level. These results are based on screening and laboratory data only. Genexpert might not the only testing modality. TB treatment data must be reviewed to assess whether a commensurate increase in treatment initiation is documented.

## TUPEE520

### MONITORING PHARMACY AND TEST KIT STOCKS IN RURAL MOZAMBIQUE: PREVENTING MINISTRY OF HEALTH STOCK-OUTS IN THE U.S. PRESIDENT'S EMERGENCY PLAN FOR AIDS RELIEF (PEPFAR)

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**Background:** HIV and tuberculosis (TB) treatment scale-up in Mozambique has expanded very rapidly in the last couple of years. We assessed the central pharmacy experience for medications and test kits being used in Zambézia province, northcentral Mozambique, with the nation's second largest population and high HIV prevalence.
**Methods:** Using pharmacy stock surveillance for 60 weeks (April 2014-June 2015), we assessed availability of 36 medications (five medication classes) and four diagnostic kits (HIV and malaria rapid tests and syphilis RPR) used in PEPFAR-supported programs. Medication/kit classes were: adult antiretrovirals (ARVs), pediatric ARVs, TB medications, antibiotics, and test kits. We modeled pharmacy data using ordinal regression, characterizing weekly product availability in four categories: good; adequate; imminent stockout; or stockout.
**Results:** Among 2160 weekly records, there were 166 (7.7%) stockouts and 150 (6.9%) imminent risks of stockout. Earlier calendar time was associated with a reduced medication supply (p< 0.001), the time association was non-linear (p< 0.001), selected drug/kit classes were associated with reduced supply (p< 0.001), and an interaction effect existed between time and drug class on the odds of reduced supply (p< 0.001). At the evaluation's mid-point, pediatric ARVs had a 17.4 (95% confidence interval [CI]: 8.8-34.4) times higher odds of a reduced medication supply compared with adult ARVs. Compared with adult ARVs, TB medications, antibiotics and test kits were also at greater risk of reduced supply at the evaluation's mid-point. Adult and pediatric ARVs had 67% and 71% lower odds respectively of reduced medication supply over time (95%CI: 0.11-1.04 and 0.11-0.79), comparing the first and last weeks.
**Conclusions:** Despite increasing demand over time with program scale-up, adult ARV pharmacy shortages have become less frequent. Pediatric ARVs, TB medication, antibiotics, and test kits have been more prone to variable stock outs and will be a priority focus.

# IMPACT OF HIV FUNDING/PROGRAMMING ON REPRODUCTIVE HEALTH AND OTHER DISEASE OUTCOMES

## TUPEE521

### THE LARGEST EFFECT OF AN HIV QUALITY IMPROVEMENT PROGRAM IN CÔTE D'IVOIRE IS ON PROVISION OF MATERNAL HEALTH CARE

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**Background:** Cote d'Ivoire is likely to have met Millennium Development Goal (MDG) 6 to 'halt and have begun to reverse the spread of HIV/AIDS by 2015', yet MDG 5 - to reduce the maternal mortality ratio by three quarters between 1990 and 2015 - showed no progress. Improving health of individuals and communities requires a health-systems approach to ensure pregnant women living with HIV do not die of other preventable causes. Through funding from CDC/PEPFAR, in 2008 Jhpiego began implementing a quality improvement (QI) program across 35 health facilities with the aim of improving the quality of antenatal care (ANC), including preventing mother to child transmission (PMTCT) of HIV. An evaluation was undertaken to assess the effects on service delivery.
**Description:** The evaluation was a quasi-experimental, pre- post- design, undertaken in 10 health facilities offering ANC and PMTCT services in northern Cote d'Ivoire. Baseline and endline data collection occurred in March 2014 and February 2015, respectively. Data collection included observations of consultations with providers and data reviews. Data analysis was done using STATA.
**Lessons learned:** There was an improvement in HIV service delivery in ANC, with significantly more women provided education on the risk of transmission of HIV during pregnancy. The table shows the substantial improvement in provision of basic antenatal care, including educating women about danger signs during pregnancy and discussing post-partum family planning options.

| Service Delivery Standard Achieved | N Achieved / N Assessed at Baseline | N Achieved / N Assessed at Endline | p value | RR |
|---|---|---|---|---|
| Provider explains the risk of transmission of HIV from mother to child during pregnancy, labor & delivery, and breastfeeding | 41 / 136 (30%) | 108 / 140 (77%) | .008 | 2.56 (1.28 - 1.53) |
| Provider establishes the HIV status of the client | 96 / 136 (71%) | 122 / 125 (98%) | .006 | 1.39 (1.10 - 1.75) |
| Provider explains intermittent preventive treatment for malaria | 53 / 126 (42%) | 112/ 138 (81%) | .001 | 1.93 (1.29 - 2.88) |
| Provider encourages the woman to deliver in a health facility | 21 / 134 (16%) | 89 / 138 (64%) | .001 | 4.12 (1.95 - 8.69) |
| Provider discusses at least 4 danger signs during pregnancy: vaginal bleeding, intense headache, fever, acute abdominal pain, blurred vision, convulsions, shortness of breath | 7 / 135 (5%) | 92 / 140 (66%) | .001 | 12.67 (5.53 - 29.05) |
| Provider discusses family planning options | 4 / 135 (3%) | 61 / 139 (44%) | .002 | 14.81 (2.63 - 83.33) |

*[Improvements in provider performance in Antenatal Care]*

**Conclusions/Next steps:** The implementation of a QI program targeting PMTCT services led to significant improvements in the general management of pregnant women in ANC, as well as provision of PMTCT services. This is of particular importance in a setting where the leading causes of maternal mortality are hemorrhage, indirect causes, and eclampsia. Standardization of ANC and PMTCT services, using a health-systems focused QI approach, contributes to improvements in maternal health beyond HIV, perhaps most importantly the planning for the next pregnancy.

## TUPEE522

### THE IMPACT OF AIDS TREATMENT ON TUBERCULOSIS OUTCOMES AT THE NATIONAL LEVEL IN SOUTH AFRICA

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**Background:** HIV/TB co-infection is particularly prevalent in South Africa, where TB has been the leading cause of death for over a decade. The 2004-2008 national rollout of ART provides a unique opportunity to examine the population-level impact of ART on the TB epidemic.
**Methods:** We performed a longitudinal regression analysis that follows the evolution of TB outcomes before and after the introduction of ART using a large data set from the National Health Laboratory Service. This is the first study to produce estimates of the impact of the ART rollout net of confounders by exploiting the random variation in the rollout.
**Results:** After ART became available in a health facility, 3·7% (p< 0·0001) more patients were tested for TB and 3·2% (p< 0·0001) more received follow-up tests, with a steep rise around the introduction of ART. Though the number of TB-positive patients increased by 4·3% (p=0·0002) in the first year post-ART, the TB rate among tested patients fell by 2 percentage points (8%, p=0·001) after two years. Sputum smear testing declined relative to more technologically advanced diagnostics post-ART.
**Conclusions:** ART availability increased attention to TB screening and drew new patients into the health care system. Increases in the numbers of repeat patients are indicative of retention in care and reflect an increase both in TB screening and monitoring. The decline in TB rates post-ART demonstrates that the reduction in TB risk due to improved immune functioning and more contact with health care outweighed any increased TB risk due to the longer lifespan of ART initiators.

## TUPEE523

### BARRIERS TO COLLECTION OF MEDICO-LEGAL EVIDENCE IN RAPE CASES IMPACTS OF HIV PREVENTION AND CARE

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**Background:** Evidence suggest that there is high prevalence of rape in South Africa, accompanied by poor reporting and low conviction rates for offenders. Medico-legal services play an important role, securing convictions and also in HIV prevention for victims of sexual violence in particular rape. Tshwaranang Legal Advocacy Centre and the Health Economics and HIV/AIDS Research Division (HEARD) at University of KwaZulu Natal carried out a study to explore the barriers to the collection and use of medico legal evidence in prosecution of sexual violence cases.
**Description:** The research was conducted in Gauteng, Eastern Cape, Mpumalanga and KwaZulu Natal. The sample included doctors and forensic nurses at health centres, forensic detectives within South African Police Services, specialist prosecutors, case managers and site coordinators at Thuthuzela Care Centres. Ethical approval for the study was given by the University of KwaZulu Natal Human and Social Science Research Ethics.
**Lessons learned:** Inadequate human and financial resourcing of targeted departments, contempt for survivors of violence, uneven knowledge and poor implementation of sexual assault procedures and policies and a lack of adequate knowledge by survivors to respond after a sexual assault in ways that safeguard evidence and reduce further harm to themselves. All these had the potential to undermine access to post exposure prophylaxis and some impacted on adherence to Anti-Retroviral Therapy.
**Conclusions/Next steps:** The need to advocate for adequate resourcing of the relevant government departments, to ensure that services required for survivors of violence are accessible and available. Gender sensitivity training and programmes for duty bearers, who are the first point of contact with survivors and are expected to ensure survivor get treatment to prevent infection. Awareness raising in communities on responding to sexual assault. It is envisaged that improving the medico legal services will in turn allow victims of rape to have confidence in the system and access post rape services timeously and, in so doing preventing exposure to such as HIV.

# EFFECTS OF HIV PROGRAMMING (PREVENTION AND TREATMENT) ON DEVELOPMENT OUTCOMES (E.G., SCHOOLING)

## TUPEE524

### INFLUENCE OF ANTIRETROVIRAL THERAPY ON NUTRITIONAL STATUS OF CHILDREN: ANALYSIS OF 21 GLOBAL PRIORITY COUNTRIES IN AFRICA

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**Background:** The virological and immunological benefits of antiretroviral therapy (ART) in HIV-infected children have been widely studied. However, few studies have examined the effects of paediatric HIV interventions on malnutrition in Africa where 30-50% of children with severe acute malnutrition are HIV-infected. The purpose of this study was to determine the influence of paediatric HIV treatment on malnutrition in the 21 global priority countries in Africa.
**Methods:** This is an ecological study, which correlated country-level data on nutritional indicators (2007-2014) with paediatric ART coverage (2014) from WHO global database on child growth and malnutrition, and 2015 UNAIDS progress report on global AIDS epidemic plan. Data were analysed with STATA v.12.0. We explored the pattern of relationships with scatter plots. Pearson's correlation and linear regression were utilized to explore possible association and adjust for confounders. The β-coefficients were estimated based on the maximum likelihood method. A p-value of 0.05 was considered to be statistically significant.
**Results:** The mean paediatric ART coverage was 30.1% (SD: 6%) [Range 8%, Chad; 66%, Namibia]. The mean prevalence of the nutritional indicators among under-5 children were: wasting 6.8% (SD: 3.9%) [Range 0.8%, Swaziland; 18.1%, Nigeria]; underweight 16.7% (SD: 6.8%) [Range 5.8%, Swaziland; 30.3%, Chad] and stunting 35.3% (SD: 8.5%) [Range 22.7%, Ghana; 57.5%, Burundi]. Across the 21 countries, paediatric ART coverage had a highly significant inverse linear correlation with prevalence of wasting (r= -0.5, p=0.03) and underweight among under-5 children (r= -0.6, p=0.009). Although not significant, the prevalence of stunting was lower among countries with a higher paediatric ART coverage (r= -0.3, p=0.132). The regression analysis showed that for every 10% increase in paediatric ART coverage, there was a decrease of 1% in prevalence of wasting and 2% fall in prevalence of underweight. After adjusting for Gini coefficient, poverty index and gender inequality, paediatric ART coverage was the most important correlate with wasting
(β = -0.42; 95%CI: -0.8, -0.03; p=0.042).
**Conclusions:** Our findings suggest that increased paediatric ART coverage lowers the risk of acute malnutrition. To accelerate Sustainable Development Goal 2 on reducing the risk of child malnutrition in the countries, there should be more investments on paediatric ART programmes.

## TUPEE525

### DESIGN AND VALIDATION OF TEXT-MESSAGES FOR A MOBILE-HEALTH INTERVENTION TO IMPROVE ADHERENCE IN PEOPLE LIVING WITH HIV

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**Background:** Mobile-health (mhealth) interventions, particulary those based on text-messages (SMS) can be cost-effective to increase antiretroviral treatment (ART) compliance. To ensure their effectiveness, SMS must be adjusted to the specific population of people living with HIV (PLWH). This study describe the design and validation of SMS to be used in a randomized-controlled study for a mHealth intervention aiming to improve ART adherence and decrease loss to follow up in PLWH in an HIV clinic in Mexico City
**Methods:** Eleven HIV-specialised health-care professionals (HCP) and 40 PLWH participated in this study. Data were collected from July to November 2015. Six HCP were asked to write 5 SMS for 4 categories: motivational self-healthcare SMS, reminders of ARV collection, medical and laboratory appointments. Then the SMS were judged by 5 different HCP based on: a) SMS match with the category (Yes/NO), b) SMS usefulness (0-10) and c) SMS fit for PLWH (0-10). We calculated two reliability measurements: judges' percent agreement (JA) and intraclass correlation coefficient (ICC). SMS were selected if they matched with the category and had usefulness and fit scores above 50 percentile. Lastly, SMS were tested in focus groups of PLWH, where participants commented on language and evaluated them based on: a) is the SMS understandable (Yes/No), b) SMS pleasantness (0-10) and c) SMS usefulness (0-10); JA and ICC were calculated. SMS were selected if they were understandable and had usefulness and pleasant scores over 50 percentile. We compared SMS scores by sex, age, disclosure and time since HIV diagnosis.
**Results:** 128 SMS were submitted and assessed by expert referees, obtaining mean JA=91.66%; usefulness ICC=0.30; and fit ICC=0.30. Eighty-six SMS with the highest scores were selected to be evaluated in focus-groups, and obtained a median JA of 97.36%; usefulness ICC=0.30; and fit ICC=0.31. Forty-eight SMS with the highest scores were retained. We found differences in SMS language preferences, pleasantness and usefulness scores, according to sex, age and time since HIV diagnosis
**Conclusions:** The validation process allowed us to obtain 48 well-accepted SMS that vary depending on age, sex and time since diagnosis. This process may be key in ensuring mHealth effectivenes.

## TUPEE526

### POPULATION-WIDE ADULT MORTALITY FOLLOWING THE EXPANSION OF ANTIRETROVIRAL THERAPY PROGRAM IN THE RAKAI DISTRICT (UGANDA)

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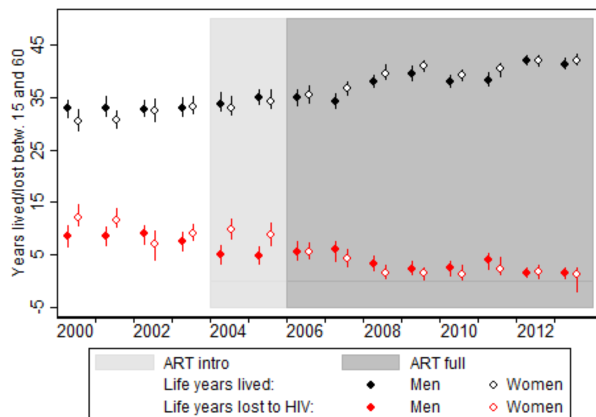
**Background:** Studies have demonstrated the impact of ART on the survival of individuals enrolled in HIV care and treatment programs, but there is a scarcity of research evaluating the impact of ART at a population level.
**Methods:** Demographic and HIV surveillance data come from the Rakai Community Cohort Study (RCCS) for the period covering 1999 to 2013. We use non-parametric survival analysis for estimating trends in (i) the person-years lived in adulthood (ages

15-60) and (ii) the adult life-years lost to HIV. For testing differences in age-adjusted mortality hazards of people living with HIV (PLHIV) by gender, time and treatment status, we use parametric survival analysis with a Weibull distributed outcome.
**Results:** Since the introduction of ART in 2004, the per-person number of years lived in adulthood increased from 32.87 (95%CI: 31.24-34.58) to 42.08 (95%CI: 41.10-43.08) years for women and from 33.80 (95%CI 32.22-35.39) to 41.33 (95%CI: 40.14-42.43) years for men. As a result, the number of life-years lost to HIV in 2013 has declined to 1.27 years among women and 1.53 years among men (Figure 1). Reductions in the mortality rates of PLHIV (both on and off ART) explain most of these changes. Among PLHIV who received treatment, the risk of mortality was 2.4 times higher among men than among women (95%CI: 1.63-3.52), with no evidence of changing gender differences. Conversely, the mortality risk among untreated women decreased by 25% each calendar year (95%CI: 0.71-0.79) and among men there was a 15% annual decline (95%CI: 0.81-0.90).




*[Figure 1]*

**Conclusions:** The last decade is characterized by large reductions in HIV-associated mortality, and the residual burden of HIV on the adult mortality is now relatively small. Gender differences in the mortality rates of PLHIV are sizable and, in the case of pre-ART mortality, increasing over time. Increasingly expansive PMTCT services probably contribute to these gender differences.

## TUPEE527

### THE CAUSAL IMPACT OF ART INITIATION ON HOUSEHOLD FOOD SECURITY OVER TIME

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**Background:** The magnitude and direction of the net effects of ART on household welfare is unclear: patients may incur costs when utilizing ART (e.g., travel); conversely, patients recover health and employment on ART. This study examines the impact of ART on one aspect of household welfare - household food security.
**Methods:** We utilize routinely collected longitudinal data from the Africa Centre for Health and Population Studies and employ a regression discontinuity design over 2300 observations (collected between 2004 and 2012), to assess the causal impact of ART on three household-level food security outcomes: probability of an adult missing any food for financial reasons, probability of an adult missing a meal for financial reasons, and probability of a child missing a meal for financial reasons.
**Results:** For each outcome, ART causes a significant increase in the probability of food insecurity in the year immediately following ART initiation, which diminishes to 0 between 1 and 3 years after ART initiation. In the first year after initiation, ART initiation yields a significant increase in the probability of an adult in the household missing food by 11.3 percentage points (coefficient = 0.113, 95% CI = [0.044, 0.183]), a significant increase in the probability of an adult in the household missing a meal by 11.8 percentage points (coefficient = 0.118, 95% CI = [0.024, 0.213]), and a significant increase in the probability of a child in the household missing a meal by 9.4 percentage points (coefficient = 0.094, 95% CI = [0.033, 0.156]). The upper bound on these causal estimates is an approximately 6 fold increase in short-term household food insecurity as a result of ART initiation.
**Conclusions:** ART initially places a significant burden on household food security; however, this effect disappears over time. It is likely that rapid appetite recovery paired with the financial burden of utilizing ART, which are high relative to income in this community, initially outweigh the longer-term beneficial ART effects on employment and income. Food and financial support programs may help to alleviate the temporary loss in food security following ART initiation, especially in the context of the expanding ART rollout and treatment-as-prevention strategies.

# MICRO-ECONOMIC AND MACRO-ECONOMIC IMPACTS OF HIV PROGRAMMES AND POLICIES

## TUPEE528

### ONE SIZE WILL NOT FIT ALL: DIVERGENT PREFERENCES FOR NEW HIV PREVENTION PRODUCTS ACROSS ADULTS, ADOLESCENTS AND FEMALE SEX WORKERS IN SOUTH AFRICA

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**Background:** The development of antiretroviral (ARV)-based HIV prevention products has substantially changed the prevention landscape, yet little is known about how appealing these products will be to potential users. We conducted a discrete choice experiment (DCE) to measure preferences for oral, topical (intravaginal ring or gel with/without a diaphragm) or injectable ART-based pre-exposure prophylaxis.
**Methods:** From September to December 2015, we consented and interviewed 340 adults (182 males, 158 females) and 73 adolescent girls (aged 16-17 years) in a household survey, and 122 female sex workers (FSW) recruited in a respondent-driven sampling (RDS) survey in Ekurhuleni, South Africa. Respondents were asked to choose between three hypothetical products with varying attributes over ten choice sets, with an opt-out option. Choice sets were developed through literature review, qualitative interviews and extensive piloting with target populations. Data were analysed using nested and mixed logit models.
**Results:** Among all groups, the refusal rate for the survey was less than 1%. Although the injectable product was the most favoured product among all groups, preferences for other attributes varied substantially between and within populations. Female sex workers valued high HIV protection around twice as much as adult women (population preference weight ratio (PPWR): 1.87, p=0.04) and adolescent girls (PPWR: 2.14, p=0.02), whilst frequency of use was the key driver of demand among adult women. Adolescent girls were equally concerned with protection from HIV, pregnancy (PPWR: 0.76, p=0.2), and STIs (PPWR: 0.74, p=0.14). Adult males valued both HIV protection (PPWR: 9.35, P>0.01) and STI protection (PPWR: 9.31, p>0.01) around nine times more than pregnancy prevention, and were the only group to indicate that side-effects were important inhibitors of demand.
**Conclusions:** These results suggest that stimulating demand for new HIV prevention products may require a more a nuanced approach than simply developing highly effective products. STI and pregnancy prevention, alongside frequency of use, appears to substantially impact demand. A one- size-fits-all package is unlikely to be an effective or efficient means of delivering new prevention products across different populations. These results strengthen evidence calling for the development of multi-purpose technologies.

# INTERVENTIONS TO INCREASE DEMAND, UPTAKE AND RETENTION OF VULNERABLE AND KEY POPULATIONS FOR HIV PREVENTION AND CARE PROGRAMMES

## TUPEE529

### DOES PEER OUTREACH INCREASE HIV TESTING SELF-EFFICACY AND UPTAKE? EVALUATION OF THE LINK UP PROGRAM IN BANGLADESH BROTHELS

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**Background:** In Bangladesh, brothels house thousands of female sex workers (FSWs) who are at elevated risk of HIV. As part of the global Link Up project, an HIV and sexual and reproductive health peer outreach intervention was introduced in selected brothels. This analysis examines whether Link Up had an impact on FSWs' HIV testing self-efficacy and uptake.
**Methods:** A repeated cross-sectional survey was conducted before and after the intervention (June 2014 and August 2015) with all resident FSWs ages 18 to 24 in four intervention and four comparison sites. The survey collected information on

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socio-demographics, HIV-related behaviors, healthcare utilization, and healthcare-seeking self-efficacy. Linear regression models assessed changes in HIV testing uptake (i.e., ever tested), receipt of test results, or testing self-efficacy (defined as confidence to locate a testing site and to get tested) from baseline to endline, comparing intervention and comparison brothels. Supplemental logistic regression models used endline data to compare these three outcomes among women who reported contact with a Link Up peer educator, relative to those with no such contact. All analyses controlled for clustering at the brothel level.

**Results:** Interviewers surveyed 1,061 baseline participants (505 intervention, 556 comparison), and 1,005 endline participants (541 intervention, 474 comparison). Testing uptake, receipt of test results, and testing self-efficacy increased over time in both intervention and comparison sites. However, in multivariate analyses, the improvement in intervention sites was not significantly different from that of comparison sites.

At endline, 68% of women in intervention brothels reported having contact with a Link Up peer educator. Women with peer educator contact had statistically significantly higher odds of testing uptake (Adjusted odds ratio [AOR] 1.76, 95% confidence interval [CI]: 1.04-2.96), receipt of test results (AOR: 6.56, 95% CI: 1.79-24.12), and testing self-efficacy (AOR 1.85, 95% CI: 1.25-2.73).

**Conclusions:** FSWs' testing self-efficacy and uptake increased over time, irrespective of whether they resided in brothels that received the Link Up program. Concurrent interventions in comparison sites may explain this finding. Furthermore, since testing self-efficacy and uptake increased more among those who had contact with Link Up peer educators, the intervention may have benefitted from increased outreach intensity to reach more residents.

## TUPEE530

### PROTECTION OF PLHIV'S ACCESS TO MEDICAL SERVICES AT PENAL INSTITUTIONS THROUGH THE NATIONAL PREVENTIVE MECHANISM

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**Background:** In 2006, Ukraine ratified the Optional Protocol to the Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment and undertook to establish a structure which would perform the functions of the National Preventive Mechanism (NPM). In 2012, the country introduced amendments to the Law of Ukraine "On the Commissioner for Human Rights of the Parliament of Ukraine", according to which functions of NPM were assigned to the Ombudsman's Office. Ukraine decided to apply the Ombudsman Plus Model. "Plus" means the civil society; the monitors, who have to become actively involved in monitoring visits to closed institutions.

**Description:** The All-Ukrainian Network of PLWHA joined the implementation of the NPM by its work in the expert council and involvement in monitoring visits to penal institutions. In 2015, the NPM monitors were engaged in works aimed at studying the access to medical services of people living with HIV at penal institutions in 9 regions of Ukraine. The instruments were provided and the peculiarities of the monitoring of ensuring the PLHIV's right for medical aid at penal institutions were taught. According to the results of the visits, the following systematic problems were found: a low level of prisoners' examinations to detect HIV (below 10% of the total number of prisoners); improper voluntary consultations and HIV testing; untimely examinations of HIV positive persons and prescription of antiretroviral therapy; a low qualification level of medical staff in terms of HIV/AIDS. Besides, the monitoring detected issuance of outdated antiretroviral medicines to convicts.

**Lessons learned:** Recommendations based on the detected violations, which could be fulfilled by penal institutions' managers, were fulfilled immediately. In case violations had a systematic character, they were reflected in reports. Based on the NPM monitors' reports, the Ombudsperson of Ukraine sent response acts to the Ministry of Justice of Ukraine and the State Penal Service of Ukraine.

**Conclusions/Next steps:** As a result of the project, the Ombudsperson's Office is initiating legislative amendments through preparation of a special report "Status of fulfillmentof the right for medical aid of PLHIV at institutions of the State Penal Service of Ukraine in 2015" for the parliamentary hearings.

## TUPEE531

### SUCCESSFUL KEY POPULATION PROJECT START UP IN A SOCIALLY, CULTURALLY AND LEGALLY SENSITIVE COUNTRY - BUY IN OF LINKAGES PROJECT FOR FEMALE SEX WORKERS AND MSM IN MALAWI

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**Background:** Key population (KP) such as female Sex Workers (FSW), men who have sex with men (MSM), have an important role in HIV/AIDS because of their increased risk and vulnerability. This is fueled by a combination of socio-political and structural barriers. Malawi is one of the high HIV/AIDS burden countries among general population and KP. The prevalence of HIV among FSW and MSM is high, 62.7 and 17.5% respectively and national prevalence is 10.6%. Projects addressing KP to reduce HIV transmission are therefore warranted.

**Description:** FHI 360 in Malawi with support from PEPFAR/USAID is implementing a five year Project for KP. The aim is to support the Government and KP organizations to meaningfully deliver interventions to reduce HIV transmission and acquisition among KP and extend life for those who are HIV-positive. We conducted several project entry meetings with leadership from Ministry of Health headquarters, National AIDS Commission, Central Hospitals, District Health Management, District Executive Committees and other stakeholders. We present a successful buy in approach amid prevailing barriers.

**Lessons learned:** It was initially difficult to convince some of the senior health leadership and other stakeholders in the four operational districts to support operations of KP project, but succeeded. KP Project was viewed as "promoting sex work and gay marriage rights" which is against the social-legal and moral norms of Malawi. The magnitude and or existence of FSW, MSM respectively has been a general subject of debate in Malawi, with some people thinking these groups are insignificant to cause public health concern, being unaware of the high prevalence. We used evidence based and sound advocacy skills used to secure the buy in. The emphasis was on health rights, the sexual interaction dynamics between KP and general public regarding HIV/AIDS. The official commitment of the Government of Malawi towards HIV prevention among key population was also our leverage point.

**Conclusions/Next steps:**

- Sensitive projects require pragmatic, informative and non-confrontational approaches to have buy in, by stakeholders.
- There should be meaningful involvement of opinion leaders to gain acceptance of projects.
- Build on documented government commitment to move forward sensitive programs.

## TUPEE532

### AN INDICATION OF EARLY SUCCESS OF KEY POPULATION PEER-LED INITIATIVES TO REACH, TEST AND TREAT FOR FEMALE SEX WORKERS

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**Background:** HIV prevalence among female sex workers (FSWs) in Malawi is estimated to be 62.7% compared to an estimated 10.6% in the general population. FSWs serve clients from the general population and therefore are a critical group in the spread of HIV in a population. Malawi has adopted the UNAIDS 90-90-90 target to provide a continuum of HIV care services to HIV infected individuals. PIHDC is implementing an intervention project among FSWs, LINKAGES HIV prevention, care and treatment which is supported by USAID. The aim of the intervention is to reduce HIV transmission among FSWs and improve the quality of life of key populations (KP) living with HIV. Clients are followed through the HIV cascade framework of reach, test, treat and retain (on ART).

**Methods:** It is a follow-up design project. We identified FSWs who mobilized their peers from their hotspots. FSWs were asked to select peer educators who were trained to reach up to 40 peers each with behavior change messages that promote HTC, STIs, gender based violence, family planning screening and PMTCT. All those reached through trained peer educators were linked to access care through outreach, mobile clinics and health facilities. In addition, we engaged peer navigators (HIV+ve FSW) to support HIV+ve peers to enroll and retain them on treatment.

**Results:** Of the 1284 FSWs reached, 191 were tested for HIV between October and December 2015. Of those tested 47% (N= 90) were HIV +ve and 87.7% (79) were enrolled in care (pre-ART) while 80% (63) were initiated on treatment. 8 default-

ers were identified and were successfully put on ART again after being identified through our peer led strategy.
**Conclusions:** Implementing the LINKAGES HIV cascade framework provides early insights, a pointer to a successful program guiding KP interventions towards the 90-90-90 target among FSWs. Involvement of FSWs peers help to get new enrollees for prevention, care, and treatment and bring back those non-adherent to intervention in the HIV service cascade.

## TUPEE533

### AFRICA KEY POPULATION EXPERTS GROUP: SEX WORKERS, MEN WHO HAVE SEX WITH MEN, TRANSGENDER PERSONS AND PEOPLE WHO USE DRUGS TAKE A LEAD IN PROVIDING STRATEGIC DIRECTION TO THE HIV RESPONSE IN AFRICA

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**Background:** Despite significant progress in reducing HIV infections and expanding treatment in Africa, hostile legal and social environments have resulted in sex workers (SWs), men who have sex with men (MSM), transgender people (TGs) and people who use drugs (PWUDs) being disproportionately affected by HIV. As changing this situation requires, amongst other things, enhanced engagement of these groups at policy and strategy level, in 2014 UNDP supported the establishment of the Africa Key Population Experts Group.
**Description:** The Experts Group is comprised of around fifty MSM, TGs, PWUD and SWs drawn from sixteen African countries. Members are selected to the group in their individual capacity on the basis of their policy and programme expertise in HIV prevention and promoting human rights for KPs but they do not represent either their countries or the organizations and networks that they belong to. The group operates through regular face to face meetings as well as virtual electronic communication and have conducted three meetings between May 2014 and May 2015.
**Lessons learned:** Although identifying enough number of TGs and PWUDs has been challenging, the Experts Group is the first group that brings together these four KPs for collective advocacy, capacity development and skills building and provides a unique platform which significantly enhances their capacity to engage in important policy and strategy processes at regional, national and sub-national levels. The main achievement of the group to date has been the development of a Model Regional Strategic Framework on HIV for KPs which has been extensively used in fifteen countries as input into Global Fund processes, National Strategy reviews, research design, national reports, conferences, etc. and by two Regional Economic Communities, SADC and the EAC. The group also acts as the Regional Advisory Group for the new Africa Regional Global Fund Project on Human Rights.
**Conclusions/Next steps:** The Experts Group has a proven potential to serve as a reference group for KP focused policy and strategy review across Africa and could play an important role in setting standards for programming. It can also mentor the establishment of similar groups in other regions and foster cross-key population collaboration at the global level.

## TUPEE534

### DROP-IN CENTERS DRIVE HIGHER YIELD AND BETTER LINKAGE TO TREATMENT FOR FSWS IN ETHIOPIA

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**Background:** MULU is a USAID-funded HIV prevention project focused on key and priority Populations in Ethiopia. Female sex workers (FSWs) are highly marginalized and underserved population with an HIV prevalence of 24%, 16 times higher than the prevalence among women in the general population. Drop-In Centers (DICs), which provide social support, HIV testing, and linkage to treatment services have been an effective strategy to identify and link FSW with care, and diagnose HIV-positive FSWs.
**Description:** The project established 54 DICs in areas with a high density of FSW in towns with more than 500 sex workers. All DICs were licensed by the local government to provide clinical services including HIV testing services and linkage to treatment. The DICs were established with standard operating procedures to ensure MARPs friendliness in terms of access, provider attitude, confidentiality and availability of services. HIV testing results were analyzed from registrations anonymously. Referrals and linkage to treatment were tracked using a labelled voucher system, and completed vouchers were collected from the MULU clinic network of public and private facilities that provide HIV treatment.
**Lessons learned:** A total of 25,068 FSWs received HIV testing services at DICs between Oct., 2014-Sept, 2015. Altogether 802 women were diagnosed with HIV, for a yield of 3.2%. While this yield was significantly higher than the HIV prevalence in the general population, it fell short of the estimated 24% prevalence among FSW and higher than the 0.5% incidence among general women population. Approximately 80% of the women diagnosed with HIV in the DICs were successfully linked with treatment. The DICs are a useful entry points to identify new HIV cases and link them to treatment, with the goal of reducing HIV transmission and improving health of FSWs.
**Conclusions/Next steps:** Antiretroviral therapy initiation will benefit the health of sex workers and reduce the risk of HIV transmission to their clients and sexual partners. Investment in and expansion of the DIC model is important if Ethiopia is to scale up testing and treatment and improve linkage to treatment among FSWs. DICs act as FSW-friendly hubs, and help improve the health for a marginalized target populations with high HIV burdens.

## TUPEE535

### INCREASING HEPATITIS C KNOWLEDGE AMONG DRUG USERS ENGAGED IN METHADONE TREATMENT IN MALAYSIA

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**Background:** Hepatitis C (HCV) disproportionately affects people who inject drugs (PWIDs). Many misconceptions about HCV transmission exist among PWIDs, and overall knowledge, perceived risk and treatment interest is limited. Moreover, methadone has been shown to reduce risky behaviors responsible for transmitting HCV, and methadone clinics provide an opportunity to integrate HCV screening, education and treatment referrals. Therefore, the aim of this study is to determine baseline HCV knowledge and assess the impact of HCV education among PWIDs engaged in methadone treatment.
**Methods:** We enrolled 98 participants who routinely attended a methadone clinic in Malaysia. All participants completed a 1-hour standardized education session, socio-demographic questionnaires, and an HCV knowledge assessment at three time points: baseline, immediately after, and 4-weeks after the session.
**Results:** The mean age and dose of methadone are 44.5 (9.41) years and 115 (63.09) mg, respectively. The majority of participants are male (92.9%), employed full-time (56.1%), and have a history of injection drug use (74.5%). 24.5% are HIV-positive, 65.3% have been screened for HCV, and 16.3% are currently undergoing HCV treatment. At baseline, only 34.7% and 45.9% knew they could receive HCV treatment if HIV-positive or while on methadone, respectively. 25.5% knew that bleach, boiling water or alcohol would not sterilize needles against HCV, 32.7% knew that HCV re-infection could occur, and 53.1% were aware that no-cost treatment was provided at public hospitals. Perceived barriers to treatment included: not knowing where to go (35.7%), expensive medications (15.3%), and lengthy treatment durations (16.3%). Out of a possible 40 points, the average baseline score was 14.81 (8.45). Immediately after the session, scores increased 82.4% to an average of 27.02 (7.86; $p< 0.001$), and knowledge was retained with an average score of 24.32 (7.83; $p=0.001$) 4-weeks after the session.
**Conclusions:** This study shows that knowledge and HCV screening is low among PWIDs engaged in methadone treatment in Malaysia. A brief, but comprehensive HCV education session is a low-cost and effective strategy in improving overall HCV knowledge, making it suitable for resource poor settings. Thus, integrating HCV education into harm reduction programs may reduce HCV disparities, and increase screening and treatment interest in this high-risk population.

## TUPEE536

### HIV OUTREACH FOR FEMALE SEX WORKERS INCREASES UPTAKE OF HIV TESTING

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**Background:** With one of the highest HIV prevalence rates in Southeast Asia, Cambodia's HIV epidemic response is focused on key populations, including female sex workers (FSW). Interventions to counter HIV among FSW include the SMARTgirl program which provides targeted outreach, including HIV/STI prevention education,

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condom/lubricant promotion, and HIV/STI screening referrals. We evaluated the effects of the program on uptake of HIV testing among FSW.
**Methods:** In May-June 2015, we conducted cross-sectional survey of 1,176 FSW aged ≥ 18 years that received outreach services in seven geographic regions, collecting sociodemographic and service utilization data, selecting FSW using probability proportional to the size of the entertainment establishments where they worked. Binary logistic regression was used to identify the effects of outreach on uptake of HIV testing in the last 12 months, controlling for sociodemographic variables.
**Results:** Overall, 84% of FSW in the program were tested for HIV in the previous 12 months. The odds of having had an HIV test in the previous 12 months were higher for FSW that: received information about HIV testing and condom use from program outreach workers in the past 12 months (OR=6.74, p< 0.001), received a referral slip for FP services from outreach workers (OR= 2.1, p< 0.001), or received HIV/AIDS information from facility-based FP service providers in the past 12 months (OR=4.1, p< .01).
**Conclusions:** These findings show a high overall rate of uptake of HIV testing among FSW in the program (84%); more than the national DHS estimate of 70% of Cambodian FSW that were tested for HIV in the past 12 months in 2013. The findings also suggest the value of outreach on uptake of HIV testing among FSW. Key drivers of increased uptake of HIV testing were the provision of HIV-related information (by facility-based FP staff that were not part of the program, and by outreach workers that were) and referrals for FP services by outreach workers, which brought FSW to facilities that also provided HIV testing.

## TUPEE537

### FROM BROTHELS TO PARLIAMENT: LESSONS LEARNT FROM SCALING UP A RIGHTS-BASED SEX WORKER HIV PROGRAMME

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**Background:** The HIV risk that sex workers face universally is heightened by contextual factors in South Africa, including a generalised epidemic, criminalisation and high rates of violence. The Red Umbrella Programme is a national peer-led combination prevention programme managed by NACOSA, funded by the Global Fund. Whilst the foundation of the programme is bio-behavioural interventions, the programme also includes structural interventions, including collective mobilisation; skills development; and interventions to reduce stigma and discrimination.
**Description:** The Red Umbrella Programme was implemented from October 2013-March 2016, by 19 civil society organisations. 616 sex worker peer motivators were employed to conduct Outreach, HCT and Risk Reduction workshops at 74 sites, in all 9 provinces. A 24-hour, national toll-free helpline is operated by sex worker counsellors. Leading sub-recipient SWEAT, implemented structural interventions to create an enabling environment, including sex worker capacity-building; sensitisation of stakeholders, social mobilisation via Sisonke Sex Worker Movement; and strengthening of sex workers' participation in HIV coordinating structures.
**Lessons learned:** Results are reported from three sources:
1) *Programme Data*: to date, 24 825 sex workers have tested for HIV;
2) *Good Practice Guide:* the results of a workshop that was held to assess how sex worker site coordinators had tailored the programme to their local contexts was published and;
3) *Programme Evaluation:* the evaluation (in press) will compare sex workers' current knowledge and behaviour with the results of a 2013 survey.
**Conclusions/Next steps:** For Phase III, the programme has integrated lessons learnt from stakeholders with evolving disease and treatment trends. The health component will be strengthened; referral for ART will be added. Phase III aims to improve data management further so that incidence and prevalence can be measured. However, activities related to creating a legally and socially enabling environment have been discontinued. An up-scaled, coordinated response to the violation of sex workers' rights remains a challenge.

## TUPEE538

### JOINT PEPFAR/GLOBAL FUND KEY POPULATION CASCADE ASSESSMENT IN MALAWI

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**Background:** HIV programming for key populations (KP) - including men who have sex with men and sex workers - demands new and innovative tools for monitoring uptake of services, identifying gaps, and addressing structural barriers. The "HIV cascade" provides a useful conceptual tool for understanding population-level engagement within three stages of prevention and five stages of care and treatment. Through routine data collection, KPs can be monitored for "leaks" along the cascade to inform program improvement. In February 2016, a Joint Global Fund/PEPFAR Cascade Assessment was conducted in Malawi, through the LINKAGES project, to describe the HIV cascade for KP, identify "leaks" across the cascade, and refine LINKAGES and Global Fund interventions.
**Description:** The joint team reviewed available LINKAGES programmatic and clinical data, and met with representatives of government, KP community-based organizations, and health facilities to better understand the needs of KPs, and the facilitators and barriers to increased service access and availability.
**Lessons learned:** As Malawi moves toward comprehensive HIV/AIDS programming for KPs, implementers must reorient prevention, treatment and care models to include both community- and facility-based services. LINKAGES utilized micro-planning at the community level to map hot spot venues and generate size estimates to guide programming, including development of peer educator ratios to enable scalable KP outreach. In the first quarter of implementation, LINKAGES estimated 2,625 female sex workers (FSW) in Lilongwe, and reached 685 with community-based prevention services (26%). Of the 685, 279 were HIV-positive (41%). However, only 28 (10%) were documented as being enrolled in care. Pervasive human rights abuses, stigma and discrimination, and gender-based violence hinder demand for and accessibility to comprehensive HIV services. New programmatic interventions, including establishment of drop in centers providing ART, access to test and start ART, and peer navigator systems are planned to reach additional KP, increase uptake of HIV testing, and improve linkage to care and treatment.
**Conclusions/Next steps:** Joint PEPFAR/Global Fund Cascade Assessments are aligning available programmatic and clinical data sources to evaluate and improve community- and facility-based HIV/AIDS services for KP. Joint assessments are an emerging global best practice that can be replicated in other countries.

## TUPEE539

### PERCEIVED BARRIERS AND FACILITATORS TO COMBINING DELIVERY OF HIV PREVENTION, TESTING AND TREATMENT SERVICES WITH FEMINIZING HORMONE THERAPY FOR TRANSGENDER WOMEN IN LIMA, PERU

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**Background:** Transgender women (TW) represent a population at-risk for HIV infection in Peru. Holistic HIV prevention, testing, and treatment interventions that are responsive to the lived realities of TW and healthcare providers serving them are urgently needed. The current study gathered perspectives from healthcare professionals and TW in Peru to inform future community-based intervention approaches, including potential acceptability of combining HIV services with gender-affirmative medical care (e.g. cross-sex hormone therapy).
**Methods:** A mixed-methods study was conducted in January-February 2015 in Lima, Peru consisting of focus groups (FGs) and a brief survey. Seven FGs were conducted: two with healthcare professionals (N=19) and five with TW (N=48). FG transcripts were double-coded and analyzed utilizing an immersion crystallization approach to identify themes; descriptive analyses of survey data were conducted.
**Results:** Healthcare professionals (53% cisgender female; mean age=39 years) represented a variety of professions: 16% doctor, 26% nurse, 21% psychologist, 11% obstetrician, 26% other. Overall, TW (mean age=29 years) were at high-risk for HIV;

67% self-identified as a sex worker and 29% were unsure of their HIV status.
TW participants described hormones as a crucial step in gender affirmation; however, the majority of TW narratives described using hormones without medical consultation and under the guidance of friends/community members. Healthcare professionals echoed the importance of hormones to TW patients and lack of routine medical supervision.
Perceived acceptability of integrating hormone therapy with HIV services was high; more than 90% of healthcare professionals and TW perceived that such an approach would "very likely" improve the HIV cascade of care for TW. Nevertheless, participants identified implementation barriers: (1) medical mistrust felt by TW; (2) lack of training/guidelines to inform providers in hormone administration; (3) anticipated stigma by healthcare professionals for providing care to TW; (4) service delivery barriers. Healthcare professional and TW participants identified TW peer health promoters as essential resources to facilitate this intervention.
**Conclusions:** Feminizing hormone therapy represents a key need for many TW; however, delivery of such care is rarely considered alongside HIV services. This study found high levels of perceived acceptability for an integrated service model combining HIV prevention, care, and treatment services with delivery of hormones.

## TUPEE540

### HIV CASCADE OF CARE AMONG PEOPLE WHO USE DRUGS IN VIETNAM: FINAL GAPS AND FUTURE STRATEGY

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**Background:** In Vietnam, the HIV epidemic has been driven by drug injection. Despite major efforts on risk reductions, rapid HIV elimination will require a high coverage of suppressive ART within people who inject drugs (PWID). Our study aimed at assessing the cascade of HIV care and to estimate the current HIV incidence among active PWID in Hai Phong (2 million inhabitants).
**Methods:** We conducted a community-based Respondent Driven Sampling (RDS) survey in May 2014, recruiting active users with positive urinary drug tests. After a standardised questionnaire, blood was drawn for HIV testing, CD4 count and HIV viral load when appropriate. Then, 250 RDS participants were enrolled in a longitudinal study with follow-up at week 12, 24 and 52 including HIV tests. Participants were supported by trained peers to register at methadone and HIV clinics.
**Results:** At the RDS survey, 603 participants were recruited in 3 weeks including 8% MSM, 7% FSW, 15% early-injectors (< 2 years injection) and 69% of "regular injectors". Heroin was the only injected drug. HIV and HCV prevalence was 25.2% and 66.8%, respectively. Of the 152 HIV-infected participants, 82 (53%) reported knowing their HIV status and of those 71 (86.6%) should have received ART according to national guidelines at the time (CD4 count< 350 cells/µL). Among the latter, 59 (83.1%) were already on ART and 49 of them (83.1%) had undetectable viral load. The follow-up rate was 86% at week 24 and 78% at week 52, with a mortality rate of 3.4/100 pers-years. At 52 weeks, 118 (58%) participants could be initiated on methadone and 52% on ART. No HIV seroconversion was recorded, giving a population HIV incidence between 0 and 1.8/100 pers-years.
**Conclusions:** In Hai Phong, the HIV cascade of care highlights a major gap in HIV testing among PWID. HIV-infected PWID tend to consult HIV services only when they are symptomatic, although with a satisfactory ART efficacy. Repeated community-based RDS as a mass screening strategy followed by peer-groups support in engaging PWID into HIV care (and methadone) would likely end the HIV epidemic among PWID in Haiphong. The low HIV incidence is encouraging towards this goal.

## TUPEE541

### EXPERIENCES OF PROVIDER DISCRIMINATION IN ACCESSING MEDICAL AND HIV PREVENTION SERVICES BY MEN WHO HAVE SEX WITH MEN INCLUDING TRANSGENDER MEN GLOBALLY

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**Background:** Bringing an end to the HIV/AIDS epidemic requires engagement of key populations in quality services. Previous research has shown that men who have sex with men (MSM) including transgender MSM and non-transgender (cisgender) MSM who do not feel that their health care providers (HCPs) are sensitive to their needs are less likely to access health services. The nature of such negative experiences with health care providers remains unexplored. We conducted a cross-sectional, global survey of transgender and cisgender MSM. This study sought to explore provider discrimination and its association with service utilization.
**Methods:** The 2014 Global Men's Health and Rights Study was administered to 3857 participants who completed the online survey, available in seven languages. Participants were asked about provider discrimination related to their sexual orientation or gender identity. Respondents were asked the frequency of the following provider experiences within the past 6 months: poor treatment, refusal of treatment, being judged, being reprimanded, and unauthorized disclosure of sexual orientation or gender identity. Responses to these items were averaged to calculate a composite scale on provider discrimination ($\alpha$=0.8698). Multivariable analyses were used to explore the association of discrimination with service utilization within the past 6 months, controlling for demographics and service accessibility.
**Results:** 2,464 MSM completed the survey items of interest, including 97 (3.9%) transgender MSM. Many reported some form of healthcare coverage (86.0%) and having an HCP (70.1%). 16% of the sample had ≥1 experience of discrimination: poor treatment (10%), refusal of treatment (4%), being judged (12%), being reprimanded (7%), and unauthorized disclosure (5%). Provider discrimination was significantly ($p< 0.05$) associated with: STI testing (odds ratio, OR 1.9), having a medical visit (OR 1.6), HIV testing (OR 1.6), and HIV prevention (OR 1.7). Accessing condoms, which does not require provider interaction, was not associated with discrimination.
**Conclusions:** Transgender and cisgender MSM report recent discrimination by their providers when utilizing HIV-related services. Engagement with healthcare providers is associated with a greater number of experiences of discrimination, which may serve as a disincentive for seeking services among MSM. Assessing provider discrimination and training of the healthcare workforce might improve utilization of HIV-related services.

## TUPEE542

### A MULTI-COMPONENT PROGRAM TO MITIGATE THE EFFECTS OF STIGMA AS A BARRIER TO THE UPTAKE OF HIV PREVENTION, TREATMENT, AND CARE SERVICES FOR KEY POPULATIONS IN SENEGAL: HIV PREVENTION 2.0

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**Background:** Senegal has been successful in the HIV response through an early focus on the scale up of antiviral therapy (ART). However, HIV prevalence has been consistently high among key populations female sex workers (FSW) and men who have sex with men (MSM) suggesting specific barriers in access to HIV prevention and treatment services. The HIV Prevention 2.0 (HP2) is an implementation research study of key populations in Senegal evaluating the utility stigma mitigation as to improve uptake of HIV services. Here, we use the template for intervention description and replication (TIDieR) checklist to describe the implementation of the intervention and lessons learned.
**Description:** The intervention is conducted on three different levels including pre-clinical, clinical, and post-clinical levels or peer-to-peer referral system. A systematic search of existing training materials informed the development of the final modules included which were adapted to the Senegalese context. The pre-clinical community level focused on providing interventions that strengthen individual resilience to stigma through peer facilitators paired with 2 groups of 10 members of the cohort

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each. Monthly hour-long group meetings cover 5 modules including HIV prevention, reproductive health, stigma and discrimination, human rights, and living with HIV. The clinical intervention was implemented by facilitators selected according to their profile and professional background, clinical work with KP for the clinical training, and outreach work and experience in BCC for the community intervention to ensure participation and credibility of the trainings to address stigma in health facilities.
**Lessons learned:** Pre-clinical interventions necessitate peers that are very well versed in the various modules and participatory learning methods to ensure fidelity of implementation. In addition, retaining flexibility to allow participants to change groups based on better fit is important. Given the increased stigma towards MSM vs FSW in Senegal, separate clinical trainings were required. In addition, it was important for these to be delivered by Senegalese clinicians limiting the utility of external facilitators.
**Conclusions/Next steps:** Local adaptation and implementation based on stakeholder consultation appears crucial for the success of the trainings. With further prospective measurement, we will be able to assess the utility of these approaches in increasing uptake of ART measured through viral load suppression.

## TUPEE543

### MESSAGING FOR HIV/AIDS PREVENTION AMONG YOUTHS: LEVERAGING THE UBIQUITY OF MOBILE AND SOCIAL MEDIA PLATFORMS THROUGH A MEDICAL CALL CENTRE IN UGANDA

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**Background:** Uganda, with approximately 75% of its population below the age of 35 years, is ranked only second to Niger among countries with a youthful population. At a current adult HIV prevalence of 7.3 %, Uganda continues to bear a heavy burden of HIV. Health programs are constantly faced with the challenge of identifying communication platforms that are relevant to youths. However, social media and mobile messaging platforms have opened up an interconnectivity that makes them an appropriate and futuristic channel for health communication. The Medical Concierge Group provides free HIV and reproductive health consultations with medical doctors through voice calls, SMS, Facebook, twitter and WhatsApp.
**Description:** The Medical Concierge Group Limited (TMCG) set up the call centre to evaluate the value of remote access to medical professionals. Access is through voice calls, a two-way SMS platform, Facebook, Twitter and WhatsApp.TMCG disseminates health information on HIV and related issues as well as provide an avenue for consultations and patient engagement.Through mobile based reminders and retention packages, the platform supports antenatal care ,antiretroviral treatment adherence, circumcision and pharmacovigilance.
**Lessons learned:** TMCG is leveraging existing ubiquitous media.The inbuilt social media and call centre analytics provide frugal mechanisms for real time data summaries and visualizations. In 2015, TMCG had an average of 50,000 monthly users on its platforms. 80% of these were youths below 35 years with a male to female ratio of 60:40. We had 21,000 SMS interactions concerning circumcision, antenatal care and hospital return visits. WhatsApp and Facebook were the most popular messaging platforms with 80 unique interactions on average per day. Most queries centred on condom use, emergency contraceptives and HIV post exposure prophylaxis.
Uptake of the services by men and commercial sex workers was attributed to its confidentiality and privacy. The Call centre also provided a novel channel for community feedback on availability and quality of HIV services.
**Conclusions/Next steps:** Call centres and social media platforms provide affordable, actionable and timely messaging among youths and high risk populations. Patient engagement provides valuable insights for resource allocation and improvement of HIV care.

## TUPEE544

### REACHING UNREACHABLE POPULATION: MULTI-COLLABORATION FRAMEWORK TO IMPROVE YOUNG KEY POPULATION ACCESS TOWARDS HIV-RELATED SERVICES IN DEMONSTRATION SITE OF BANDUNG, INDONESIA

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**Background:** The LOLIPOP Project (Linkages Quality Care for Young Key Population) has been initiated by UNICEF Indonesia in collaboration with Ministry of Health, National AIDS Commission and Young Key Population Network to response emerging HIV prevalence among YKPs in Indonesia. IBBS 2011 data from the Ministry of Health show that they are getting infected with HIV in worrying levels while still adolescents or young adults. Young people in the key populations (YKP) have high rates of infection and are at the center of the epidemic, but have the least access to information and services. In the absence of specific program that are able to increase access for YKPs towards HIV-related services, a model intervention is deemed necessary.
**Description:** In late 2014, a comprehensive participatory need assessments involving local stakeholders have been conducted in Bandung City, as demonstration site. As a result, multi-collaboration framework to target enabling environment, demand creation, supply side and strategic information components have been agreed among national and local partners. The framework is implemented within the existing national strategy of strategic use of ARV with primary goal to increase access to HIV testing, treatment and adherence. Each partner took particular roles according to their primary scope of works.
**Lessons learned:** YKP-friendly training for service providers was implemented to support supply side component. Simultaneously, YKP sensitization workshop was conducted for outreach workers. YKP designated online communication platform and IEC materials have been developed to support education and promotional of the project. Series of coordination meetings were employed to closely monitor the progress. Within six months of project implementation, number of HIV testing among YKPs in Bandung has been increased 66% from baseline data. Similarly, 67% increase is found in number of YKP receiving ART.
**Conclusions/Next steps:** Collaborative approach targeting multi-dimensions of programmatic aspect is deemed effective to boost unreachable population such as YKPs. Similar methods can be utilized to expand the program in wider districts. Particular attention should be given in the near future to accommodate treatment adherence and YKP living with HIV.

## TUPEE545

### CAPTURING ORPHAN AND VULNERABLE CHILDREN'S DATA

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**Background:** Orphans and Vulnerable Children (OVC) affected by HIV became an issue of national concern in 1999 after HIV/AIDS was declared a national disaster by Kenya's President. Kenya adopted the United Nations General Assembly Special Session goals aimed at addressing orphanhood as a priority to address vulnerability faced by children affected by and living with HIV. OVC programs provide a strong platform within communities to effectively identify HIV-infected children and caregivers who do not present to health facilities. They facilitate linkages and referrals to facility and community-based HIV related services through mobilization and result in strengthening of relevant systems and structures.
**Description:** PEPFAR OVC programs focus on implementing core interventions and improving referral networks in priority counties where the HIV prevalence and number of PLHIV and OVC is highest. In FY 14, 711,436 OVC received services in Kenya, 507, 327 (71.3%) of which were ever tested for HIV. Of the OVC who had been tested, 33,738 (7%) were HIV positive and 31,868 (94%) were linked to care and treatment.
To capture accurate data for OVC HTC testing, an OVC Longitudinal Management Information System (OLIMS) was utilized. The OLMIS contributes to HTC by maintaining a longitudinal history of an OVC and caregiver over time while assuring confidentiality through restrictive access and password. The OLMIS captures OVC and caregiver information on data tools and facilitates the use of data for decision making and strategic planning. Innovative functions built into the OLMIS include: validation of data during entry, online transmission of data from local implementers,

and tracking of individual OVC to establish gaps in HIV testing and linkage to care and treatment.
**Lessons learned:** The OLMIS facilitates the provision of targeted support based on the level of vulnerability and facilitates the tracking of services provided, defaulters, and effective referrals.
**Conclusions/Next steps:** The utilization of the OLMIS enables OVC Programs in Kenya to track and follow individual OVC. Tracking individual OVC has helped to identify existing gaps when linking OVC to HTC and to care and treatment. The lists that the OLMIS generates leads to improved and more precise follow-up of HIV-infected children by Community Health Volunteers.

## TUPEE546

### INTEGRATING BRIEF GBV PREVENTION INTERVENTION INTO HARM REDUCTION PROGRAMS FOR WOMEN WHO USE DRUGS IN KYRGYZSTAN: REDUCED VIOLENCE, INCREASED UPTAKE OF HIV SERVICES

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**Background:** The widespread problem of gender-based violence (GBV) among women who use drugs in Central Asia constitutes a serious human rights violation, which is also driving the HIV epidemic in this region. There is an urgent need for brief GBV interventions that can be delivered in low- threshold harm reduction settings in Central Asia and other countries with heroin epidemics.
**Description:** This study evaluated the feasibility and preliminary effects of WINGS, a 2-session evidence-based GBV screening, brief intervention, and referral to treatment (SBIRT) model with HIV testing and counseling (HTC) in identifying and reducing GBV, completing HTC and linking women to GBV and HIV services among women who use drugs in Kyrgyzstan. Using a pre-/post-design, we employed random effects Poisson and Logistic regression analyses for continuous and dichotomous outcomes, respectively.
We screened 109 women who use drugs from two harm reduction sites in Kyrgyzstan, 73 of whom met the criteria, completed a baseline survey and enrolled in the study, and 66 women completed a 3-month post-intervention.
**Lessons learned:** The study identified extremely high rates of GBV among the sample: 73% reported any physical or sexual violence by an intimate partner (IPV) and 60% reported any physical or sexual violence by others (GBV) in the past year. At the 3-month follow-up, participants reported experiencing 59% fewer physical IPV incidents in the prior 90 days than at baseline (p< .001) and 27% fewer physical GBV incidents (p< .01). Participants were more likely to report receiving GBV services (p< .001). The large majority of women (89%) completed HTC. Of these, 4 (7.7%) tested positive for HIV and 3 were linked to HIV care.
**Conclusions/Next steps:** The high rate of participation, significant reductions in GBV and completion of HIV testing from baseline to the 3-month follow up suggest the feasibility and promise of this brief intervention for low-threshold harm reduction settings.

## TUPEE547

### ACTIVE CASE-FINDING IN ORPHANS AND VULNERABLE CHILDREN

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**Background:** OVC affected by HIV became an issue of national concern in 1999 after HIV/AIDS was declared a national disaster by Kenya's President. Kenya has a large population below the age of 18 years estimated at 48 percent and an estimated OVC population of about 2.6 million, nearly half of these are AIDS orphans. OVC programs provide a strong platform within communities to effectively identify HIV-infected children and caregivers who do not present to health facilities. They facilitate linkages and referrals to facility and community-based HIV related services through mobilization, and result in strengthening of relevant systems and structures.
**Description:** PEPFAR OVC programs focus on implementing core interventions and improving referral networks in priority counties where the HIV prevalence and number of PLHIV and OVC is highest. In FY 14, 711,436 OVC received services in Kenya, 507, 327 (71.3%) of which were ever tested for HIV. Of the OVC who had been tested, 33,738 (7%) were HIV positive and 31,868 (94%) were linked to care and treatment. Various strategies to scale-up HTC for OVC were utilized in Kenya, including:

1. Integrating testing within community services,
2. Mobilization and sensitization,
3. Targeted outreach by health facilities with the community,
4. Door-to-door testing
5. same-day HTC for the child and caregiver,
6. Facility-based PITC and,
7. Quarterly tracking of HIV status through the OVC Longitudinal Management Information System.

**Lessons learned:** In order for HTC in OVC programs to be successful, adequate community mobilization and sensitization is vital. To support this, planning with the MoH ensures adequate supply chain management of HIV test kits. Further, training and use of sessional counselors is essential. These workers often already have a heavy workload, so proper training is essential.
**Conclusions/Next steps:** In the Kenya OVC program, testing strategies for OVC resulted in a high positivity rate. OVC platforms can be used to identify children infected with HIV and close the treatment gap between adults and children. Given OVC have risk factors for HIV, programs should seek to implement case-finding strategies that identify HIV-infected OVC in a timely and efficient manner and ensure linkage to care and treatment within health facilities.

# FUNDING FOR PROGRAMMES FOR KEY POPULATIONS

## TUPEE548

### COST ANALYSIS OF VIOLENCE REDUCTION INTERVENTIONS FOR FEMALE SEX WORKERS IN KARNATAKA, INDIA

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**Background:** The Gates funded, India *Avahan* HIV prevention programme for Female Sex Workers (FSWs) in south India (2003-2013) integrated an 'essential' package of HIV prevention programming with a 'structural' intervention addressing upstream drivers like stigma, violence and discrimination. Epidemiological evidence from Karnataka suggests a significant reduction in HIV/STI infection among FSWs. Polling booth survey data from 15813 FSWs from 16 districts suggests a substantial reduction over time in proportion of FSWs reporting being raped in the past year (30.0% in 2007, 10.0% in 2011, p< 0.001). However the resources needed for such interventions remain unquantified but is necessary for policy makers to estimate how much they need to invest, and what would be the value added. This study assesses the incremental costs of violence reduction interventions for FSWs in Karnataka and provides empirical evidence from real study settings.
**Methods:** We collected intervention financial and programme output data from 16 districts in Karnataka, India for the period 2007-2011 from a provider perspective using an ingredients top-down approach. The activities are carried out at three levels namely policy level advocacy with government officials, secondary stakeholders like police, lawyers and media, and primary stakeholders (female sex workers). All costs are presented in US$ 2011 (3% discount rate).
**Results:** The total costs of violence reduction interventions of 16 districts was $ 216,365 with an average cost of $144,243 ($55,182-$460,058). The costs by subactivity showed that community empowerment activities incurred 46% of the costs followed by legal support (18.4%), advocacy (17.9%) and access to social entitlements (17.6%). The number of reported incidents of rights violation against FSWs over 4 years was 14,208 of which 14% were committed by police. The unit cost for reaching the estimated FSW population (187,675) with these interventions over the years was $11 (2-34) across the districts.
**Conclusions:** We recommend that addressing violence and vulnerability among FSWs should form integral part of HIV prevention interventions Such efforts are relatively inexpensive and can have substantial impact in terms of supporting prevention efforts and reducing harm. Interventions should be strengthened and sustained through specific allocation of resources.

## TUPEE549

### MATCHING PEPFAR FUNDED HIV PREVENTION ACTIVITIES AND SPENDING FOR PEOPLE WHO INJECT DRUGS WITH EVIDENCE: OPPORTUNITIES TO INCREASE ALIGNMENT

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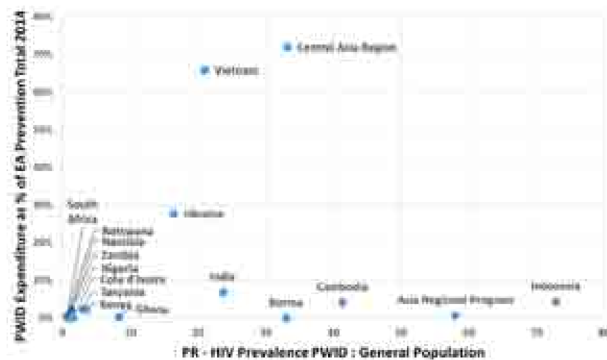
**Background:** People who inject drugs (PWID) constitute a disproportionate burden of the HIV epidemic, accounting for nearly 1/3 of new HIV infections outside of sub-Saharan Africa. PEPFAR has funded prevention programs targeting PWID since its inception, and established the IDUP budget code in 2009 to track allocations. We exclusively analyzed Country Operational Plans' (COPs) IDUP funding from 2009-2015 and Expenditure Analyses (EAs) for PWID in 2013-2014.
**Methods:** Using amfAR's COPs Database, planned funding under IDUP was analyzed for COP2009-2015 and compared to PWID-specific spending in EAs 2013-2014. Use of mechanism narratives post-2013 have been discontinued, so COP2013 IDUP narratives (n=71) were reviewed and coded for activities outlined in COP2013 and WHO technical guidance for PWID. HIV prevalence ratios (PRs) comparing PWID to the general population were calculated for countries and regions with available data (n=17) and plotted against 2014 PWID expenditure as a percent of total prevention spending.
**Results:** Overall IDUP funding steadily decreased from COP2013-2015 despite median country allocations for IDUP increasing during this period. The most frequent PEPFAR-funded activity for PWID was technical assistance and capacity building (14%) - equally least frequent were needle and syringe programs (NSPs) and policy reform around PWID (3% respectively). PWID-specific spending in 2014 amounted to less than 10% of prevention expenditure in 14 (82%) countries, 5 (36%) of which had PRs greater than 20.




*[Figure. HIV Prevalence Ratio of PWID to General Population Compared to 2014 Expenditure by PEPFAR]*

**Conclusions:** Strong resource allocation for PWID is a critical HIV prevention opportunity, especially where HIV prevalence among PWID is high. To adequately plan IDUP funding, investments in data collection and adherence to international guidelines are necessary. Evidence-based prevention activities in the WHO guidance should be considered funding priorities; including NSPs. US government restrictions on NSP support are problematic, particularly when domestic restrictions have been lifted. Moreover, mechanism narratives help to identify funded PWID activities. Without indication of these activities, transparency is diminished.

## TUPEE550

### CHALLENGES AMID INCREASES IN PEPFAR COP INVESTMENTS FOR MSM AND TRANSGENDER INDIVIDUALS, 2013-2015

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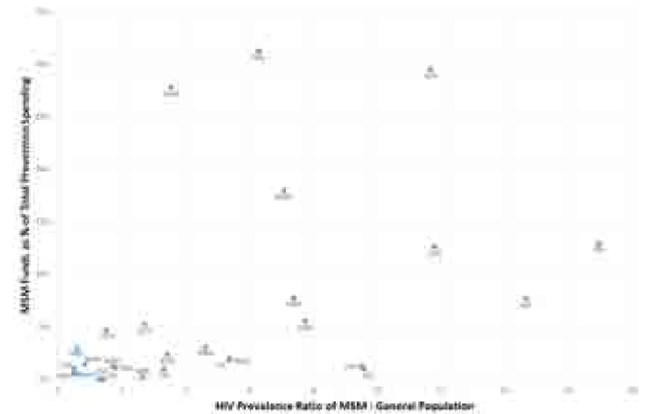
**Background:** Men who have sex with men (MSM) and transgender individuals (TG) are at greater risk of HIV acquisition than general adult populations worldwide. We tracked MSM/TG funding in 2013 PEPFAR Country Operational Plans (COP) and MSM/TG 2014 expenditures using the MSM/TG cross-cutting budget category.
**Methods:** Using amfAR's PEPFAR COP Database, funding data for countries utilizing the MSM/TG cross-cutting budget category in COPs 2013-2015 (n=32) were analyzed for changes over time. Planned spending and expenditure data for MSM/TG were each tabulated as raw totals, and percent of planned or observed expenditures in each country. COP mechanism narratives were reviewed and coded for MSM/TG-specific activities. HIV prevalence ratios (PRs) comparing MSM to the general population were calculated and plotted against 2014 MSM/TG expenditures as a percent of total prevention spending.
**Results:** From 2014-2015, total planned funding for MSM/TG across countries increased by 79%. 59% (19/32) of countries increased abosulte funding, while 34% (11/32) of countries decreased funding and 38% (12/32) decreased MSM/TG funds as a proportion of total funding. Of the 2013 COP mechanism narratives containing MSM/TG cross-cutting funds, 44% focued on key populations (KP) generally, 22% (22/73) omitted MSM, TG or KPs, 4% (3/73) were specific to MSM, and 1% (1/73) were specific to TG. Of 28 countries with MSM HIV prevalence data (n=28), 7 had PRs in the top quartile (PR >7.7); yet 57% (4/7) spent below the mean (8.24%) on MSM as a percent of total prevention spending.
**Conclusions:** The majority of countries increased their investments in MSM/TG from 2013-2015, but a substantial number decreased or eliminated such funding altogether. Moreover, the COP mechanism narratives did not universally provide information on the precise nature of PEPFAR's investments for MSM and even fewer for TG. A number of countries with high HIV prevalence among MSM spent disproportionately less on this population.




*[Figure. HIV Prevalance Ratio of MSM to General Population Compared to 2014 Expenditures]*

## TUPEE551

### DOES FUNDING MATCH THE BURDEN? TRACKING PEPFAR EXPENDITURES IN HIV PROGRAMMING FOR FEMALE SEX WORKERS FROM 2013 TO 2015

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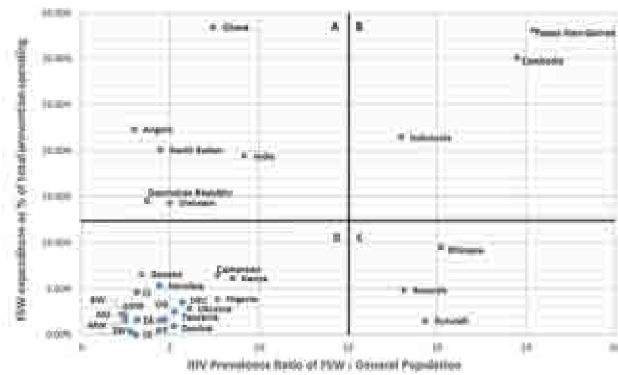
**Background:** Globally, female sex workers (FSW) are disproportionately affected by HIV. PEPFAR has been a critical funder of FSW HIV programs, and in 2013 added criteria to country operational plans (COPs) to track FSW funding. We analyze FSW funding from 2013-2015 COPs and 2014 Expenditure Analyses (EAs) to describe planned and spent FSW funds.
**Methods:** Funding data for countries utilizing the FSW cross-cutting category in 2013-2015 COPs (n=35), sourced from amfAR's COPs database, were analyzed for changes over time. Individual mechanisms were coded for FSW-specific activities by budget code and focus area frequency. HIV prevalence ratios (PRs) comparing FSW to the general population were calculated for countries with available data (n=31) and plotted against 2014 FSW expenditures as a percent of total prevention spending. The resulting plot was divided into quadrants: higher spending/lower PR (A); higher spending/higher PR (B); lower spending/higher PR (C); lower spending/lower PR (D).
**Results:** From 2013-2015, planned FSW funding increased in total dollars and as a proportion of total funding. Six (17%) countries decreased planned FSW funds by 100% in COP 2015 and 14 (41%) countries spent a lower percentage of total funding in 2014 for FSW than planned in 2013. Nineteen (61%) countries were classified D, 6 (19%) as A, and 3 (10%) as each B and C. Review of 2013 mechanism narratives showed that 81% (78/96) described FSW activities, while 18% (17/96) included FSW funds without mentioning FSW.



[Figure 1. HIV Prevalence Ratio of FSW to General Population Compared to 2014 Expenditure by PEPFAR]

**Conclusions:** Disproportionate HIV risk necessitates FSW's prioritization in resource allocation. PEPFAR COP funding for FSW has increased in recent years, however, there is extreme country variability. Bolstering funding commitments for FSW in settings with wide disparity in HIV risk for FSW is epidemiologically sound and vital to the HIV response. Stakeholder involvement in application of FSW cross-cutting funds is imperative and can be assisted by more explicit descriptions of activities.

## TUPEE552

### KEY POPULATIONS-LED INTERVENTIONS IN MALAWI, TANZANIA AND BOTSWANA TO REALISE MEANINGFUL AND INCLUSIVE GLOBAL FUND INVESTMENT

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**Background:** The AIDS and Rights Alliance for Southern Africa's (ARASA) 2014 informal assessment on meaningful engagement of key populations (KPs) in Global Fund processes in a few SADC countries showed that KPs require capacity strengthening on linkages between human rights and HIV, as well as Global Fund processes. They required opportunities to influence strategic investment of Global Fund and other resources. Technical and financial support could facilitate the creation of platforms that would enable consistently engage on content, share materials and information as well as streamline consultations with their constituencies for feedback on an on-going basis. KPs were eager to engage more effectively with members of the Country Coordinating Mechanism (CCM) as well as be considered principal and sub-recipients of current and future grants.
**Description:** From March 2015 to January 2016, ARASA in collaboration with the International Treatment Preparedness Coalition (ITPC) worked with Key populations groups (namely sex workers, people who use drugs and LGBTI) in Tanzania, Botswana and Malawi to undertake interventions that were aimed at increasing Global Fund investments in interventions that would improve the health and rights of these inadequately services populations. Through focused interventions including budget monitoring training, focused trainings with their constituencies as well as with influencers such as health care workers and religious leaders, 'days of action' focusing on financing for health, and co-ordinated interventions geared towards attaining them seats on the CCMs, these partners were able to increase their constituencies' visibility in their respective countries' Global fund processes.
**Lessons learned:** In two countries, KPs were able to secure seats on their CCMs; in two countries - national allocations to key populations budgets were increased by the national AIDS Councils and in one country, a formalised sex work alliance was established.
**Conclusions/Next steps:** As a result of the success of the interventions, more funding has been secured to continue this work and to bolster sustainability of their interventions. This funding will now focus on documenting these and other experiences; to allow for better modelling of interventions for KPs in other countries.

# INTEGRATION OF HIV AND SEXUAL AND REPRODUCTIVE HEALTH FOR KEY POPULATIONS

## TUPEE553

### ACCESS TO HIV SERVICES FOR NIGERIA'S INTERNALLY DISPLACED PERSONS: THE NEED FOR INCLUSION

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**Background:** Nearly 3.3 million Nigerians live as refuges in Internally Displaced Peoples (IDPs) camps within Nigeria and in the adjoining countries . Nearly all these individuals were forced to leave their homes amidst the Boko Haram insurgency. With an HIV prevalence rate of 3.2% among 15- to 49-year-old, the response of the Nigerian government to the health needs of these displaced individuals with particular reference to HIV/AIDS has been underwhelming. There is a strong relationship between conflict and HIV/AIDS spread. The IDPs are particularly susceptible because of sexual violence & exploitation, lack of access to reproductive health services, and lack of health infrastructure. There is also the risk of further spreading HIV to the host communities.
**Description:** A media review using newspapers and the internal displacement monitoring center (IDMC) was done to identify the history of IDPs, their locations, main health issues. A literature review was done and informal interviews were carried out to identify the challenges of providing HIV/AIDS care services in such settings.
**Lessons learned:** Many IDP camps in Nigeria do not provide HIV counseling and testing to identify new cases, HIV/AIDS awareness campaigns, or ARV refills for patients already on medications. Newly diagnosed HIV patients are not integrated into the health system. Reasons for these include
1) No coherent policy on HIV/AIDS in camps
2) Lack of funds
3) Non availability of PEPFAR drugs in the camps
4) Non integration of IDP camps with nearby primary health centers.
**Conclusions/Next steps:** The chaos and instability in IDP camps has created numerous challenges of access to care for HIV/AIDS. The federal and state governments must integrate and coordinate with NGOs and international organizations working with IDPS to provide comprehensive HIV/AIDS care services urgently. There is also a need to track HIV/AIDS incidence and prevalence in camps and create long term HIV/AIDS strategies that work beyond the current instability. Nigeria must invest in critical public health infrastructure.

## TUPEE554

### SEXUAL HEALTH NEEDS OF WOMEN WHO INJECT DRUGS IN KENYA: IMPLICATIONS FOR HIV AND SRH PROGRAMMES

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**Background:** HIV prevalence among women who inject drugs in Kenya is high at 44.5% (NASCOP 2012). Harm reduction interventions targeting people who inject drugs are generally focused on injecting practices, and often gender blind. Sexual and reproductive health (SRH) needs and rights of people who inject drugs, particularly women who use drugs, are poorly understood and addressed. To remedy this, this study explored sexual and reproductive health needs of women of reproductive age who inject/use drugs in Coastal Kenya, to inform the development of community-based and outreach-based integrated SRHR and harm reduction services.
**Methods:** Semi structured interviews (n=24), and focus group discussions (4 sessions, n= 28) were conducted with women of reproductive age who use drugs in Mombasa and Kilifi, Kenya. The mean age of the participants was 29, age range was 19 - 56; and mean duration of injecting was 2.8 years and using drugs was 8.5 years. Interviews and focus group discussions explored contraceptive use and access, pregnancy and termination, parenthood, sexual practices and awareness and experience of sexually transmitted infections and intimate partner violence. Data were analyzed using NVIVO software to identify and codify key themes.
**Results:** Out of 52, 99% had ever tested for HIV, 5 were not willing to disclose their status, 1 had not tested and 13 were HIV positive. Nine of the respondents reported at least one unintended pregnancy. Respondents reported going for ante-natal care (ANC) either late or at the time of delivery. Barriers to ANC and PMTCT services reported were: costs, service provider attitudes and the lack of time. Some of the participants had delivered outside of a health facility. The rates of follow up on im-

munization and child health were poor. Respondents reported attempting termination of pregnancy through deliberate heroin overdose and other unsafe methods. Integration of services was acceptable to the respondents. Respondents also reported intimate partner violence and coercive sexual practices.
**Conclusions:** There are high unmet SRH&R needs among women who use drugs in Kenya. Integrating comprehensive SRH&R, including ANC and PMCTC services, with harm reduction interventions is required to advance rights to health for women who use drugs in Kenya.

## TUPEE555

### DELIVERING INTEGRATED HIV/MODERN FAMILY PLANNING SERVICES TO FEMALE SEX WORKERS THROUGH MOBILE, COMMUNITY-BASED, INTEGRATED BIOMEDICAL SERVICES IN FIVE REGIONS OF TANZANIA

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**Background:** Unplanned pregnancies are an occupational hazard for female sex workers (FSW) who infrequently access the health system due to fear of stigma and discrimination and the criminalization of sex work. Key population-friendly mobile community-based HIV testing and counseling “plus” (CBHTC+) teams operated by the PEPFAR-funded Sauti Program provide family planning (FP) counseling and services integrated with HIV testing and counseling, and STI, TB, gender-based violence, and alcohol and drug screening in hotspots in five regions of Tanzania. This abstract describes the uptake of FP services by FSW in this program.
**Description:** Patient level data was collected during CBHTC+ services, entered into a central database through single data entry, cleaned and analyzed using STATA statistical software. Chi2 test compared proportions and logistic regression assessed associations.
**Lessons learned:** Between August and December 2015, records were entered for 9,332 females reached through the Sauti program, of which 30% (n= 2,712) identified as FSW (median 28 years [IQR 24-33]). More than one third (36%, n=967) of this population had had previous experience with contraception, mainly using injectables (52% n=503) followed by implants (22%, n=217) and oral contraceptives (17%, n=165). Two percent (n=22) had used an intrauterine device before, and 1% (n=13) reported tubal ligation. At the time they accessed Sauti services, only 22% (n=592) were currently using FP, with a similar distribution of methods. Following their visit to Sauti, 13% (n=357) newly initiated FP, preferring implants (17%, n= 86) over injectables (15%, n=74) and pills (7%, n=34) besides male condoms (52%, n=257). Younger age and previous experience with FP was associated with FP uptake (OR 0.98, p= 0.011: OR 2.3, p< 0.001 respectively).
**Conclusions/Next steps:** FSW, especially younger FSW, have an unmet need for modern FP methods which can be addressed through easily accessible and non-judgmental FP services. Injectables were the most common FP method in the population, but when choosing in the KP-friendly supportive counseling environment of the Sauti Program, next to male condoms, FSW chose implants over injectables; suggesting a subgroup of FSW who have existing interest in long term FP. Programs learn more about the fertility intentions of FSW to help further shape the FP counselling.

## TUPEE556

### EXPANDING THE CONTRACEPTIVE METHOD MIX FOR WOMEN AT HIGH-RISK OF HIV: EXPERIENCES FROM THE CAPRISA 008 TENOFOVIR GEL IMPLEMENTATION TRIAL

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**Background:** For safety reasons, women participating in microbicide trials are required to be on a non-barrier contraceptive. The predominant contraceptive choice in South Africa is an injectable hormonal contraceptive that is administered 2 or 3-monthly. Data from observational studies suggest that injectable hormonal contraceptive use, particularly depot medroxyprogesterone acetate (DMPA), may be associated with increased HIV risk. Expanding the contraceptive choices for women, especially those living in high HIV burden countries, is therefore important.
**Methods:** Women participating in the CAPRISA 008 Tenofovir Gel Implementation trial were offered a range of contraceptives including injectables (DMPA or Nur-Isterate), oral contraceptives (OC), intrauterine contraceptive device (IUCD), and female sterilization (tubal ligation). Contraceptive implants were also introduced as an additional contraceptive option part way through the study. Women were counseled on all the contraceptive methods and their choices were captured on a log that was reviewed at each subsequent study visit in order to provide more contraceptive options, assess adherence to the method of their choice and to record any switches in contraceptive use. Pregnancy was assessed at each study visit. Descriptive analysis of contraceptive data was undertaken.
**Results:** A total of 372 women were eligibly enrolled in CAPRISA 008. At enrolment, 278 (74.7%) of these women were on injectables, 75 (20.2%) were taking OC, 16 (4.3%) were sterilized, 1 (0.3%) had a contraceptive implant and 2 (0.5%) had undergone a hysterectomy. By the end of the study, the number of women on injectables and OCs had declined to 177 (47.6%) and 63 (16.9%) respectively, while the number choosing contraceptive implants or IUCDs had increased to 81 (21.8%) and 6 (1.6%) respectively, and 27 (7.3%) women were not on any form of contraception. In total, 70 (23.3%) women who were using an injectable contraceptive at enrolment switched to the contraceptive implant during study follow-up.
**Conclusions:** Structured contraceptive counselling to promote a wide range of contraceptive choices resulted in an expanded contraceptive method mix in a population that has predominantly favoured injectable contraceptives. If the relationship between DMPA and HIV risk is confirmed then it is reassuring to know that women are willing to switch to alternate contraceptive methods.

## TUPEE557

### BEING A CHILD, A WIFE AND A WIDOW: PROTECTING GIRLS AGAINST EARLY AND FORCED MARRIAGES

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**Background:** *Ukuthwala*, a once romanticised cultural practice, whereby a girl and boy in love arranged for the girl to be ‘abducted’ to compel parents’ consent for marriage, is now being distorted (UNFPA 2013) with devastating results. Young girls in impoverished communities are forced to marry older men, often trading bride-price for their right to education. Multiple-concurrent partnerships and polygamy are prevalent, placing girls at greater risk of HIV infection. *Ukuthwala* is directly contributing to low levels of education and employment, increased poverty and poor health outcomes for girls and their families. Keeping girls at school reduces HIV incidence and improves employability and health outcomes (UNICEF 2009). A community intervention in South Africa, is engaging girls, parents and leaders to end early and forced marriage.
**Description:** Bhekuzulu Self Suffient Project (BSSP) is an organisation dedicated to eradicating harmful practices and promoting the health and well-being of young girls. BSSP is targeting Grade 8-12 learners, and the broader community, in the Loskop area of KwaZulu-Natal, with a programme to sensitise them about the negative impacts of forced and early marriage, to help reduce poverty and mitigate the impact of HIV and AIDS.
**Lessons learned:** BSSP conducts Community Dialogues, awareness campaigns, workshops, health education and talk shows. Over the past three years, it has referred young brides to psychological support for counselling and to the local clinic for HIV-testing and family planning. It has supported them to share their views against *Ukuthwala*.
BSSP has developed good working relationships with the mobile clinic and the district hospital. It has formed partnerships with the Department of Education, Legal Aid and local schools.
Patriarchy remains entrenched and despite progress, BSSP faces challenges with some chiefs who regard interventions in their villages as a threat to tradition. Legal action is not taken in statutory rape cases and young people affected find that elders still hold the power and are supported by local men and traditional authorities.
**Conclusions/Next steps:** BSSP’s programme shows that harmful practices can be effectively challenged. Steps to strengthen the interventions include advocacy for a permanent local clinic and legal aid facility.

## TUPEE558

### *SHADOWS AND LIGHT:* ADDRESSING THE LINKED SEXUAL AND REPRODUCTIVE HEALTH (SRH) AND HIV NEEDS OF KEY POPULATIONS

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**Background:** *Shadows and Light* was a three-year project that was implemented by four IPPF Member Associations (MAs) between October 2012 and September 2015, funded by the German BACKUP Initiative. The project increased service providers' ability to address the linked SRH and HIV needs of four key populations at increased risk of HIV: transgender people; sex workers; people who use drugs; and men who have sex with men. The project focused on building local capacity of key populations to engage in Global Fund processes as these mechanisms offered key opportunities to influence, deliver and sustain services to key populations.
**Description:** An independent review was conducted during the final month of implementation (September 2015) to document the key lessons learned. The methodology involved review of project documentation and interviews with 13 key stakeholders. The report synthesised the overarching achievements of the project across the four countries; highlighted the main challenges and obstacles faced; identified key lessons learned; and suggested recommendations.
**Lessons learned:** The project achieved significant impact in each of the four MAs in terms of capacity to deliver SRH and HIV services for key populations. Key achievements included reach to young key populations and focus on gender-related issues; involving key populations as agents of change; reducing community-level stigma and discrimination; working through established community structures; and building partnerships to strengthen referral mechanisms. Table 1 outlines the key lessons learned under three thematic areas
(1) planning and design of integrated services for key populations;
(2) increasing key population involvement and building leadership; and
(3) advocating for and funding integrated services for key populations.

| Planning and designing integrated services | Increasing involvement of key populations | Advocating and funding for key populations |
|---|---|---|
| Effective interventions must recognise and respond to the complex and often overlapping vulnerabilities of key populations, and include broader and related health and SRH issues | Promoting meaningful involvement and leadership at all stages of project increases the effectiveness of programmes as well as reducing stigma | Using restricted project resources strategically to complement gaps in existing programmes demonstrates impact and advocacy can ensure approaches scaled up |
| Identifying appropriate and innovative ‚entry points' is critical to engage key populations on SRH issues | Engagement with wider key population networks was limited in practice and there is scope to engage further with these networks as strategic partners | Small pilot projects can demonstrate important lessons regarding the benefits of integration for key populations, from which larger programmes can develop |
| When services are genuinely stigma-free, preference is to access services at regular times rather than having a designated ‚key populations' clinic' | Genuine leadership development of key populations takes time and requires strategic investment | Flexibility on the part of donors can enable projects to respond more quickly and effectively to specific needs as they arise |
| Key populations prefer being able to access services through a ‚one stop' centre, particularly in hostile environments | Continued advocacy is required at national level to increase key population representation on CCMs | There is an urgent need to prioritise investment in tailored and targeted services for young key populations |

*[Table 1: Lessons learned and recommendations for addressing the linked SRH and HIV needs of key populations]*

**Conclusions/Next steps:** *Shadows and Light* has demonstrated that IPPF's strong rights-based approach is a solid foundation on which to build upon their existing work with vulnerable and socially excluded groups to provide integrated SRH and HIV services for key populations, offering tremendous potential to scale up this approach and the integration of services for key populations through IPPF's established global infrastructure.

## TUPEE559

### UNDERSTANDING FACTORS RELATED TO PATIENT-PROVIDER COMMUNICATION ABOUT PREGNANCY AND HIV AMONG FEMALE SEX WORKERS LIVING WITH HIV IN SANTO DOMINGO, DOMINICAN REPUBLIC

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**Background:** Female sex workers (FSW) living with HIV are a vulnerable population for multiple health concerns, yet are understudied in the public health literature. FSW face barriers to care as well as increased risk for sexual and reproductive health complications among other health issues, therefore communication with health providers can play an important role before and during pregnancy.
**Methods:** Data was analyzed using bivariate and multivariate logistic regression from a cohort of 253 FSW living with HIV who were of reproductive age while living with HIV in Santo Domingo, Dominican Republic to assess factors associated with ever having communicated about pregnancy with a health provider.
**Results:** Almost all women had been pregnant (95.65%; mean: 4.5 pregnancies), many had been pregnant after HIV diagnosis (36%; mean: 1.6) and reported wanting more children (28%; mean: 1.6 children). Over half (58%; n=146) reported having ever spoken to any health provider about pregnancy among women living with HIV. Of those, about 38% (56/146) had been pregnant since diagnosis and 24% (36/146) indicated wanting more children. Of participants who have been pregnant after HIV diagnosis (n=91), about 38% (35/91) never discussed pregnancy with a health provider and about 48% (34/91) indicated a desire for more children. Of the total population, about 56% (142/253) do not feel that if an HIV positive woman wants to get pregnant she should, however about 75% (191/253) felt that health providers are supportive of pregnancy in women living with HIV. Multivariate logistic regression found significant associations between having spoken to a health provider about HIV in pregnancy and a more positive perception of their health provider (AOR: 1.97; 95% CI: 1.01, 2.48) and years since HIV diagnosis (AOR: 1.07; 95% CI: 1.00, 1.13). Negative associations were seen with history of drug use (AOR: 0.38; 95% CI: 0.20, 0.90) and current alcohol use (AOR: 0.52; 95% CI: 0.30, 0.92).
**Conclusions:** This study examines missed opportunities and barriers in patient-provider communication about pregnancy for FSW living with HIV. Findings highlight the importance for integrated, non-judgmental and tailored care and communication surrounding pregnancy, addressing the multiple risk factors for this highly vulnerable population.

## TUPEE560

### PROMOTING SRH SERVICES TO IMPROVE HIV PREVENTION FOR YOUNG FEMALE SEX WORKERS: EXPERIENCE FROM THE ABHAYA PROGRAMME IN INDIA

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**Background:** Young female sex workers (FSW < 24 years old) are marginalised, and often difficult to reach with HIV-related services. It has also been observed that women who have been in sex work have various sexual health issues that are undiagnosed and therefore untreated.
**Description:** India HIV/AIDS Alliance implements the Abhaya programme in Gujarat, Delhi and Telangana to provide sexual reproductive health (SRH) services to FSW. It also explores SRH as a starting point for HIV-related service delivery. Young FSW, below 24 years of age, were reached through health camps, hotspot meetings and drop-in-centres by outreach workers, in coordination with the government-funded Targeted Intervention (TI) projects. The project provided SRH education, counselling/referral and service linkages with family planning clinics, gynecologists and STI clinics. Clients were also motivated to seek and/or referred for HIV services, i.e. HIV testing and ART.
**Lessons learned:** 1,074 young FSWs (≤ 24 years old) were educated on SRH and HIV-related services. They were mainly counselled on oral birth control (n=348), menstruation hygiene management (n=409) and cervical cancer (n=88). The most commonly availed services from the project were oral birth control (n=181), mensuration issues (n=198), emergency contraception pills (n= 58) and cervical cancer Pap smear testing (n=26). Reaching out to FSW with SRH services resulted in an increased uptake of HIV prevention services. 14 FSWs were diagnosed as HIV+ and were linked with ART centres.
**Conclusions/Next steps:** Reaching out to the young FSWs via an SRH approach was successful as it created an enabling environment for SRH discussions in a population

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still grappling with the challenges of adulthood and sexuality and managing these factors in the context of sex work. These discussions have led to increased HIV counselling, testing and linkages with care, support and treatment services.

## TUPEE561

### BRINGING SEXY BACK: PREP AND SEXUAL HEALTH SERVICES FOR YOUNG URBAN MEN WHO HAVE SEX WITH MEN

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**Background:** The CDC estimates that young men who have sex with men (Y/MSM) account for nearly 75% of all new infections among youth in the United States. Improving access to culturally and clinically relevant sexual health services is critical for stemming the tide of new infections, particularly in urban settings such as Oakland, California, where a HIV State of Emergency has existed since 1998. The Connecting Resources for Urban Sexual Health (CRUSH) Project was conceived as a comprehensive approach to HIV prevention where Y/MSM, regardless of serostatus, can access affirming and innovative sexual health services.
**Description:** The aim of CRUSH is to implement and evaluate the effectiveness of a package of HIV care, treatment and prevention, including routine sexual health services: STI screening and treatment, PrEP and PEP access, for Y/MSM of color. Utilizing a broad range of scientific and community partners, patients can arrive for scheduled or drop-in visits; receive regular HIV testing, be assessed and treated for STIs, access PrEP and PEP, and adherence support for PrEP and ART. To engage Y/MSM, CRUSH embodies a "clinic without walls" structure, supporting retention efforts, allowing youth to access barrier free services.
**Lessons learned:** Since February 2014, CRUSH enrolled a total of 262 HIV negative and 81 HIV positive participants to receive sexual health care; 238 have received PrEP. About 15.5% (n=37 of 238) of those receiving PrEP were assessed as needing PEP at some point in the course of the study. Nearly 29% (n=99 of 343) are Y/MSM of color. Average age of all participants is 24.6. Average amount of time participants stay on PrEP is 36 weeks of a 48 week study period.
**Conclusions/Next steps:** Uptake of sexual health services in this setting for Y/MSM of color was higher than anticipated. Providing routine STI treatment is a critical for integrating PrEP into an existing HIV primary care setting. Ensuring flexible clinic access including drop in visits for STI testing and treatment for both HIV positive and negative youth is essential to engage Y/MSM in routine sexual health. Intensified in-reach and outreach and messaging targeting Y/MSM of color are needed for engagement into PrEP.

## PREVENTION AND TREATMENT PROGRAMMES FOR AND WITH ADOLESCENTS AND YOUNG PEOPLE, INCLUDING THOSE FROM KEY POPULATIONS

## TUPEE562

### AN INNOVATIVE COMBINATION STRATEGY TO ENHANCE HIV TESTING AMONGST ADOLESCENTS IN SOUTH AFRICA

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**Background:** Adolescents form a large proportion of the HIV burden in sub-Saharan Africa, contributing to approximately 30% of all new infections. However, low levels of HIV testing and counselling (HTC) access and uptake amongst adolescents frequently results in late HIV diagnosis and their late entry into treatment programs. We report on an innovative combination approach to enhancing HIV diagnosis amongst adolescents in very high HIV prevalence settings in South Africa.
**Methods:** A cross-sectional study utilizing routine individual-level HIV testing data of adolescents (aged 10-19 years) tested as part of a program using a combination of HIV testing strategies in two districts having antenatal HIV prevalences of 39%-41% was performed between January 2014 and October 2015. Testing strategies involved:
I) Home-based HIV testing of consenting household members of known HIV-positive clients identified at primary healthcare centres (index client trailing);
II) Home-based testing of household members in households in the surrounding areas of index case households (door-to-door testing); and
III) HIV testing at special outdoor events (campaign testing).
**Results:** Amongst 4800 adolescents who received counselling, 4756 (99.1%) consented to HIV testing. The median age of tested adolescents was 17.6 years (IQR: 15.3-18.9 years) and 36.3% were male. The proportions who received testing for the first time were 90% amongst males and 85.7% amongst females (P< 0.0001). 2558 (54%) adolescents were tested in index client households, 1882 (40%) during door-to-door testing, and 292 (6%) were tested at campaigns. Overall, 7.5% of females and 3.9% males tested HIV positive (P< 0.0001). Amongst those who tested positive, 66.7% were late adolescent girls (aged 16-19 years). HIV positivity was higher at campaigns (9.4%) compared to index client trailing (6.0%) and door-to-door testing (5.9%) (P=0.019).
**Conclusions:** Using an innovative combination HTC approach in a high HIV prevalence setting, a large number of adolescents were counselled with very high HIV testing uptake, and high yields of positive tests were found amongst late adolescent girls in particular and at testing campaigns. Expansion of innovative methods to diagnose HIV-infected adolescents in sub-Saharan Africa is required to achieve the UNAIDS target of 90% of HIV-infected adolescents knowing their HIV status by 2020.

## TUPEE563

### COMMUNITY-BASED HIV TESTING FOR ADOLESCENT SEXUAL AND REPRODUCTIVE HEALTH: RESULTS FROM A MOBILE CLINIC INITIATIVE

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**Background:** HIV testing is sub-optimal in South African adolescents, a population where HIV related deaths continue to rise despite reductions in pediatric and adult HIV related mortality. Discussions with adolescents highlight the inappropriateness of traditional medical facilities to support youth in time of an evolving epidemic and recommend accessible and youth-friendly HCT services to facilitate earlier HIV testing.
**Description:** The Tutu Teen Truck (TTT) launched in August 2015 as a nurse-led, counselor-supported mobile clinic providing HCT services at convenient times and in accessible spaces for adolescents in limited-resource, high disease burden communities of Cape Town. The clinic attracts adolescent clients spontaneously accessing HIV testing at taxi ranks, township shopping/community centres, sports fields or on the roadside opposite schools. Young people were involved in designing the TTT to optimally provide a youth-friendly, integrated SRH service which is culturally appropriate, respectful and confidential. During the HCT visit adolescents complete a self-reported sexual behaviour risk assessment and tailored health education sessions provided by peer-counselors.
**Lessons learned:** Between August and December 2015, the clinic enrolled 1285 adolescents between 12 and 24 ($\bar{x}$ = 17.5) years of age, with 37% being male and 88% black South African. 45.6% of adolescents had no prior HIV test. HIV was newly diagnosed in 2.7% of adolescents, while prevalence was 3.6%. The average CD4/µl count was 429 in newly diagnosed patients, with 67% of positive patients CD4≤500/µl. Adolescents› most prominent self-reported HIV-related risks were that 63% did not know their partner›s HIV status and 52% inconsistently use condoms; while 14.6% had multiple sexual partners in the past six months and 3% were diagnosed with a STI in this same period.
**Conclusions/Next steps:** Mobile, community-based SRH services for adolescents are feasible, while providing an accessible debut HIV testing site for 1 in 2 young people. Although the TTT found a relatively low HIV prevalence by South African standards, the majority of those testing positive qualified for ART. In addition, adolescents accessing the clinic displayed some risky HIV-related behaviour which suggests that PrEP availability could be a valuable. Next steps might be to provide both PrEP and ART for adolescents from mobile clinics.

## TUPEE564

### INCREASING UPTAKE OF HIV, STI AND FAMILY PLANNING SERVICES, AND REDUCING HIV-RELATED RISK AMONG YOUNG PEOPLE LIVING WITH HIV (YPLHIV) IN UGANDA: EVIDENCE OF THE LINK UP PROJECT

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**Background:** In Uganda, youth aged 15-24 comprise nearly 40% of people living with HIV (PLHIV), and new HIV infections continue to rise in this group. As they transition into adulthood, YPLHIV confront unique challenges: stigma surrounding their developing sexuality, and HIV care paradigms which focus on the needs of only children or adults. To address barriers to care, the Link Up project implemented a peer-led intervention through YPLHIV support groups, offering a range of services, including counseling on HIV and sexual and reproductive health (SRH) issues, integrated HIV and SRH education, and referrals to ART and youth-oriented SRH facilities. This abstract presents the evaluation findings of this project.
**Methods:** At baseline (Oct, 2014), we recruited 473 YPLHIV aged 15-24 years who were members of Link Up peer-support groups in Luweero and Nakasongola districts to participate in a cohort study. After a 9-month intervention period (January-September, 2015), we successfully re-interviewed 350 participants. Key outcomes included self-efficacy for condom and contraceptive use (10-item index; dichotomized high/low), comprehensive HIV knowledge (five-item UNAIDS scale), condom use (last sex), HIV-status disclosure, ART uptake and adherence, STI uptake, and contraceptive prevalence. Multivariate logistic regression analysis applied to longitudinal data was used to assess changes in key outcomes from baseline to endline, controlling for gender, age, education, marital status, and number of children.
**Results:** At baseline, nearly 70% of participants were female; 21% married/cohabitating; 77% ever had sex; 23% disclosed HIV status to a sex partner; and 68% were using ART. At endline, 94% attended Link Up peer-support groups; 86% contacted by peer-educators; and 48% received referrals.
Multivariate analyses showed significant increases at endline, compared to baseline, in: self-efficacy [AOR:1.8(1.3-2.6)]; comprehensive HIV knowledge [AOR:1.8(1.3-2.6)]; HIV disclosure [AOR:1.6(1.01-2.6)]; condom use at last sex [AOR:1.7(1.2-2.5)]; STI uptake [AOR:2.1(1.5-2.9)]; ART uptake [AOR:2.5(1.6-4.0)]; ART adherence [AOR:2.5(1.3-4.9]; CD4 testing [AOR:2.4(1.5-3.6]; and use of modern contraceptives: [AOR:1.7(1.1-2.7)].
**Conclusions:** Link Up's peer led intervention through peer-support groups and referrals can be effective in increasing self-efficacy and knowledge of HIV, condom use, HIV disclosure, uptake of ART, ART adherence, CD4 testing, STI uptake, and use of modern contraceptives. This model should be shared and adapted to other contexts.

## TUPEE565

### PHYSICAL HEALTH AND SEXUAL REPRODUCTIVE HEALTH STATUS OF YOUNG PEOPLE IN THE BORSTAL TRAINING INSTITUTION, ILORIN, KWARA STATE, NIGERIA

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**Background:** Young people (10-24 years) comprise about a third of Nigeria's population. Some of the young people initiate objectionable deviant behaviours and are subsequently remanded in Borstal Training Institutions (BTI) for rehabilitation after trial and prosecution. However, studies conducted in Nigeria among delinquent young people in BTI have not adequately explored their sexual reproductive health status. This research was therefore conducted to assess the sexual reproductive health and determine the physical health status of delinquent young people being rehabilitated in the BTI, Ilorin.
**Methods:** A cross-sectional survey of the 133 inmates remanded in the BTI was conducted. The institution caters for only male offenders who are sentenced by the court of law for an initial period of three years. A semi-structured questionnaire was utilized to collect information socio-demographic characteristics and history of common health symptoms experienced three months preceding the study. Also, Knowledge, Attitude and Practice regarding HIV were evaluated.
**Results:** Data were analysed using descriptive statistics, Chi-square and Spearman rank correlation at p = 0.05. The mean age of inmates was 18.9±2.2 years. Various offences included abuse of psychoactive substances (65.5%), armed robbery (39.8%), "being beyond parental control" (6.0%) and recurrent involvement in street fights (0.8%) led to been remanded. The mean duration of stay in the institution was 1.3±0.8 years. About 57.9% reported that they had at least one symptom such as catarrh (46.8%), fever (42.9%), headache (40.3%), body pain (40.3%), and chest pain (23.4%). Eighty-nine of the Inmates were aware that HIV can be transmitted by sexual intercourse (66.9%).
Half of them knew HIV can be transmitted from mother to child (52.6%) and through sharing needles or syringes (51.1%). About 60.3% of the inmates had misconception about transmission of HIV. Fifty (37.5%) of the inmates had a history of sexual intercourse, and 60% of these inmates had used a condom. However, only 44.0% said they used condoms consistently.
**Conclusions:** It was observed that Inmates of the Borstal Training Institution experienced poor physical health and had misconception about the route of transmission of HIV. There is need for Intervention to improve Inmates KAP on HIV.

## TUPEE566

### UPTAKE OF PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) SERVICES BY ADOLESCENTS AND YOUNG WOMEN COMPARED TO OLDER WOMEN: EVIDENCE FROM A RETROSPECTIVE COHORT IN SIX SUB-SAHARAN AFRICAN COUNTRIES

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**Background:** In Sub-Saharan Africa, young women (aged 15-24 years) are at higher risk of acquiring HIV with sources indicating that their risk is more than twice that of young men. Mother-to-Child Transmission (MTCT) accounts for over 90% of new HIV infections in children. mothers2mothers employ, Mentor Mothers, who are themselves mothers living with HIV, to provide health education and psychosocial support to other HIV-positive mothers in selected health facilities. We used longitudinal client records to compare uptake of PMTCT services and MTCT amongst adolescent women (15-19 years), young women (20-24 years) and older women (25 years or older).
**Methods:** We documented uptake of PMTCT services for HIV positive mothers who presented between June and November 2012 and followed them up for up to 31 months in Kenya, Lesotho, Malawi, South Africa, Swaziland and Uganda. We extracted records of 12,900 HIV positive mothers at a representative sample of 87 health facilities. Using routine M&E data, we used logistic regression to explore PMTCT service uptake and MTCT rates and adjusted for facility type, site location (rural/urban), disclosure status and male partner HIV status.
**Results:** A total of 846 (6.6%) were adolescent women (15-19 years) and 3,465 (26.9%) were young women (20-24 years). Adolescent women (OR=0.70; 95% CI=0.56, 0.87) and young women (OR=0.77; 95% CI = 0.66, 0.91) were less likely to take up postnatal prophylaxis compared to older women. Mother-to-child transmission was higher in young women who were more likely to have an HIV-positive infant compared to older women (OR=1.34; 95% CI = 1.03, 1.77). Other services that adolescent women were less likely to take up compared to older women were infant cotrimoxazole prophylactic treatment (OR=0.77; 95% CI = 0.63, 0.95), Polymerase Chain Reaction (PCR) test (OR=0.77; 95% CI = 0.63, 0.94) and PCR test result (OR=0.80; 95% CI = 0.66, 0.97).
**Conclusions:** Higher MTCT may be partially explained by lower uptake of postnatal prophylaxis amongst young women compared to older women. Lower uptake of PMTCT services by adolescent- and young women emphasizes the need for programmes to specifically target this population segment through social and behavior change, and provision of youth friendly health services.

## TUPEE567

### HOW DO SAFER SEX INTENTIONS IMPACT HIV SEXUAL RISK BEHAVIOR IN YOUNG BLACK MEN WHO HAVE SEX WITH MEN? A MEDIATION ANALYSIS

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**Background:** HIV prevention interventions that reduce sexual risk behaviors among YBMSM, the most severely affected population in the United States, are critical for reducing disparities in HIV infection. The Institute of Medicine (IOM) Integrated

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Model of Behavior Change was used as the theoretical basis for development of healthMpowerment.org (HMP), a mobile-phone-optimized, Internet-based intervention designed to reduce unprotected anal intercourse (UAI) among YBMSM. The model theorizes that behavioral intentions mediate the relationship between self-efficacy, perceived norms and attitudes and health behavior. This study used baseline data from 474 HMP randomized controlled trial (RCT) participants to test this model.
**Methods:** Bivariate analyses examined relationships between UAI in the last 3 months and safer sex intentions (intentions to discuss condom use, use condoms, ask sexual partners about HIV status, use alcohol/drugs before sex), self-efficacy to refuse sexual acts, condom use norms and attitudes toward condom use. Mediation analyses were conducted using the SAS PROCESS computational macro to determine if safer sex intentions mediated the relationship between self-efficacy, perceived norms, attitudes and UAI.
**Results:** The mean age was 24.3 years; 39.5% were HIV-positive. Overall 66.1% reported one or more acts of UAI with a male partner in last 3 months. Those who reported UAI had lower safer sex intentions (*p< .001*), lower self-efficacy to refuse sexual acts (*p=.014*), lower perceived condom use norms (*p< .001*) and poorer attitudes towards condom use (*p< .001*). In mediation analyses, the relationships between UAI and self-efficacy to refuse sexual acts (estimated indirect effect=-.02, *p< .001*) and perceived condom use norms (-.04, *p< .001*) were fully mediated by safer sex intentions while attitudes toward condom use (-.02, *p< .001*) was partially mediated by safer sex intentions when controlling for age, education, income and HIV status.
**Conclusions:** The findings from this study supported behavioral intentions as a mediator between self-efficacy, norms, and attitudes and health behavior (e.g., UAI) outlined in the IOM Integrated Model of Behavior Change. These factors are important direct and indirect predictors of UAI among YBMSM. Theoretically-based interventions are critically needed to address these predictors in order to reduce UAI among YBMSM.

## TUPEE568

### LEARNERS' PERSPECTIVES ON THE PROVISION OF CONDOMS IN SOUTH AFRICAN PUBLIC SCHOOLS

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**Background:** Despite the introduction of sexuality education in South African (SA) schools 16 years ago, progress has been slow in reducing sexual risk behaviour. In 2015, the Department of Basic Education proposed the provision of condoms and sexual and reproductive health (SRH) services to learners in schools. As the sexuality of adolescents is contested much public debate has ensued, which is seldom informed by adolescents as the beneficiaries of the policy. This study explored learners' perspectives on the provision of SRH-services in SA schools.
**Methods:** Sixteen focus group discussions were conducted with 116 learners (52% female) from 33 public schools across the nine provinces. School selection was based on participation in UNICEF's youth development programmes. The discussions focused on learners' attitudes, social influences and how SRH-services should be provided in schools. Discussions were thematically analysed.
**Results:** Learners reported negative attitudes towards sexuality education because of an uncomfortable interaction with teachers and peers, and a lack of comprehensive information. While some learners had a positive attitude towards the provision of condoms in schools, due to amongst others judgemental attitudes of nurses at clinics, many were concerned that it would increase sexual activity. However, as the discussion ensued on the poor quality of services in clinics and high risk behaviour amongst adolescents, some learners shifted their position. Attitudes towards the provision of other SRH-services in school were positive as learners emphasized that current clinics are not youth friendly. Learners' perspectives on providing SRH-services in schools were strongly determined by the opinions of classmates and teachers. Hence, the most immediate concerns for implementation revolved around ensuring privacy and confidentiality.
**Conclusions:** Learners did not fully support the provision of condoms in schools due to myths about increased sexual activity and fear of stigma and discrimination. The provision of condoms in schools must be preceded by an evidence-informed advocacy campaign that debunks commonly held myths. Critical thinking skills must also be developed to inculcate evidence-informed decision-making on contested issues such as condom provision. Provision must be sensitive to the privacy and confidentiality of learners in light of the persistent stigma and discrimination they experience.

## TUPEE569

### YOUNG WOMEN'S EXPERIENCE OF RECEIVING CONDITIONAL CASH TRANSFERS FOR HIV PREVENTION: QUALITATIVE DATA FROM HPTN 068

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**Background:** There is increasing interest in studying the use of cash transfers with adolescent women in sub-Saharan Africa. Cash transfers are hypothesized to prevent HIV infection by increasing school attendance or reducing young women's reliance on transactional sex. In this study we examined young women's school attendance and unintended changes to social relationships when receiving a conditional cash transfer (CCT).
**Methods:** HPTN 068 was a 3-year randomized controlled trial to assess the impact of a cash transfer, conditioned on school attendance, on young rural South African women's HIV incidence. 2328 13-20 year old women were recruited and completed annual survey assessments. A sub-sample of 71 women (38 from intervention arm) was recruited into a longitudinal qualitative cohort, in which they were interviewed up to twice annually by female, local language-speaking fieldworkers. Interviews were recorded, translated and transcribed for coding and analysis in Atlas.ti.
**Results:** Qualitative interviews with a sub-sample of intervention-arm participants found that receiving the CCT was a largely positive experience. Moreover, the CCT did not negatively impact on relationships in communities, neighbourhoods and schools; which remained essentially unchanged throughout the study. Minor reports of jealousy and teasing within peer groups were reported but they had limited impact on participants. Within families, young women highlighted their increased independence, better relationships with mothers and sharing of resources with siblings. Impact of the CCT on sexual relationships was little and it was rarely mentioned. Quantitatively, we found no significant impact of the CCT on school attendance, however, qualitative interviews show that participants reported positive change in their attitude towards schooling across both study arms.
**Conclusions:** Receiving a CCT was a positive experience for young women and their social relationships were either unaffected or positively changed. Confirming findings from the quantitative trial results, there was no identified impact of the cash on schooling. Notably, fears of negative unintended consequences to cash payments appear unfounded.

## TUPEE570

### PARTNERING TO IMPROVE EMERGENCY AND CRITICAL CARE SERVICES FOR PEDIATRIC HIV PATIENTS IN ETHIOPIA

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**Background:** At the request of the Federal Ministry of Health, the American International Health Alliance launched a partnership between the University of Wisconsin in the United States and Addis Ababa University to strengthen pediatric emergency care in 2010. With support from the President's Emergency Plan for AIDS Relief and CDC/Ethiopia, partners established a fellowship in pediatric emergency and critical care medicine and implemented several quality improvement projects to increase the number of children tested for HIV, ensure early administration of post-exposure prophylaxis, and enhance linkages between the pediatric emergency department and the facility's HIV clinic.
**Description:** Since January 2014, more than 400 pediatric patients have been screened for HIV in the Emergency Department. Approximately 10% tested HIV-positive and were referred to the HIV clinic. In the pediatric intensive care unit, 166 (35%) admissions were screened for HIV; 13 (8%) tested HIV-positive. These rates are significantly higher than the HIV prevalence nationwide (1.2%) and in Addis Ababa (5.2%).

**Lessons learned:** Children may not come into regular contact with the healthcare system and may not utilize services unless they are injured or severely ill. Emergency and critical care providers are therefore uniquely positioned to identify and diagnose new pediatric HIV cases during emergency situations and refer positive cases for immediate care and treatment. Emergency settings should be seen as important catchment areas for children living with HIV, who may otherwise remain undiagnosed and untreated.
**Conclusions/Next steps:** HIV testing and referral services are a critical component of pediatric emergency and critical care. Additional data collection is needed to quantify the impact of providing specialized emergency care for pediatric patients in high HIV burden areas.

## TUPEE571

### ADDRESSING INTERGENERATIONAL COMMUNICATION IS KEY TO DEVELOPING AN "ADOLESCENT-FRIENDLY" FAMILY-BASED HIV TESTING INTERVENTION

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**Background:** Adolescents occupy a unique position in the family as they make a transition from childhood to adulthood. During this phase, adolescents may engage in risky behaviour that their families are unaware of. As a result, adolescents may be reluctant to participate in family-based interventions that could expose their private lives. A key consideration in developing an "adolescent friendly" family-based intervention is supporting intergenerational communication to encourage adolescent-parent sharing while simultaneously supporting the adolescent's need to develop their own identity and gain a sense of autonomy.
**Methods:** In 2014, 72 adolescents in KwaZulu-Natal, South Africa, participated in the formative phase of a research study to develop a family-based model of home-based HIV counselling and testing (FBCT). Participants were identified through social networks, schools and community groups. Qualitative data was collected using mixed-gender focus group discussions. Participants were stratified according to age (13-14/15-16/17-18 years) and HIV serostatus (HIV positive/HIV negative/HIV serostatus unknown). The data was analysed using a thematic analysis to assess differences across age groups and to identify factors that would facilitate or hinder adolescent participation in an FBCT intervention.
**Results:** Adolescents across age groups reported openness to communication with parents, but communication waned as adolescents grew up. Younger adolescents reported fear of parental disownment as a key barrier. Whereas, middle adolescents cited difficulty in initiating conversations with parents. In contrast, older adolescents appeared to be able to initiate conversations using tools such as humour but found straight-forward communication with parents difficult. Across age groups, parents making time to speak with adolescents was an important communication facilitator. Younger adolescents preferred parent-initiated communication. While older adolescents reported that certainty of parental care and support motivated adolescent sharing. Adolescents across age groups felt more comfortable communicating with a female caregiver as opposed to a male caregiver. However, younger adolescents expressed a desire for fathers to be more involved and available for communication.
**Conclusions:** In order to develop an FBCT intervention that is "adolescent-friendly" it is important to equip both adolescents and their primary caregivers with tools that help to initiate, sustain and encourage open communication that is supportive and caring.

## TUPEE572

### PREPARING FOR DREAMS: DEVELOPING AN INDEX TO ASSESS VULNERABILITY FOR HIV ACQUISITION AMONG ADOLESCENT GIRLS AND YOUNG WOMEN IN TANZANIA

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**Background:** Adolescent girls and young women (AGYW) are known to have significant risks for HIV acquisition and evidence-based HIV prevention services are currently being scaled to address their needs through the PEPFAR-funded DREAMS Initiative. However, characterizing specific HIV acquisition risks for AGYW is critical to guide the implementation of targeted HIV prevention and treatment services for these young women. The Sauti program is implementing DREAMS in Tanzania and developed a risk index to effectively delineate a pathway of risks from primarily social vulnerabilities to acute HIV acquisition risks.
**Description:** A scoping review informed the development of the Sauti AGYW Risk Index (ARI) which includes Community and Individual Modules. The Community Module aims to identify communities which have high, medium and low proportions of risk for AGYW. The Individual Module is a screening questionnaire that explores key risk-related domains: sexual behavior, gender-based violence, impoverishment, social isolation, and schooling with indicators chosen based on established association with prevalent and incident HIV infections. The Individual Module was administered by peer educators and community health promoters at mobile HTC services and community outreach to 237 AGYW aged 15-24 across five regions in November 2105.
**Lessons learned:** Among 237 participants, the ARI scored risk as: 6% low, 37% medium, 54% high and 4% very high. Given the significant levels of acute HIV acquisition risks observed among these young women, the ARI validated the Sauti programmatic approaches of engaging AGYW in high transit and commercial areas of Tanzania. Statistical assessments of risk stratification conducted on indicators of the ARI demonstrated strong relationships between composite score for most measures except for perceptions of gender-based violence.
**Conclusions/Next steps:** The initial assessment of the ARI reinforces the ability to categorize AGYW into those who are acutely in need of HIV prevention programs compared to those who are earlier in the pathway of risks and represent candidates for social protection. The ARI will be scaled up for use throughout the Tanzania DREAMS Initiative and linked to programmatic health data allowing eventual evaluation of these programs through self-reported and biologic data including HIV and STI test results.

## TUPEE573

### ASSESSING THE UTILITY OF THE SAUTI ADOLESCENT GIRL AND YOUNG WOMEN RISK INDEX TO DISCRIMINATE HIV ACQUISITION RISKS IN TANZANIA

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**Background:** Adolescent girls and young women (AGYW) are known to have significant risks for HIV aquisition. Characterizing specific HIV acquisition risks is important to guide the implementation of specific HIV prevention and treatment services for these young women. Traditionally, indices of risk for AGYW have focused on social vulnerabilities, but to inform the implementation of the PEPFAR-funded Sauti Program in Tanzania, an index has been developed to categorize AGYW into low, medium, high and very high risk of HIV acquisition.
**Methods:** A scoping review informed the development of the Sauti AGYW Risk Index (ARI) which includes short modules with indicators examining sexual practices, gender-based violence, impoverishment, social isolation, and schooling. The ARI was piloted in Sauti Program sites in November 2015 with 237 AGYW. Analyses used STATA 14.0 and included pearson's chi-square test to compare observed proportion by age group with p-values reported.
**Results:** 55.3% (n=131/237) of the AGYW sampled were between 15-19 and 44.7% (n=106/237) were 20-24. Younger respondents had a significantly lower age at sexual debut ($p< 0.01$), and used condoms less frequently with anal and vaginal sex ($p< 0.01$, $p< 0.01$ respectively). Overall younger respondents reported fewer pregnancies, though the age of first pregnancy was significantly lower ($p< 0.01$) than in the older age group. Older women were more likely to use FP methods ($p< 0.01$), be married ($p< 0.01$), less socially isolated ($p< 0.05$) and more educated ($p< 0.01$). There was a statistically significant relationship between individual indicators and ultimate risk score except for indicators related to perceptions of violence. Overall, 63% of 15-19 and 49% in 20-24 were considered high/very high risk ($p< 0.05$).
**Conclusions:** For the initial assessment, it appeared that younger women (15-19) sampled were at higher risk than those 20-24, though overall, there is a tremendous amount of HIV acquisition risk measured among all of these women. The ARI did effectively discriminate risk between those who were at high/very high risk of HIV acquisition compared to those at low/medium risk suggesting the utility of this tool in identifying those most at risk and evaluating the utility of interventions in changing these risks throughout implementation of Sauti.

## TUPEE574

### "WHERE ARE THEY NOW?" MORTALITY, LOSS TO FOLLOW-UP AND VIRAL SUPPRESSION IN PERINATALLY HIV-INFECTED (PHIV) POST-TRANSITION YOUNG ADULT ANTIRETROVIRAL THERAPY (ART) PATIENTS IN THE DOMINICAN REPUBLIC (DR): 2004-2015

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**Background:** The DR has among the most successful pediatric ART scale-ups in low- and middle-income countries; almost 80% of known HIV-infected youth receive ART. But little is known of the outcomes of these pediatric ART patients post-transition to adult care.
**Methods:** In 2016, we analyzed de-identified data abstracted from medical records of children who started ART in 2004-2015 at the two leading DR centers providing ART to children to describe pre- and post-transition mortality and response to ART, and characteristics at transition associated with post-transition death and loss to follow-up.
**Results:** From 2004-2015, 876 children (>95% PHIV), started ART in these two centers; 92 (10.5%) died pre-transition. To date, 81 (9.2%) have transitioned to adult care. Age at transition ranged from 13-26 (median=18) years. In 2016, post-transitioned patients' ages ranged from 15-29 (median=21) years. Post-transition, 8 (9.9%) were lost to follow-up; 5 (6.2%) died. Time since transition ranged from 0-9 (median=2) years, and tended to be longer in the 13 who had died or been lost to follow-up (median=3 years) than in those still receiving ART in adult care (median=2 years; *P*=.02). Most recent viral loads of patients in adult care ranged from < 40-165,479 (median=1,759) copies/ml; 60% had viral loads >1,000 copies/ml. Risk of death or loss to follow-up did not vary significantly by ART regimen, or median CD4 count or viral load at transition, although those who died tended to be more likely to have been receiving protease inhibitor-containing "second line" regimens (80%) and had higher viral loads at transition (median=12,523 copies/ml) than those who survived (46.1%; Odds Ratio=4.7, *P*=.14; median=575 copies/ml; *P*=.25, respectively). All patients who died post-transition had caregivers who were their mothers or grandmothers (5/5 [100%]) vs. 34/69 (49.3%) of survivors [*P*=.036]).
**Conclusions:** Post-transition death and loss to follow-up were considerable, with increased risk with more time post-transition. Viral response to ART was sub-optimal in survivors in care. It is unclear why youth whose caregivers were their mothers or grandmothers had greater mortality risk; in other DR studies, those caregivers tended to be poorer and more food insecure and depressed. Measures to improve post-transition outcomes are needed.

## TUPEE575

### HIV VULNERABILITY REDUCTION THROUGH ECONOMIC EMPOWERMENT AMONG THE YOUTH IN MALAWI: THE CASE OF MZUZU YOUTH ASSOCIATION

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**Background:** The Malawi National HIV and AIDS strategic framework (2011-2016) acknowledges that progress has been made in delivering services to youth. However, key gaps remain, including inadequate support provided to those young people who are most in need. In Malawi, 65% of the population lives in absolute poverty, two-thirds of the population is under 25, and out-of-school youth lack the skills to secure decent work and have little access to health and social services,
Since 2011, the ILO has engaged with national and local partners in Malawi to reach young people with a combination of health and economic services, increasing their resilience to HIV and AIDS.
**Description:** The ILO program supported over 15,000 beneficiaries located in 12 hotspots along the transport corridors in Malawi, with interventions aimed at reducing HIV vulnerabilities through economic empowerment initiatives. Poverty, as one of the key drivers of the epidemic, leads most youth to engage in high HIV-risk behaviors, including sex work. Interventions thus largely targeted vulnerable youth through the transport corridor hotspots where most transactional sex occurs. The ILO targeted youth initiatives in four hotspots, training 7000 youths on HIV. 1500 youth benefited from training on group formation, entrepreneurship skills, and business mentorship. 30% of youth trained accessed loans through a partnership with microfinance institutions and 82% started their own businesses.
**Lessons learned:** The programme proved that empowering youth reduces the HIV risk for them and their communities. 75% of girls engaged in sex work and are now engaged in various economic activities, resulting in increased average incomes ($57 at baseline to $111) resulting in increased savings (35%-77), increased spending on education ($26 - $56) and health care ($48-56). Moreover, project beneficiaries increased use of risk reduction strategies (33-72%) including use of condoms (85%), reduced number of partners (26%) and reduced alcohol intake (15%).
**Conclusions/Next steps:** Economic empowerment provides youth with necessary skills and opportunities and reduces their HIV vulnerabilities. The economic empowerment model can be replicated in other areas of Malawi sub-Saharan Africa where economic inequalities are one of the key drivers of the epidemic, and where youths are most at risk.

## TUPEE576

### COMBINED INTERVENTIONS TO INCREASE HIV DIAGNOSIS AND LINKAGE TO HIV TREATMENT AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN CURITIBA, BRAZIL

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**Background:** A multi-disciplinary team launched a community-wide intervention to reduce HIV transmission among men who have sex with men (MSM), the group most affected by HIV, in Curitiba, Brazil. The implementation science project, *A Hora é Agora (AHA),* evaluates the acceptability, uptake and cost- effectiveness of multiple HIV testing services (HTS) combined with linkage to services to improve HIV cascade outcomes for MSM.
**Description:** The project aims to increase the proportion of MSM who have accessed HTS and to link 90% of HIV positives to treatment. To expand HTS options for MSM, it's offered a web-based HIV self-testing platform; and rapid HTS in mobile vans, community organization, and public health facility. Individuals with reactive tests are referred for confirmatory tests. Peer navigators facilitate enrolment in treatment. Tailored communication strategies boost program uptake through virtual and mobile media, coupled with peer workers' face-to-face interactions at MSM social gathering venues.
**Lessons learned:** Communication strategies became the core of the intervention. Innovative, tailored and interchangeable messaging is key to high uptake of HTS and linkage. Communications also prioritize user-friendly technological tools, to better engage young MSM. Client cost-sharing and other strategies to reduce operating expenses ($16/rapid self-test; $5/test delivery) will be required for intervention scale-up and adoption by local governments.
**Conclusions/Next steps:** *The AHA* combined approach has substantially expanded MSM access to HTS in less than one year of implementation (February-December 2015) the number of MSM users accessing HTS (42% first time HIV testers; 70% 18-29 years): a) Mobile and Fixed HTS Outlets: 954/2,726 (35%) are MSM, 8,6% HIV+ MSM and 67% HIV+ accepted linkage-to-care navigators; b) Web-Based HIV testing: >3,000 test kits delivered to users, with >2,000 kits requested by self-reported MSM, >400 MSM self-reported test results returned to AHA web platform and 19/400 results HIV+, >90% of HIV+ accepted linkage services. The target of testing 1,750 MSM who have never accessed HTS is likely to be exceeded. In year 2, improved follow-up of MSM testing via the web platform, analysis of the communications strategy as well as cost-effectiveness, feasibility and service quality evaluations will inform program improvements for Curitiba and will facilitate expansion to additional Brazilian cities.

## TUPEE577

### GENDER NORMS, SEXUALITY AND SPORTS FOR DEVELOPMENT: CHALLENGES ADOLESCENT GIRLS IN KHAYELITHSA, SOUTH AFRICA, FACE WHEN PARTICIPATING IN A SOCCER-BASED HIV PREVENTION PROGRAMME

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**Background:** Gender norms and community beliefs around sexuality influence girls' participation in soccer, considered a "male sport" in the community of interest for this research. The objective of our study is to explore access and participation to, as well as ways to improve a sports-based HIV prevention programme for teenage girls.

**Methods:** Preliminary findings of the qualitative study are based on data collected November 28th - December 11th 2015, in Khayelitsha. We conducted interviews with teachers from four of the five implementing schools and two focus-groups with a total of 14 participants. Additional data comes from field notes and observations. Participants in the focus-groups were girls aged 10-14. We will conduct additional focus-groups and interviews with coaches, parents and peer-learners and collect secondary data on participants' school results.
**Results:** Preliminary results reveal relevant information related to the challenges teenage girls who enroll in the soccer-based HIV prevention programme face. Initially, teachers indicated that girls who want to play soccer face no barriers in doing so. Prompted, they would indicate lack of resources, sporting facilities and lack of opportunities for girls among the main barriers. Although they support the programmes, they also indicated their concerns that participants might turn into "tomboys" (lesbians), since girls playing soccer are expected to behave like boys. Most teachers seemed not to be aware that this belief in itself might constitute an important barrier for girls.
Participants indicated feelings of shame for not playing well, beliefs that they would turn into "tomboys" and beliefs that girls cannot play soccer as reasons for which other girls dropped out or reasons for them to feel demotivated. Results indicate imposed and auto-imposed gender stereotypes.
Among ways to improve the program, teachers mentioned involving parents and other teachers, addressing the issue of participants' sexual identity, and organizing soccer leagues for girls.
**Conclusions:** Although the target group are adolescent girls, other community members (parents, teachers and peer-learners) need to be addressed in soccer-based HIV prevention programmes so that traditional gender norms, gender stereotypes and community values which maintain a disadvantage for a population which is already at a higher risk, are challenged.

## TUPEE578

### FEASIBILITY AND EFFECTIVENESS OF A POSITIVE PARENTING INTERVENTION IN REDUCING HIV INCIDENCE AMONG ADOLESCENT GIRLS AND YOUNG WOMAN FROM GRANDPARENT-HEADED HOUSEHOLDS

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**Background:** To ensure children, particularly adolescent girls from highly vulnerable families, are empowered with knowledge to stay HIV negative and have better life outcomes, the Bantwana Initiative of World Education piloted the *Families Matter!* Parenting program, adapted from the Center for Disease Control's *Parents Matter!* program. In order to close the generation gap and open up communication between children and caregivers, the program targets grandparent-headed households receiving government cash transfers in Bulawayo, Zimbabwe and empowers these caregivers to be the primary source of sex information to the children in their care. The caregivers participate in a positive parenting module on adolescent sexual reproductive health, which covers the sexual pressure and choices faced by adolescents, and provides caregivers with appropriate HIV prevention, family planning and sexual abuse prevention and responses. The program was piloted to assess the intervention's feasibility and effectiveness.
**Description:** 42 elderly caregivers, aged 50 and older, met once weekly for a three-hour long session for seven weeks. Subsequently, they completed practical discussion exercises with their children at home. Routine data collection and interviews for qualitative feedback were conducted.
**Lessons learned:** Evidence from the pilot shows caregivers' knowledge on sex and sexuality issues increased. The weekly exercises that caregivers practiced at home made them more comfortable to openly discuss sex related issues with their children. As a result, both children and their caregivers indicated that the generational gap had reduced and their relationships grew stronger. Children noted that the caregivers were now their primary source of sexuality information and they felt empowered to change their behavior and make better sex choices.
**Conclusions/Next steps:** *Families Matter* is an effective family centered approach which increases caregivers' and adolescents' knowledge of sex, sexuality and HIV issues. The approach opens up communication and deepens mutual understanding between children and their caregivers. Children are better supported and they enjoy protective parental surveillance. The pilot proved successful, strengthening relationships and understanding of HIV prevention, family planning and sexual abuse prevention, detection and appropriate responses. WEI/Bantwana will scale up the pilot to 9,300 caregivers in three districts over two years and track its effectiveness in reducing HIV incidence.

# IMPACT OF DONOR AGENCIES AND POLICIES ON NATIONAL RESPONSES

## TUPEE579

### CASE STUDIES ON INTEGRATION OF HIV AND AIDS RESPONSE (FOCUSING ON NEEDLE AND SYRINGE EXCHANGE PROGRAM) WITHIN THE JAKARTA HEALTH SYSTEMS

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**Background:** The HIV and AIDS response in Indonesia is connected to global health initiatives (GHI) through various programs and funding schemes. The role of GHI in developing countries, including Indonesia, has resulted in both positive and negative consequences. Despite the fact that GHI can increase the response to HIV and AIDS transmission reduction strategies, they operate alongside, yet separately, from the Indonesian health care system. This dual system could, in fact, be detrimental to the overall operation of the health system, as each has different mechanisms of service delivery, planning, financing, and monitoring-evaluation. This study aims provide better information surrounding the current scope of HIV and AIDS responses and they ways in which they have been integrated into health care system, specifically in Jakarta.
**Methods:** A qualitative study conducted in Jakarta. Data was collected by interviewing 42 respondents, including stakeholders that implement HIV and AIDS programs and also key population. The framework approach will be used in this analysis.
**Results:** There are several aspects that have been fully integrated with the Indonesian health system, such as budgeting, proportion, distribution, and expense, Financing of human resources, Availability of services, Coordination & referral.
We found that partial integration with the health system had occurred for the realms of Regulation, Policy formulation, Management of financing sources, Financing mechanisms, Compensation, Provision & storage regulations, Resources, Synchronization of information system, Dissemination & utilization, and Quality of services guarantees.
In the realms of Accountability, Policy and Human Resources Management, and Community Participation we did not find evidence for any integration within the health system.
**Conclusions:** Less involvement of key populations in planning, developing, and evaluating HIV and NSP programs acted as an indicator for a lack of integration of Community Participation and Accountability in the health system. There were no specific regulations about human resources in NSP, therefore no formal competencies were used for recruitment.
The government needs to continuously develop several aspects of GHIs that are yet to become fully integrated with the health system, to ensure the continuity of HIV and AIDS response, pressingly so as there are no current donors supporting these programs.

## TUPEE580

### EFFECT OF PEPFAR FUNDING POLICY CHANGE ON HIV SERVICE DELIVERY IN A LARGE HIV CARE AND TREATMENT NETWORK IN NIGERIA

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**Background:** PEPFAR has streamlined support for HIV services in Nigeria and other recipient countries. The objective of this study was to measure and describe the impact of the PEPFAR policy change (PPC) instituted in October 2014 on HIV care delivery in APIN, a large network of HIV clinics in Nigeria.
**Methods:** We distributed questionnaires to clinic managers at APIN's 30 comprehensive HIV treatment sites. The survey assessed services supported pre-PPC (October 2013-September 2014) and post-PPC (October 2014-September 2015), impact of the PPC on service delivery areas, and responses instituted for the PPC. We compared differences in support for staffing, laboratory services, and clinical operations pre and post-PPC using proportion tests. Responses to open-ended questions in the questionnaire were analyzed qualitatively using ATLAS.ti version 7 and data categorization was done inductively.
**Results:** Eight-three percent (n=25) of sites completed the survey. The majority were public (60%, n=15) and secondary (68%, n=17) facilities. Clinics had a median of 989 patients in care (IQR: 543-3326). All clinics continued to receive support for 1st line antiretrovirals and CD4 testing after the PPC, while no clinics received support for other routine drug monitoring labs. We found statistically significant reductions in support before and after the policy change in viral load testing capacity,

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staff employment, defaulter tracking, and prevention services (92% vs. 64%, p=0.02; 80% vs. 20%, 100% vs. 44%, 84% vs. 16%, p< 0.0001 for all). Almost all sites (96%) introduced patient fees to cover the cost of lab monitoring tests (96%), hospital registration (32%), or clinical consultation (20%); yearly median fees were $40USD (IQR:21-69$USD). Qualitative analysis revealed that private facilities more frequently adopted strategies to cushion the user fee impact on patients. Clinic directors reported limitations in comprehensive care delivery, hampered clinical decision making, and decrease in new patient enrolment after the PPC. These challenges were more common in tertiary facilities.
**Conclusions:** Clinics in Nigeria are experiencing major challenges in providing routine HIV services as a result of the recent PEPFAR policy change. User fees are the most common coping response. The consequences include reduced laboratory monitoring, poor clinic attendance, and decreased new patient enrollment.

## SUSTAINABILITY OF FINANCING AND PROGRAMMES OF NATIONAL AIDS PROGRAMMES AND RESPONSES

### TUPEE581

### UNDERSTANDING PROSPECTS FOR MOBILIZING DOMESTIC RESOURCES FOR HIV IN UGANDA

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**Background:** With more than 1.7 million PLHIV in Uganda, the country's HIV epidemic remains among the largest in sub-Saharan Africa. As with other countries, Uganda's health sector relies heavily on donor funding. According to the most recent NHA, in FY 2011/12, donor resources accounted for 46 percent (US$860 million) of total health expenditure. For Uganda to achieve 90-90-90 targets by 2020, it will need to mobilize sustainable domestic resources to ensure the country stays on track.
**Methods:** The USAID- and PEPFAR-funded Health Policy Project used a set of indicators to assess the potential for domestic resource mobilization in Uganda. The team assessed the gap in projected HIV funding and the contribution from various sources: government HIV budget allocation, private sector, and donor funds.
**Results:** High levels of donor funding have been the primary support for significant scale-up of HIV services in Uganda over the past decade. PEPFAR funding increased rapidly from US$96 million to US$284 million between 2004 and 2008. While Uganda's domestic contribution increased between FY 2011/12 and 2014/15 (US$66 million to US$70 million), an annual inflation rate of around 7.9 percent wiped out those gains and domestic contribution actually decreased in real terms. The private sector contributed approximately US$3.8 million to HIV services. Household expenditure on HIV, in the form of out-of-pocket payments to providers, was valued at US$49.7 million. HPP estimates the total resources needed to achieve 90-90-90 targets will amount to around US$3.9 billion and the funding gap will be around US$1.09 billion over five years (2016-2020).
**Conclusions:** For Uganda to achieve its ambitious scale-up targets for ART coverage, significant mobilization of domestic, public-sector resources is essential. In the short term, realistic targets should be set for scale-up to establish quantifiable and achievable targets for the mobilization of domestic resources. Given the expected growth in the patient pool, increasing budgetary space through improved tax collection and creating secured streams of funding through innovative funding mechanisms will be critical to achieving Uganda's targets.

### TUPEE582

### ANALYZING CURRENT FUNDING FOR HIV AND TB IN SOUTH AFRICA TO IMPROVE THE ALLOCATIVE EFFICIENCY OF THE RESPONSE

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**Background:** The South African government's increasing allocation of resources for HIV requires substantial financial planning with development partners. To assess past allocative efficiency and enable more evidence-based joint planning, the government of South Africa and UNAIDS undertook an Investment Case to jointly assess past spending and determine the most impactful future allocations across ten interventions.
**Description:** As part of the Investment Case, we conducted an analysis of HIV and TB spending in South Africa by the government, PEPFAR, and the Global Fund. This analysis built on earlier exercises to map and analyze PEPFAR financing. We undertook the analysis using publicly available financial data to ensure replicability and compatibility going forward. Findings were compared against the Investment Case's proposed optimal mix of cost-effective interventions.
**Lessons learned:** The tracking provides an innovative approach to consolidating data from domestic and international funders into a database compatible with public finance data, potentially enabling routinizable and real-time analysis for use by the government and partners.
Total HIV and TB spending in South Africa steadily increased from R17.4 billion in 2011/12 to R22.1 billion in 2013/14. The government accounted for the largest share (80%), followed by PEPFAR (17%) and the Global Fund (3%). The government's expenditures steadily increased even as the South African economy declined and other public expenditures dropped. PEPFAR's contribution decreased over time, while the Global Fund contribution increased.
A comparison of expenditures against the Investment Case's proposed optimal mix found that South Africa's HIV response was allocatively efficient. Only 14% of expenditures were for interventions not found to be cost-effective in the evidence review, but these could be considered important programme or social enablers.
**Conclusions/Next steps:** This exercise represents a first attempt at routinizing joint expenditure analysis for HIV and TB in South Africa. It provides a model that can be used going forward in South Africa and tailored for use in other countries. The findings of the Investment Case were used to improve the efficiency of allocations in the government's 2015/16 budget. We are now working to institutionalize this approach within the government's systems in conjunction with the System of Health Accounts, to enable improved evidence-based joint planning.

### TUPEE583

### ARE HIV-AFFECTED POPULATIONS WILLING AND ABLE TO PAY FOR HIV PREVENTION GOODS AND SERVICES? RESULTS FROM A CROSS-SECTIONAL STUDY IN VIETNAM

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**Background:** Middle-income countries such as Vietnam are facing steep declines in donor assistance for HIV prevention interventions. This raises concerns regarding key population (KP) access to condoms, needles and syringes (N&S), and HIV testing and counseling (HTC) services. USAID/PATH Healthy Markets conducted a consumer survey to measure KP willingness to pay (WTP) for commercial condoms, low dead space syringes (LDSS) and HTC services.
**Methods:** A cross-sectional survey recruited a total of 1,296 people who inject drugs (PWID), 1,248 female sex workers (FSW), and 1,528 men who have sex with men (MSM), using respondent-driven sampling in six focus provinces of Vietnam (Hanoi, Hai Phong, Dien Bien, Nghe An, Ho Chi Minh City and Can Tho) during 2015.
**Results:** KP reported high WTP for condoms. WTP the minimum price of 2,000VND ($0.1) per condom ranged from 83.6% among PWID, 90.5% among FSW, to 99.5% among MSM. A significant percentage of MSM were WTP the maximum price of 12,000VND ($0.6) (42%), while a significant less percentage of FSW and PWID reported (10.5 and 6.3% respectively). Only one of four PWID reported using LDSS 1ml. Regardless, PWID WTP for LDSS ranged from 47% at the minimum price of 2,000 VND ($0.1) per LDSS to 30.5% at maximum price of 5,000VND ($0.25). The survey confirmed annual HIV testing uptake to be low (33.2% PWID, 46.8% FSW and 52.6% MSM). WTP the minimum price of 50,000VND ($2.5) for an HIV test was high, ranging from 71.8% among PWID, 80.3% among FSW, to 90.4% among MSM. WTP at a maximum price of 150,000 VND ($7.5) was still relatively high at 44.8% among MSM, although low among PWID (13.9%) and FSW (19.9%). In multiple regression models, WTP rates were higher among high income KP, but lower among those interacting with peer educators (potentially due to subsidy access).
**Conclusions:** There is an opportunity to implement the Total Market Approach (TMA) in Vietnam by targeting subsidized commodities and services to the poorest KP, and establishing a viable commercial market for those able and willing to pay. This will ensure equitable and sustainable access, while reducing the public sector financial burden.

## TUPEE584

### SUSTAINING HIV/AIDS SERVICES IN THE FACE OF FALLING GOVERNMENT REVENUE: THE ZAMFARA STATE EXPERIENCE

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**Background:** Nigeria is the biggest economy in Africa but up to 77% of the country's funding for its HIV and AIDS response is provided by international development partners, including the USG PEPFAR[1]. In recent times, PEPFAR Nigeria has been engaged in activities that focus more on increasing country ownership through the gradual transitioning of certain HIV/AIDS services to the host Government.
However, recent economic challenges threaten the ability of the country and states to allocate adequate resources for the effective takeover of HIV/AIDS services at the health facility level - a situation exacerbated by the shrinking fiscal space for health resulting from falling Government revenue caused by dwindling oil prices.
[1] NASA 2013: National AIDS Spending Assessment 2013.
**Description:** To complement Government spending on HIV/AIDS, the USAID funded Management Sciences for Health ProACT project supported Zamfara State to develop resource mobilization implementation plans in two pilot health facilities to increase funding for HIV/AIDS.
This plan which responds to and is aligned with the State Strategic Health Development Plan was developed on-site over a five day period and represents the aspiration of the facility management team.
It focuses on identifying the activities and resources needed to sustain transitioned HIV/AIDS services, mapping the sources of resources, systematically mobilizing resources from identified philanthropists and private sector, as well as managing resources efficiently.
**Lessons learned:** The State Ministry of Health was involved in the plan's conceptualization and development. This participatory approach enabled capacity transfer to the State actors. The innovation also stimulates the full participation of communities - a key element of country ownership.
As a result, across the two facilities; 11,750 USD was mobilized within three months to close the financial gap and these funds have since been used to procure laboratory reagents to serve as seed stock for the laboratory revolving fund.
**Conclusions/Next steps:** Countrywide, Government is mobilizing more resources to support the HIV/AIDS response. As States pursue this path, they are trying out innovative mechanisms. The concept of the facility resource mobilization plan should be backed by Government policy and scaled up to other health facilities as it has the potential to realize a sustainable HIV/AIDS program.

## TUPEE585

### IMPLEMENTING A CONCEPTUAL FRAMEWORK FOR STIMULATING DOMESTIC FINANCING FOR HIV/AIDS RESPONSE: A MULTI-SECTORIAL FINANCING SOLUTION

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**Background:** Nigeria has the second largest burden of HIV/AIDS in the world (approximately 3.4 million infected) and external financing accounts for over 75% of its HIV/AIDS resources. In order to close the resource gap, USAID's Health Finance and Governance (HFG) project supports selected states (Lagos, Akwa Ibom, Rivers and Cross River) in Nigeria to implement a set of HIV/AIDS financing interventions.
**Description:** The HIV/AIDS domestic resource mobilization initiative is based on a framework of five related and concurrent interventions:
1) resource planning (how much do we need and why?);
2) resource mobilization (how do we raise the money and from where?);
3) resource allocation (how do we program to achieve technical and allocative efficiency?);
4) resource tracking (how do we demonstrate accountability); and
5) resource utilization (how do we demonstrate value for money?).
Interventions implemented so far include HIV/AIDS financial and gap analysis, high level advocacy for budget allocation and disbursement, HIV/AIDS resource mobilization strategy development and HIV/AIDS resource tracking. Such interventions are commonly implemented individually but HFG is employing a holistic, multi-sectoral approach engaging a range of stakeholders and building skills from advocacy through to demonstrating value for money such that each year's program can effectively be used as advocate for budget increases in the next year.
**Lessons learned:** Following the HFG interventions, supported states significantly increased allocation to HIV/AIDS response. In the last year, Lagos and Cross River states increased their HIV/AIDS allocations by 39.5% and 24.1% respectively, overcoming the widely held notion that HIV/AIDS funding is the exclusive domain of development partners. Governments of the intervention states are committed to the HIV/AIDS response but continued advocacy, coordination, planning, financial management and evaluation are needed.
**Conclusions/Next steps:** Implementing the HIV/AIDS domestic financing framework demonstrates potential for stimulating domestic financing to narrow the HIV/AIDS resource gap and achieve long term sustainability. If applied to the entire health sector, this model could stimulate improved financing for the sector which in turn would produce further increases in HIV/AIDS financing.

## TUPEE586

### THE GLOBAL HEALTH INITIATIVE INFLUENCE OVER THE EXISTENCE AND ROLE OF CIVIL SOCIETY ORGANIZATION IN HIV CONTROL IN INDONESIA

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**Background:** Foreign grants for HIV-AIDS programs in Indonesia have been part of the Global Health Initiatives (GHI). Results from previous researches related to the GHI showed that the GHI not only brings positive impact but also negative ones towards the healthcare system in grant-receiving countries. The role of CSO in AIDS programs in Indonesia in the future becomes important considering the diminishing funds from the GHI will surely threaten the continuity of existing programs. Therefore the objective of this research is to understand the influence the GHI has over the existence and role of CSO in HIV-AIDS response in Indonesia.
**Methods:** A qualitative approach was developed using interview guides and self-assessment matrixes that are specifically used to answer the research objectives. The information gathered are about the existence and role of CSO in HIV-AIDS programs in Indonesia both in their partnership with the GHI, policy development, providing healthcare services and references along with advocacy activities. Twenty three CSOs, ten regional institutions and five GHI where interviewed in six Indonesian cities with CSOs working in the field of HIV and AIDS.
**Results:** The GHI has played an important part in providing insights and benchmarks for the government and CSO so that HIV-AIDS programs especially those related to healthcare services and prevention had developed swiftly and had been accepted by the general public for the past year. The dependency of HIV-AIDS programs to the donors affected the work orientation of CSO so that they are trapped in short-term projects. Only a few CSO are preserving the organizational value and culture as the core spirit of their every movement and organization program. The lack of knowledge management and learning from the works done made the CSOs seem to make fewer contributions to theories of change in human development especially for their assisted groups.
**Conclusions:** Findings from this research indicates that aside from the highly important role that the GHI holds for HIV-AIDS response efforts in Indonesia, the influence GHI holds towards the existence and role of CSO is extraordinarily strong, it can even affect the foundation, vision, mission, and objective of the CSO.

## TUPEE587

### MERCOSUR JOINT PRICE NEGOTIATIONS: A TOOL TO INCREASE ACCESS AND SUSTAINABILITY OF AIDS PROGRAMMES

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**Background:** In June 2015, in Brasilia, the Ministers of Health from MERCOSUR (Argentina, Brazil, Uruguay, Paraguay and Venezuela) and Associated States (Bolívia, Chile, Colombia, Ecuador, Peru and Suriname) issued a Declaration concerned about the soaring costs of medicines. One issue was the price disparity in Latin America and its impact on access, in particular medicines for HIV/AIDS and hepatitis. In the Declaration they mandated a working group (WG), comprised of representatives from MOH from MERCOSUR, to identify alternatives and opportunities to address this issue, especially joint negotiation schemes.
**Description:** In September 2015, the Ministers of Health signed an agreement to established an *Ad Hoc* Committee for Joint Price Negotiation for Medicines. It established that:

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1) the countries would jointly negotiate the prices of selected medicines by pooling their demands;
2) the pharmaceutical companies should provide the same price for all countries;
3) the ceiling price would be the lowest price applied to any country in Latin America;
4) the purchase and distribution of the selected medicines would be made through the Pan-American Health Organization (PAHO) Strategic Fund.

**Lessons learned:** The first round of negotiations took place in Paraguay in November 2015. It focused in Darunavir and Sofosbuvir, Simeprevir and Daclatasvir. In relation to DRV the price reduction was of more than 83% for some countries, amounting for a total estimated saving of US$ 20 million. Regarding Sofosbuvir, Simeprevir and Daclastavir, medicines for Hepatitis C, the negotiation is still on-going, since the pharmaceutical companies' didn't provide adequate prices. The expectation is to have another round of negotiations. It was proven that the mechanism shown results for single-source medicines that usually are less likely to obtain price reductions.

**Conclusions/Next steps:** This 1st Round of Joint Negotiation highlighted the medicines price disparity in Latin America, but also demonstrated that pooling demands and standing together can result in significant price reductions. It also contributes to increase access and to the sustainability of the national health system. Additionally, it has reaffirmed the importance of PAHO's Strategic Fund as a cooperative mechanism that can enable countries to get fairer and more homogeneous prices for the countries in the Region.

## TUPEE588

### SHOULD SOUTH AFRICA INTEGRATE HIV FINANCING INTO NATIONAL HEALTH INSURANCE, AND HOW? A FRAMEWORK-DRIVEN APPROACH TO FACILITATING POLICY DIALOGUE

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**Background:** As South Africa prepares to implement National Health Insurance (NHI), the National Treasury and the National Department of Health are exploring how to incorporate funding for the country's HIV program—which accounts for nearly 30 percent of government spending on primary health care (PHC)—into a future NHI Fund. To help policymakers consider various approaches to financially sustaining the country's HIV response, we conducted a feasibility study of integrating HIV and other health financing.

**Methods:** First, we characterized South Africa's health financing system, including the extent of integration across the financing functions of revenue collection, pooling, and purchasing. Second, we constructed five integration scenarios ranging from the devolution of health funds to the creation of a national PHC fund. Each scenario contained a distinct configuration of health financing pools and governance arrangements. Third we evaluated the scenarios' likely impact—their effect on the HIV response, PHC services, and health system efficiency—and legal, political, and technical feasibility. For these three steps we reviewed relevant literature and government documents and data, as well as interviewed senior officials responsible for HIV and PHC services, NHI policy design, and social sector spending. Finally, we convened policymakers to discuss findings and identify options for further study and possible implementation.

**Results:** The exercise illustrated a useful analytical and consultative process to scoping policy options by combining a theory-driven approach to understanding financing integration with a practical application to ongoing policy debates in South Africa. We charted different pathways available to policymakers for integrating HIV and other health financing, as well as highlighted potential drawbacks of altering the status quo. The scenarios captured considerable variation in both their feasibility and impact on health system performance. Without recommending any one scenario, we provided a useful foundation for debate and planning among senior officials.

**Conclusions:** We demonstrated that a consultative process to develop financing integration options tailored to country context can advance policy dialogue at the most senior levels of government. We will next apply lessons from South Africa to adapt the consultative process and assessment framework to Kenya and other countries working to sustain their HIV programs.

## TUPEE589

### AN INNOVATIVE OPPORTUNITY TO TAP: USE OF DOMESTIC RESOURCES FOR HIV RESPONSE HEALTH CARE FINANCING IN TANZANIA

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**Background:** In low- and middle-income countries, national health systems face financial sustainability challenges as donor funding declines. Donor dependence is particularly high for HIV programs including Tanzania. In Tanzania combined donor assistance to HIV programs amounted to average of 95% of total HIV funding every year. The NHIF and CHF together cover 5,867,140 beneficiaries, which is approximately 13.6% of the total population in the mainland (MOHSW 2012).This shows that direct support from the government is at 5% excluding in-kind or indirect costs such as infrastructure, human resources, transport as well as health system.
Management of HIV has long-term implications for treatment costs as it requires medical attention in patients' lifetime. Also, as an infectious disease, it requires sustained financial resources for prevention. To address potential non-donor funding resources for national HIV responses in Tanzania, Deloitte Tanzania TUNAJALI (USAID/PEPFAR Project) introduced resource mobilization interventions using domestic sources in Dodoma Regional Hospital as a pilot site by collecting funds from HIV clients using National Health Insurance Fund and Community Health Fund. This intervention was initiated as alternative source of revenues needed to complement government efforts.

**Description:** The alternative source of fund was collected and measured using service statistics data collected during client's visits in their HIV Care Service point (CTC). The revenues collected was utilized for medical supplies and other related services.

**Lessons learned:** The NHIF and CHF fund for 2015 was collected through 3,711clients' visits amounting to USD 64, 285.17. About 13% of the total fund used for care and treatment service at Dodoma Regional Hospital is now obtained from own source. The table below narrates two year activities.

| Period | Visits | Visits with NHIF/CHF | Revenue collected (USD $) |
|---|---|---|---|
| Jan-Dec 2014 | 14279 | 784 | 3,570.12 |
| Jan-Dec 2015 | 20386 | 3711 | 64,285.17 |
| Total | 34665 | 4495 | 67,855.29 |

*[Number of CTC clients visits and revenue collected Jan 2014 - December 2015]*

**Conclusions/Next steps:** Stepping the pace for domestic resources is vital for continued health related HIV outcomes. Health Facilities may use funds from NHIF and CHF for health service provision and improve retention of the PLHIV.

## TUPEE590

### IS PEPFAR FUNDING MOVING FROM INTERNATIONAL TO LOCAL? ANALYSIS OF FUNDING FOR IMPLEMENTING PARTNERS IN PEPFAR COUNTRIES/REGIONS, 2007-2015

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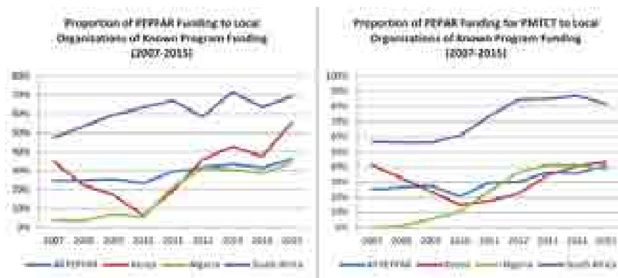
**Background:** Critical to PEPFAR's ability to achieve long term gains in controlling the HIV epidemic is creating sustainable local responses and increasing country ownership. This analysis looks at PEPFAR funding between 2007-2015, stratified by international or local implementing partner.

**Methods:** Utilizing amfAR's Country Operational Plan (COP) Database, we categorized all implementing partners who have received at least $1 of funding in any year between 2007 and 2015 as "International", "Local", "US government (USG)", or "unknown (NA)". Data were broken out by country, year, organizational type, funding agency, program area, and budget code.

**Results:** Over the 2007-2015 period, the proportion of total COP funding directed to local organizations increased from 21% to 29%. Of funded local organizations, 50.65% were NGOs followed by Host Country Governments (29.36%). Funding for international organizations proportionately decreased from 64% in 2007 to 50% in 2015, largely driven by a subset of countries that receive the majority of PEPFAR funding, including South Africa, Kenya, and Nigeria. This shift also occurred in some service areas, including prevention of mother to child transmission. Nevertheless,

in only a handful of countries (n=5) was the plurality of 2015 funds provided to local organizations, and in only 6 did local organizations receive greater funding than international organizations.



[Figure 1]

**Conclusions:** The extent to which PEPFAR, and other international HIV donors, increase country-level capacity is essential for achieving sustained control of local HIV epidemics. Our analysis provides firm evidence that PEPFAR has begun to shift funding from international to local organizations. However, most funding overall remain channeled to international organizations. Continued tracking of such shifts will be important for assessing future prospects for sustainability of the local HIV response.

## TUPEE591

### SUSTAINABILITY OF THE PROGRAMS IN FIGHTING AIDS IN SERBIA WHICH WERE CONDUCTED WITHIN ROUND 1, ROUND 6 AND ROUND 8 AFTER ENDING OF PROJECTS FUNDED BY THE GLOBAL FUND

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**Background:** Global Fund approved for Serbia financing of the following HIV projects:
2002, Round 1 - 3.575.210.00 USD
2006, Round 6 - 9.557.094 EUR
2009, Round 8 - 12.406.231 EUR
All projects were five-year projects and were closed down in 2014. Through funds from Global Fund overall national response to the HIV epidemics had been financed, including the creation of two five-year national strategies. The only remaining activity that the government continuously financed itself was the procurement of medicines for ART.
During the year following the withdrawal of GF from Serbia, the majority of activities realized through project funds ended.
**Description:** Activities in fight against HIV which the GF financed during its 12 - year presence in Serbia were expected to continue within the framework of National AIDS Response.
In 2014, a closeout period was carried out aimed to finalize the ongoing projects and to create the exit strategy through which the implementation of activities would be transferred to the stakeholders in the country. However, after close out period, nearly all the ongoing activities discontinued.
By the end of 2015, not a single NGO (out of more then 30 organisations that were carrying out activities of the project in Serbia) continued its work previously performed in the GF project. (Except few organizations which were granted small programs by the local community).
**Lessons learned:** Regretfully, the GF financed projects in Serbia did not include sound sustainability plans and proper exit strategies.
**Conclusions/Next steps:** When creating programs, Global Fund should consider long term trends of the national response that applying countries show in fight against HIV, to make sure that the funded activities are better fit into existing national response to the epidemics of HIV and that from the very beginning of the project implementation sustainability is incorporated as the most important aspect of the program in all the countries in which it finances programs in order to make sure that the national response will continue to exist even after the GF ends financing of these countries. Obviously this would require repositioning of the approach that the Global Fund currently has when evaluating national applications.

# NATIONAL FINANCING INITIATIVES

## TUPEE592

### PATIENT THANKSGIVING INITIATIVE AS A FUNDRAISING STRATEGY FOR MEETING PATIENTS' OTHER NEEDS: TASO RUKUNGIRI EXPERIENCE

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**Background:** The AIDS Support Organization (TASO) Uganda Limited has supported over 100,000 active HIV positive people to access Services Since 1987. TASO Rukungiri one of the centers started in 2005 and is supporting 15,617 active HIV positive persons. Over years there has been success in raising funds to support client's needs but the gap between centre demand and available resources remains high. TASO Centers were tasked by senior management to come up with initiatives aimed at increasing resource envelope to run other non donor funded activities.
**Description:** We identified different avenues from which thanksgiving to keep critical services running would be held namely; Center Annual General Meetings (AGM), candle light Memorial Day, World AIDS day, staff briefs and general staff meetings to mention but a few. Focal person was identified to request consent of clients to participate voluntarily in the initiative and also to keep track of collections from thanksgiving. Clients were also encouraged to give personal testimonies related to Living with HIV and to appreciate that there's no greater joy than seeing someone invest in something they deeply care about. Reports presented to the stakeholders for accountability and ways to utilize the funds are suggested by staff and clients. 35 thanksgiving events were held since January 2015 to January 2016.
**Lessons learned:** In one year (4th January 2015 to 31st January 2016), 1,170,950Ugandan shillings has been raised.
We have also noted increased willingness to give/donate at all TASO events.
The funds collected have enabled TASO Rukungiri to link 70 needy clients' households to community health insurance scheme and recruitment of more needy households continues.
The initiative has boosted the resource envelope for the centre to also give financial support to non-medically insured needy clients who fail to meet medical bills in case of admission.
**Conclusions/Next steps:** Strategies aimed at addressing financial constraints like patient thanks giving increase the resource envelope to meet clients' 'other' needs in resource limited settings.

## TUPEE593

### IMPACT OF DECENTRALIZED AND REDUCED GOVERNMENT FUNDING ON HIV/AIDS PROGRAM FOR MSM AND TG POPULATION IN INDIA

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**Background:** According to 2011 HIV Sentinel Survey, the national mean HIV prevalence among transgender people (8.8%) and men who have sex with men (4.4%) was about 10-20 times greater than that among the general population. However a shift from centralized to decentralized government funding mechanism has posed challenges in implementation of HIV prevention programs for MSM and TG.
**Description:** Until July 2014 all targeted interventions (TIs) received funds from State AIDS Control Societies (SACS) through National AIDS Control Organization (NACO). After NACO merged with health ministry in August 2014, funds were diverted to state treasuries instead of SACS. In Feb 2015, total budget for HIV/AIDS control was reduced by 22%.This resulted into reduced and delayed fund disbursements thus affecting delivery of services to the communities.
The Humsafar trust through GFATM R-9 MSA grant provides technical support to MSM and TG - projects in 10 states and 1 union territory. In 2015, it was observed that 11 projects in Assam, 4 in Nagaland, 2 in Jammu and Kashmir, 4 in Arunachal Pradesh, 3 in Himachal Pradesh and 8 in Uttaranchal had not received grants for more than 6 months. 7 TIs in Chhattisgarh, 3 in Chandigarh, 2 in Mizoram and 1 in Tripura received consolidated grants for 6 months in September 2015 covering only staff salaries.14 out of 16 projects in Haryana have been closed.
**Lessons learned:** MSM and TG interventions are managed by small NGOs and during fund crunches these NGOs continued working by taking loans from their board members and small corpus to sustain human resources and operational costs with lesser allocation towards service delivery.
**Conclusions/Next steps:** The states under consideration have hidden MSM and TG population who are hard to reach. TIs had successfully reached out to this population through outreach strategies. High turnover of staff especially peer educators

and outreach workers has affected outreach program and has increased risk of HIV transmission among MSM and TG population due to unavailability of prevention services. Timely and adequate disbursement of funds by states is need of the hour to implement HIV/AIDS prevention program for MSM and TG population.

## Transitional financing

### TUPEE594

#### Guiding principles for transitional financing: examining key features of donor-country agreements for sustainable financing of the HIV & AIDS response

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**Background:** As donor assistance for HIV plateaus and even decreases, low- and middle-income countries must start planning for a transition away from donor financing. One promising tool to promote financial sustainability and uninterrupted service delivery is a well-developed, explicit agreement between countries and donors outlining programmatic and financial responsibilities and specifying mechanisms for accountability. Such an agreement can be an important means of clarifying roles and ensuring that all actors deliver on commitments. The objective of our study is to establish key guiding principles for designing transition agreements to improve government and donor policies on agreements and ensure smooth and sustainable transitions.
**Methods:** The study utilizes grounded theory to analyze qualitative data gathered from 21 donor-country agreements and key informant interviews with stakeholders from PEPFAR, the Global Fund, the World Bank, and the MCC. We identified key features relating to the roles of donors and government, inputs for planning and budgeting, and mechanisms for accountability, to identify guidelines and processes that are salient to the HIV financing transition. For each feature, we analyzed current donor practice, identified a standard to follow, and developed a guiding principle.
**Results:** The broad guiding principles identified are:
1. Duration of agreement: set a standardized time period for all agreements
2. Actors involved: select a key financing or high-level political authority as the country signee
3. Financing targets: specify domestic and external commitments for the duration of the agreement
4. Inputs for target setting: ground financing commitments in country strategies, quantitative approaches, and country dialogue
5. Monitoring and evaluation: identify expenditure tracking tools and processes to monitor financing commitments
6. Potential consequences: specify mutual consequences for not meeting commitments
**Conclusions:** The guiding principles provide a clear course for the development of donor-country agreements for sustainable financing for HIV. To strengthen the guidance, we are undertaking an analysis—complete in May 2016—of the HIV transition in Namibia, to identify successes, challenges, and lessons learned that can be extrapolated to other transition settings and used to ground the guidance in country experience. Our findings will help enable more smooth and sustainable HIV transitions moving forward.

## International assistance, frameworks and funding mechanisms

### TUPEE595

#### Diagnostics at a discount? An analysis of tiered pricing for HIV diagnostics

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**Background:** Most people living with HIV do not reside in the same countries where technologies for combatting HIV/AIDS are produced. In order to account for the differential ability of consumers across the globe to pay for important health products, firms might employ strategies of tiered pricing. In this analysis, I sought to determine whether national income is associated with the price at which diagnostics to detect HIV are purchased.
**Methods:** Transactional data were obtained from the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria for purchases of HIV tests by recipient countries from 2005-2015. Examining the distribution of prices for HIV tests, I constructed three tiers to reflect purchases made at low, middle, and high prices. I employed an ordered logit model to determine whether gross national income per capita is associated with purchasing diagnostics at each price tier. As covariates, I included national HIV prevalence, purchase volume, whether diagnostics were procured directly from the manufacturer, whether freight costs were embedded in the price, and the year of purchase.
**Results:** Prices for diagnostics to detect HIV varied considerably. On average, HIV tests purchased at a low price tier cost 0.48 USD per test ($SD$=0.26). At a middle price tier, HIV tests cost 1.00 USD per test ($SD$=0.18) and at a high price tier, HIV tests cost 4.19 USD per test ($SD$= 9.30). As national income increases, recipients of Global Fund assistance are more likely to purchase HIV tests at low prices (p< .05) and are less likely to purchase HIV tests at high prices (p< .05).
**Conclusions:** Contrary to expectation, I did not find evidence that HIV tests are differentially priced to account for the varying ability of consumers to pay for these products. Rather, it appears that low-income countries are less likely to purchase HIV tests at low prices and that as income increases, countries are more likely to purchase HIV tests at low prices. Despite arguments that strategies of tiered pricing could enhance access to important health products while preserving profits, these findings suggest that such strategies do not dominate global pricing for HIV tests.

### TUPEE596

#### Most impacted least served: meaningful engagement of transgender people in Global Fund processes

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**Background:** Globally transgender people are vigorously affected by HIV/AIDS. Social stigma, punitive laws, lack of community friendly services and resources, less or no opportunity for being in the decision making process made them unserved regarding HIV response. A global study, undertaken by IRGT, A Global Network of Transgender Women and HIV, has helped to identify the extensive barriers to address transgender specific needs in HIV epidemic and what has been the mechanism undertaken for engaging transgender people by key donors such as Global Fund.
**Methods:** Apart from study and literature review, semi-structured interviews were conducted with transgender community activists from different parts of the globe, data were collected from civil society organization (CSO) representatives, and officials from the Global Fund and other major HIV donors. The study has unfolded the different needs and challenges faced by the transgender community throughout the globe, the current scenario of the HIV epidemic among the transgender population and also the strategies adopted by the key donor agencies.
**Results:** Five key findings revealed in interviews around the meaningful engagement of transgender people in Global Fund processes,
1) Data collection with and among trans people;
2) Tokenistic engagement of trans people in Global Fund processes;
3) Capacity-building, organizational development, and social support;
4) Global Fund withdrawal from middle income countries; and
5) Critical role of global and regional networks of trans advocates.
**Conclusions:** In recent years, Global Fund initiated activities to increase the meaningful engagement of transgender people in their programme implementing process. Five recommendations listed to ensure more meaningful engagement of transgender people are -
1) Support trans-specific data collection and engagement
2) Recognize and reinforce the engagement of trans activists and organizations as technical and community experts contributing to Global Fund processes
3) Ensure that Global Fund withdrawal from middle income countries does not undermine trans programming and engagement
4) Reinforce capacity and development of trans activists and organizations and
5) Finance and work with global and regional trans networks to increase the meaningful
engagement of trans people, improve gender sensitivity, and advance policy change

## Effect of health insurance schemes and other support models on access, adherence, and outcomes

### TUPEE597

### Public and private sectors collaboration for increased access to treatment

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**Background:** The National AIDS Council utilises 50% of its AIDS Levy income on treatment and care, which include procurement of ARVs. These ARVs have been available for free, even to workers whose medical aid covers ARVs. Unfortunately, due to self stigma and lack of time to present at public facilities, workers would be forced to rely on medical aid, and in this process have to pay additional costs after busting medical aid limits due to high prices in the private sector.
**Description:** Noting these challenges, the National AIDS Council and its partners initiated a partnership called ***Increased Access to Treatment***, wherein NAC procures comparatively cheaper ARVs in bulk. The ARVs are stored at the National Pharmaceuticals Company, and accessed by private pharmacies and doctors. There is a small mark up percentage charged along the chain, taking the price from US$10 at importation to below US$17 retail.
Effectively, this arrangement has reduced the price of ARVs on the private scheme from at least US$70.00 per person per month to not more than US$17.00 for the TLE combination. The National AIDS Council invested US$1,5 million at the start of the partnership and has now recovered USD1 million, which is the past was considered spent money. The recovered amount has been re-invested into procurement of new drugs. Over 100 pharmacies across the country are currently participating, with opportunities for growth as new pharmacies join in.
**Lessons learned:** Patients on medical aid are unlikely to exhaust their annual drug limit. The productive capacity of the patients is improved as they no longer wait long hours queuing for treatment in public facilities, while decongesting public facilities. At the same time national resources are saved as funders reduce expenditure on ART prescription. Additionally, the initiative addresses stigma and discrimination as clients on medical aids access services in confidential circumstances. As a domestic and sustainable funding system, the initiative has enabled the underfunded NATPHARM to raise over USD150, 000 in administration fees.
**Conclusions/Next steps:** Public and private sectors collaboration has increased domestic funding contribution to treatment and created an opportunity for funding other essential drugs for cancer and TB.

## Effects of financial crises

### TUPEE598

### Effects of the introduction of cost-sharing in HIV treatment due to donor funding reduction on the people living with HIV (PLHIV) utilizing antiretroviral clinics in Ibadan, Nigeria

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**Background:** The donor agencies are largely responsible for the costs of antiretroviral treatment (ART) - laboratory investigations and medicines - in Nigeria and other developing countries. This resulted from advocacy by global civil societies including the community of PLHIV. The downturn in global economy and changing policies in the western countries led to the scaling down of support for free treatment. This resulted in the introduction of cost-sharing for laboratory investigations while ART medicines remain free in Ibadan ART centres. This study explored the effects of cost-sharing for HIV/AIDS treatment on PLHIV utilizing such ART services.
**Methods:** This qualitative study was conducted among PLHIV in 5 ART Centres (3 paying and 2 non-paying) in Ibadan. Using a developed Guide, 2 Focus Group Discussions (FGD), 1 male and 1 female, were conducted per centre. The discussions explored the effects of cost-sharing on PLHIV in facilities that introduced payment for investigations. Data were analysed using the thematic approach.
**Results:** The mean age of participants was 40 years. Three ART Centres introduced cost-sharing 4-10 months before this study. PLHIV part-paid for biochemical and hematologic investigations and purchased opportunistic infections medicines. The ART medicines and virologic/ immunologic investigations remained free. The policy was 'no cost-sharing for laboratory investigations, no free antiretroviral medicine'. The costs paid was 2000 - 12000 Naira ($7- $45) in anual, biannual or monthly installments. Children paid 500 Naira ($2.5) monthly in one centre. Following cost-sharing introduction, PLHIV reported widespread payment difficuties resulting in drastic changes in treatment quality; strained caregiver/PLHIV relationships; hopelessness and depression; increased loss to follow-up; irregular clinic attendance; delayed treatment initiation among new PLHIV; worsening clinical conditions and increasing deaths. Difficulties with paying resulted from poverty, unpreparedness for the change, non-disclosure to potential supporters, and spousal refusal to assist. There seems to be no gender differences in their experiences. PLHIV requested the government to sustain free services, or provide realistic economic empowerment.
**Conclusions:** The introduction of cost-sharing due to dwindling donor funding is causing disruptions in ART services and impacting adversely on the PLHIV. The governments need to intervene promptly with alternative funding mechanisms to curb the emerging public health crisis.

## Economic evaluation of prevention, treatment, and/or care programmes

### TUPEE599

### Patient costs of antiretroviral treatment for men who have sex with men (MSM) in Jiangsu province, China

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**Background:** China's National Free Antiretroviral Therapy program has treated about 420,000 people living with HIV/AIDS since 2002, reducing mortality from 10.7% in 2010 to 5.6% in 2015. The cost-effectiveness of ART encouraged the Chinese government to scale up free ART. However, little data on costs of ART beyond free first and second-line medicine for patients exist, especially among MSM who account for a growing proportion of the epidemic in China.
**Methods:** A cross-sectional survey on costs of ART was conducted in 2015 in three cities of Jiangsu province, China. MSM registered in the national ART management system and had taken ART for at least 1 year (initiated on or before December 31, 2013) were enrolled. ART clinic physicians contacted MSM and conducted a structured interview at the time of picking up medicine or at a scheduled appointment to collect information on patients' direct and indirect costs incurred in obtaining ART in 2014. Information of the direct costs included direct medical expenditure such as routine examination, medical care and costs of treating side-effects of drugs and AIDS-caused opportunistic infections (OI), and direct non-medical costs such as transportation costs. Indirect costs included patients'/family members' lost wages and lost jobs. Differences in costs between groups were compared using the Wilcoxon rank sum test. In a generalized linear regression model, total costs were log-transformed.
**Results:** Of 1,003 eligible MSM identified, 845 were interviewed. Median age was 36 years, median monthly income was between 313-781 USD. 83.5% had insurance. Viral load was < 1000 copies/uL for 94.2% in 2014. The overall annual median cost of ART for MSM was 146 USD (IQR: 84-340).Main expenditures were from direct medical costs (88USD, IQR 57-200), followed were direct non-medical costs (13 USD, IQR 3-38). No indirect costs were paid by patients and their family members. Generalized linear regression found total patient cost of ART significantly higher early in treatment (F=48.52, P<0.0001) and in those with OI (F=39.63, P<0.0001).
**Conclusions:** Most MSM paid less than 150 USD per year to obtain ART in Jiangsu province, China. Our findings suggest that expansion of earlier HIV treatment among Chinese MSM is financially feasible to the patient.

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## TUPEE600

### POTENTIAL COST SAVINGS IN REDUCING ANTIRETROVIRAL REFILL SCHEDULES FOR STABLE PATIENTS ON ANTIRETROVIRAL THERAPY AT TASO, UGANDA

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**Background:** TASO runs antiretrovirals (ARV) refill appointment for stable clients after monthly, bi-monthly and quarterly periods. This was implemented after noting an increase in patients who would attend at random for refills. These routine refill appointments were aimed to reduce the frequency of client attendance for drug refills and clinical checkups for stable patients on ART. TASO examined the potential cost savings during two, three month and 6 month refill schedules to refill patients' ARVs.
**Methods:** We identified the drivers of treatment costs per patients in TASO, which included staff wages, operational costs, medications, laboratory and training costs. A baseline cost was computed per patient using an average cost per visit based on 2012 cost analysis of $38.86USD per visit. The average patient visited TASO for ARV refill 6 times per year. This cost was used to estimate an annual cost of treatment based on the three frequencies of ARV refill. A stable patients is one who has disclosed serostatus, reports excellent adherence level and an CD4 above 350 cells/ml.
**Results:** For 2 month refill period based on six visits per patient per year will cost USD$233, three (3) months refill assuming reducing visit per patients from six to four per year with 33% savings in staff and operational costs based on the drivers of treatment costs identified above will cost USD $189, six (6) months refill assumes reducing visits per patients from four to two with 50% saving in staff and operational costs based on the cost drivers identified will cost US $146.
**Conclusions:** Increasing the duration between ARV drug refill appointments for stable patients has the potential of reducing cost for caring of HIV infected patients throughout TASO Uganda centers and in sub-Saharan Africa. Reducing appointment frequency from 2 to 6 months should be investigated for long-term stable patients that are virally suppressed and report good adherence levels. Future research should be conducted to explore possible extrapolation of these findings to other sub-Saharan African countries.

## TUPEE601

### CLINICAL OUTCOMES AND COST-EFFECTIVENESS OF ART MONITORING IN MOZAMBIQUE: CLINICAL, LABORATORY CD4, POINT-OF-CARE CD4 AND VIRAL LOAD STRATEGIES

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**Background:** Point-of-care CD4 tests (POC-CD4) expedite clinical decision-making but can be less accurate/precise and more expensive than laboratory CD4 (LAB-CD4). We examined the clinical and economic impact of POC-CD4 in Mozambique to monitor for ART failure, since HIV RNA is not widely available.
**Methods:** We used a validated model to simulate a cohort of HIV+ adults at ART initiation. Patients were monitored clinically (CLIN), with annual CD4 tests (LAB-CD4 or POC-CD4), or HIV RNA (VL). We examined 2 settings: without laboratories (POC-CD4 vs CLIN) and with laboratories (VL vs POC-CD4 vs LAB-CD4). The cohort was 63% female, mean age 30y (SD 10y), and median CD4 166/µl (IQR 78-226/µl). Table (left side) provides strategy-specific parameters. Model outcomes included life expectancy (LE), lifetime medical costs (both discounted, 3%/yr), and incremental cost-effectiveness ratios (ICER, $/year of life saved(YLS)). We varied POC-CD4 costs, test characteristics, time to adherence intervention or regimen-switch in sensitivity analyses. We considered ICERs < $600/YLS (2013 Mozambique *per capita* GDP) to be cost-effective.
**Results:** Without laboratories, projected LE increased from 11.68y (CLIN) to 12.96y (POC-CD4); lifetime costs increased from $3,860 (CLIN) to $4,580 (POC-CD4); the ICER was $560/YLS (Table, right side). Even at higher POC-CD4 costs or with delayed time lag, POC-CD4 remained near the cost-effectiveness threshold and improved outcomes compared to CLIN. With laboratories available, LE was 12.83y (LAB-CD4), 12.96y (POC-CD4), and 13.34y (VL); lifetime costs were $4,400 (LAB-CD4), $4,580 (POC-CD4), and $5,170 (VL), resulting in similar ICERs of $1,440/YLS and $1,550/YLS. At higher POC-CD4 costs, poorer POC-CD4 test characteristics, or longer POC-CD4 time-lags, POC-CD4 was dominated (reduced LE, higher costs); the ICER of VL vs LAB-CD4 decreased ($1,520/YLS).
**Conclusions:** POC-CD4 monitoring for ART failure improved clinical outcomes and was cost-effective in settings without laboratories. With laboratories available, ICERs of POC-CD4 and VL were similar (vs LAB-CD4); investments in VL should be prioritized.

| | Strategy | Model Input Parameters | | | | Model Output | | |
|---|---|---|---|---|---|---|---|---|
| | | Bias (%) | Precision (%) | Test cost ($) | Time lag* (months) | Life Expectancy (years) | Cost ($) | ICER ($/YLS) |
| No lab | CLIN** | N/A | N/A | N/A | 0/0 | 11.68 | 3,860 | - |
| | POC-CD4† | -4 | 19 | 13 | 1/11 | 12.96 | 4,580 | 560 |
| | SA: POC 2x cost | | | 26 | | 12.96 | 4,770 | 710 |
| | SA: POC +3m time lag | | | | 4/14 | 12.83 | 4,500 | 580 |
| Lab | LAB-CD4† | 0 | 15 | 10 | 4/14 | 12.83 | 4,400 | - |
| | POC-CD4† | -4 | 19 | 13 | 1/11 | 12.96 | 4,580 | 1,400 |
| | VL†† | 0 | 0 | 31 | 4/14 | 13.34 | 5,170 | 1,550 |
| | SA: POC 2x cost | | | 26 | | 12.96 | 4,770 | DOM |
| | SA: POC test characteristics | +20 | +25 | | | 12.90 | 4,600 | DOM |
| | SA: POC +3m time lag | | | | 4/14 | 12.83 | 4,500 | DOM |

Abbreviations: ICER, incremental cost-effectiveness ratio; YLS, year of life saved; CLIN, clinical strategy; POC-CD4, point-of-care CD4 strategy; LAB-CD4, laboratory CD4 strategy; VL, HIV RNA; N/A, not applicable; SA, sensitivity analysis; m, months; DOM, dominated (lower life expectancy, more costly).

* Time lag to adherence intervention / time lag to regimen switch.
** ART failure defined by a WHO Stage IV opportunistic infection occurring >12 months after ART initiation.
† ART failure defined by clinical criteria or if annual CD4 is <nadir, <100/µl or <50% of peak CD4 >12 months on ART; a 2nd confirmatory CD4 test was performed the following month if the 1st CD4 detected ART failure.
†† ART failure defined by clinical criteria or if annual HIV RNA is >setpoint, or >1,000 copies/µl.

*[Table 1. Projected clinical outcomes and cost-effectiveness of different monitoring strategies (white areas represent base case inputs and results; shaded areas are sensitivity analyses)]*

## TUPEE602

### HOW DOES THE COST OF PATIENT CARE CHANGE WITH THE INTRODUCTION OF ROUTINE VIRAL LOAD MONITORING? A MICRO-COSTING STUDY FROM KENYA

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**Background:** This paper evaluates the impact of introducing routine viral load monitoring (RVLM) at 6, 12, and 18 months on the cost of care for patients receiving antiretroviral therapy. Patient-level data come from a clinical trial of RVLM in Kenya (CLADE study).
**Methods:** A micro-costing approach, based on detailed patient medical records, was used to evaluate the costs of care (2012 $US) for each patient in each study arm through their first 18 months on ART (the per-protocol groups; Arm A: no RVLM, n = 336; Arm B: RVLM, n=321). Resources included in costs were ARV and non-ARV drugs, diagnostic tests, staff, and clinic fixed costs. The year 2012 is used for the costing analysis because the majority of patient follow up was during 2012. The unit cost of a viral load test in 2012 was $52.94, and the cost of a CD4 test was $9.41.
**Results:** Table 1 reports the average quantity of key resources used for patients in each study arm. Table 2 reports average costs of care for patients in each study arm.

| | Arm A (no RVLM) | Arm B (RVLM) | Difference (Arm B - Arm A) |
|---|---|---|---|
| Number of CD4 tests | 3.3 | 3.1 | -0.2 |
| Number of viral load tests | 0.08 | 3.9 | 3.82 |
| Number of visits patient seen by Doctor | 2.2 | 2.2 | 0.0 |
| Number of visits patient seen by Clinical Officer | 11.6 | 12.2 | 0.6 |
| Total months of first-line ARV regimens (3 most common below) | 19.7 | 19.3 | -0.4 |
| (#1: Fixed dose combination: D4T 30mg/3TC 150mg/NVP 200mg) | 6.0 | 5.3 | -0.7 |
| (#2: Fixed dose combination: AZT 300mg/3TC 150mg /NVP 200mg) | 5.4 | 6.1 | 0.7 |
| (#3: 2 pill combination: AZT 300mg/3TC 150mg + EFV) | 3.9 | 3.9 | 0.0 |
| Total months of second-line regimens | 0.1 | 0.6 | 0.5 |

*[Average quantity of resources by study arm (full list of all resources included in the analysis is available from the authors)]*

| | Arm A | Arm B | Mean Difference | 95% Confidence Interval |
|---|---|---|---|---|
| Average cost per patient | 432 | 641 | 209 | 191, 228 |
| Of which: | | | | |
| ARV drugs | 147 | 150 | 3 | -8, 14 |
| OI drugs (Septrin/Dapson) | 10.6 | 10.6 | 0 | -0.19, 0.14 |
| CD4 tests | 31 | 29 | -2 | -3.2, -1.3 |
| Viral load tests | 4 | 209 | 205 | 195, 214 |
| Other diagnostics | 36 | 35 | -1 | -3.5, 0.2 |
| Total staff | 130 | 136 | 6 | -0.64, 12.7 |
| Fixed costs | 73 | 73 | 0 | Not relevant |

*[Average costs per patient (2012 USD) by study arm]*

**Conclusions:** Over the first 18 months on ART, RVLM increased the cost of care (basically the unit cost of the test times the number of tests). As the costs of viral load testing continues to decline and RVLM largely replaces CD4 monitoring, the additional cost of RVLM on the costs of patient care will decline substantially. Future research is needed to address cost and health outcomes over a longer period of time.

## TUPEE603

### A better deal for mothers and children: modeling the cost-effectiveness of civil society organizations for delivering PMTCT services

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**Background:** Governments are considering contracting civil society organizations (CSOs), including faith-based organizations, to expand prevention of mother to child transmission (PMTCT) services. These organizations have well established working relationships with communities and marginalized populations, and have reported higher retention in care. However, there are few studies assessing CSOs' provision of health services in terms of value-for-money. This economic evaluation assessed the cost-effectiveness of CSOs and public facilities in Kenya in the provision of PMTCT services.
**Methods:** We use an activity-based costing approach, dividing PMTCT into six components: HIV counselling and testing (HCT), antiretroviral treatment (ART) for the mother, early infant diagnosis (EID), NVP and CTX prophylaxis for the infant and ART for the child. We developed probability trees of PMTCT services provided by CSOs and public facilities and modeled the progression from when a pregnant woman enters the health system through to the infant's HIV status after one year. We used actual costs for HCT and ART from Kenya and filled data gaps for some components using assumptions based on comparable reports of costs and effectiveness from various health interventions delivered by public facilities and CSOs.
**Results:** We estimated that PMTCT services per mother-child pair in Kenya cost US$ 433 in CSO facilities as compared to US$ 511 in public facilities. Overall, most PMTCT components were more costly in public facilities except for HCT. HCT cost US$ 19.05 per woman in CSOs and US$ 17.64 in public facilities. ART for mothers cost US$ 330.00 in CSOs and US$ 349.35 in the public sector. Preliminary calculations suggest that the incremental cost-effectiveness ratio (ICER) of CSO-PMTCT services compared to public PMTCT facilities is US$ 823.40 per life year saved.
**Conclusions:** The ICER of CSO-PMTCT services is below the per capita GDP of US$ 1,246, suggesting that contracting CSOs in Kenya is a highly cost-effective strategy for expanding coverage of PMTCT services. CSOs could have an important role to play in preventing mother-to-child transmission of HIV and achieving an AIDS-free generation.

## TUPEE604

### Costs and constraints in meeting ambitious scale up targets for pediatric and adolescent antiretroviral treatment in Kenya

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**Background:** The PEPFAR and Children's Investment Fund Foundation-supported Accelerating Children's Treatment (ACT) Initiative aims to double numbers of children and adolescents on ART in nine countries including Kenya. The Government of Kenya (GOK) aims to increase ART coverage in these two age groups from 25% and 36%, respectively, to 90% by 2019. The USAID- and PEPFAR-funded Health Policy Project analyzed the ART cascade from identification to retention in Kenya and estimated the resources needed to meet GOK/ACT targets.
**Methods:** Constraints and related responses along the cascade were addressed through qualitative data collected from 18 implementing partners (IPs). Outputs and financial data on ART service delivery and health systems strengthening activities were collected from seven IPs. Commodities costs for identification (including EID), laboratory monitoring, and antiretrovirals were based on recent prices under local Global Fund grants.
Authors estimated weighted average unit costs by age, cascade stage, and cost category. Disaggregated future targets by cascade stage and age group were projected using Spectrum and program data.
**Results:** IPs cited weak case identification and stigma as the greatest overarching barriersto ART scale-up and expressed concern that adolescents are falling through the cracks. The unit costs for essential treatment cascade activities funded by development partners are US$148, $90, and $81 per person for ages 0-23 months, 2-14 years, and 15-19 years, respectively. About 73-84% of costs are for treatment, 3-22% for linkage, and the remaining for identification. Linkage and identification costs were higher among children 0-23 months than other ages. Costs of antiretroviral regimens increase with age, from $104 per patient-year in patients ages 0-23 months to $140 for those 15-19 years. The total resource needs for essential cascade activities and commodities considered is estimated at US$74.8 million for calendar years 2016 and 2017.
**Conclusions:** Though ACT contributes significant supplemental funding above regular PEPFAR support, the costs of increasing identification and linkage to care are significant to meet expanded ART targets in children and adolescents. These costs outstrip forecasted resources in future years after the ACT initiative ends. Kenya must address implementation bottlenecks along the ART cascade and raise significant additional resources.

## TUPEE605

### Optimizing the response of HIV prevention and treatment: assessing efficiency of HIV interventions in Nigeria

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**Background:** As Nigeria faces dwindling resources for HIV, there is a need to optimize the use of resources in order to ensure scale up of HIV services as well as achieve national objectives and target. Unit cost estimates are essential for the better use of resources and information on the heterogeneity in the unit among interventions and across health facilities is critical to addressing inefficiencies. The aim of the Optimizing the Response of Prevention Treatment and HIV Efficiency in Nigeria (ORPTHEN) study is to measure costs and identify determinants of higher efficiency of HIV prevention and treatment programs.
**Methods:** The study was a retrospective, cross sectional, observational assessment in 200 sites across 17 states in Nigeria in 2015. The goal was to assess the total cost, average cost and determinants of efficiency for three HIV interventions: HIV counseling and testing (HCT), Prevention of Mother to Child Transmission (PMTCT) and Antiretroviral Therapy. Data was collected from primary, secondary and tertiary facilities in seventeen Nigerian states on inputs to HIV prevention services and their cost, outputs produced in 2013 fiscal year, the environment and constraints in which production decisions are made.
**Results:** The weighted average cost per HCT client tested was estimated at US$12.4, Cost per PMTCT client tested was US$19.3 and Cost per ART client was US$157. *The* major cost component for prevention interventions is staff while ARVs is the major cost component for ART. The study also revealed that characteristics such as scale of service provided and type of facility contributes to heterogeneity of costs.

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**Conclusions:** The result of the ORPTHEN study will be used by decision makers to improve efficiency of HCT, PMTCT and ART services in Nigeria. Nigeria is now conducting the OPRTHEN study for HIV Prevention interventions among Female Sex Workers to achieve higher efficiency in the delivery of HIV interventions to FSWs.

## TUPEE606

### THE COST OF VOLUNTARY MEDICAL MALE CIRCUMCISION IN SOUTH AFRICA

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**Background:** South Africa has a low prevalence of male circumcision. On the basis of compelling and overwhelming evidence that voluntary medical male circumcision (VMMC) reduces men's risk of becoming HIV infected through heterosexual intercourse, South Africa in 2010 embarked on scaling up its VMMC program. To project the resources needed for continued scale-up of VMMC services and ensure program sustainability, it is crucial to:
1. Estimate the unit cost to provide VMMC,
2. Assess cost drivers and cost variances across the provinces and different VMMC service delivery modes, and;
3. Evaluate the costs associated with mobilizing and motivating men and boys to access VMMC services.
**Methods:** Cost data were systematically collected and analyzed from 33 government and PEPFAR-supported (U.S. President's Emergency Plan for AIDS Relief) urban, rural, and peri-urban VMMC facilities from eight of South Africa's nine provinces. Unit costs were calculated from a bottom-up approach. All costs are reported in U.S. dollars.
**Results:** The cost per circumcision performed in South Africa in 2014 was $132, with the largest cost drivers being direct labor (43%), consumables (24%) and quality assurance/quality improvement (13%). The unit cost was higher when performed in public hospitals ($158), compared to health centers and clinics ($121). Direct labor costs could be reduced by 17% if South Africa were to encourage task shifting from doctors to professional nurses, which could have resulted in saving as much as $15 million in 2015, during which the country had set a target of performing 1.6 million circumcisions. About $14.2 million was spent on VMMC demand creation in 2014. Most of these costs were attributable to personnel, including community mobilizers (36%) and small and mass media (35%).
**Conclusions:** The VMMC unit cost ($132) in 2014 was generally consistent with other studies that analyzed VMMC unit costs in South Africa. VMMC demand creation requires further investigation to assess if the level of spending and the allocation of spending are appropriate for South Africa's VMMC program. The results of this study are expected to inform strategic planning for continued scale-up of VMMC and to identify the resources required to sustain the VMMC intervention.

## TUPEE607

### ESTIMATING OUT OF POCKET EXPENDITURES INCURRED BY CLIENTS OF VOLUNTARY MEDICAL MALE CIRCUMCISION IN SOUTH AFRICA

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**Background:** In 2010, South Africa embarked on scaling-up its voluntary medical male circumcision (VMMC) program based on compelling evidence that circumcision reduces men's risk of acquiring HIV infection through heterosexual intercourse. While VMMC is offered free-of-charge, there is concern that clients seeking VMMC services might be incurring some indirect out-of-pocket expenditures such as transportation cost or foregone income. Since these costs might pose challenges to increasing uptake of VMMC services within the target population, this study assessed costs from a client perspective in order to inform policies aimed at demand creation.
**Methods:** Cost and demographic data were systematically collected through 190 interviews conducted in 2015 with VMMC clients or their caregivers (in the case of minor clients) at 25 Government and PEPFAR-supported VMMC facilities in 8 of the 9 provinces in South Africa. All information on costs was gathered through in-person interviews. Average costs in U.S. dollars were calculated using a bottom-up approach.
**Results:** The main VMMC clients' out-of-pocket expenditure reported was transportation cost, with an average of US$ 9.20 (R 100), ranging from US$ 7.75 (R84) in Northern Cape to approximately US$ 14 (R152) in Mpumalanga. Lost days of work were reported by only 8 clients (4%). Other sources of indirect expenditures included costs of childcare or expenditures on miscellaneous items such as food or medicine, reported respectively by 1 and 20 clients.
While the average age of VMMC clients is 22 years, about 42% are < 18 years with the largest proportion of minor clients between 10-15 years of age (29%). Nearly 92% of VMMC clients are < 35 years.
**Conclusions:** The largest VMMC client out-of-pocket expenditure is transportation costs although there is considerable variation in costs between provinces. In 2011, poor and non-poor households in South Africa were able to spend respectively US$ 0.7 (R7) and US$ 5.8 (R63) daily on transportation.
Consequently, spending R100 on transport to access VMMC services could represent a significant burden to the expansion of VMMC demand creation. Child care expenses and lost income were not significant items identified by respondents, which was not surprising given the relatively young age of the VMMC clients.

## TUPEE608

### DOES INTRODUCTION OF PREPEX™ INTO AN EXISTING SURGICAL VMMC PROGRAM SAVE MONEY?

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**Background:** Researchers in South Africa participated in a demonstration study assessing the feasibility and acceptability of introducing the PrePex™ device for non-surgical voluntary medical male circumcision (VMMC). Devices, such as PrePex™, are intended to make the circumcision procedure quicker, simpler, and more cost-effective. This study aimed to derive the incremental costs of introducing PrePex™ into facilities where a surgical circumcision programme was already established and fully functioning.
**Methods:** Cost data were systematically collected through facility surveys and information provided by CHAPS. The contributions of the following cost categories to the unit costs were assessed: direct clinical labour, support staff, medicine and consumables, continuous quality improvement (CQI), overhead, training, equipment and vehicles. Per unit costs were calculated using a costing model employing a top-down approach. All costs were converted into US dollars at the 2014 exchange rate (R 10.83 = US $1).
**Results:** The overall unit cost was US$121.92 (R1320.41) prior to the introduction PrePex™ and US$117.46 (R1272.04) after the introduction of PrePex™. The cost per circumcision performed was lower after the introduction of the PrePex™ device because the total number of clients increased considerably, while the total expenditure incurred remained fairly constant.
The only increase in total expenditure was seen among medicines and consumables - total expenditure on medicines and consumables increased from US$ 238,565 (approximately R2.5 million) to US$ 255,491 (approximately R2.7 million), thereby resulting in a 7.1 percent increase in expenditure on medicines and consumables after the introduction of PrePex™. All other expenditures on equipment, overhead, CQI, and vehicles remained the same.
**Conclusions:** The introduction of PrePex™ into an existing surgical program did not increase the cost per VMMC. Results indicate that the introduction of PrePex™ in clinical settings where surgical VMMC is already taking place may not result in increased costs per unit since no additional equipment is required for the PrePex™ procedure and the additional costs of medicines and consumables is not expected to be significant. While additional clinical labour might be needed as the total number of VMMC procedures increase, since non-physicians can perform circumcisions using PrePex™, it is possible that these additional costs may also not be significant.

## TUPEE609

### THE IMPACT OF INTEGERATED PRODUCTION ON THE EFFICIENCY OF HIV PREVENTION SERVICES: ECONOMETRIC ESTIMATES FROM THE ORPHEA FOUR-COUNTRY SAMPLE

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**Background:** The widely shared ambition to greatly expand the provision of HIV prevention services in severely affected countries will be more affordable if national programs can achieve "economies of scale", so that total prevention costs expand less than proportionately with the expansion of prevention services. Another potential source of economies is the integration of multiple HIV services within a single facility in the expectation that the facility can achieve "economies of scope".
In a facility producing multiple services with shared personnel, these two sources of cost-savings are closely related, since the economies of scale of expanding any one service will typically depend on its synergy with other services and thus on the rates at which those other services are simultaneously expanded.
**Methods:** In order to identify, differentiate and empirically estimate the potential contribution of each of these two sources of cost savings, this study develops and applies a method for estimating a joint cost function for producing two HIV prevention interventions; HIV testing and counseling (HTC) and prevention of mother-to-child transmission (PMTCT) in Kenya, Rwanda, South Africa and Zambia. Using the data collected for 2011-2012 by the ORPHEA project from 194 facilities producing both services and controlling for service quality, we compare the fit of several different model specifications to characterize the effects of scale, scope and input prices on total facility costs of HTC and PMTCT.
**Results:** For HTC, holding PMTCT constant at its mean, we estimated the economies of scale ($1-\partial C/\partial q$) to be statistically indistinguishable from zero. For PMTCT, holding HTC constant at its mean, we estimated substantial economies of scale: doubling the number of pregnant women tested increases total facility cost by only 33% in all countries (p-val< 0.01), and at most by only 65% for Zambia (p-val< 0.01). Economies of scale are also significant if we increase both outputs maintaining a low ratio of HTC to PMTCT.
**Conclusions:** Our results suggest that policy makers will be misled by cost projections that assume a constant "unit cost" of either HTC or PMTCT or assume that the impact of scale on the cost of either is independent of the other.

## TUPEE610

### OPTIMIZING THE RESPONSE OF PREVENTION AND TREATMENT: ESTIMATION OF ANTIRETROVIRAL COSTS OF HIV/AIDS TREATMENT IN NIGERIA

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**Background:** Nigeria has committed to provide comprehensive HIV services to all in need. Yet as in most countries in the region, critical HIV financing shortfalls will likely arise and persist as eligibility for and demand for access to services continue to increase. Greater efficiency and effectiveness throughout HIV programming are therefore essential priorities.
The objective of this study was to estimate the average annual cost per HIV patient treated and factors associated with their variation.
**Methods:** We analyzed data from a cross-sectional study carried out in 200 health facilities providing integrated HIV services located in seventeen States with the highest HIV prevalence in Nigeria, between December 2014 and May 2015. We estimated the annual antiretroviral (ARV) cost per patient. An index of the antiretroviral and TB drugs dispensed in each facility during the costing year, weighted by the frequency of use of each specific drug was estimated. Annual ARV treatment cost per patient was estimated by adding annual costs of staff, utilities, capital, training, laboratory tests (CD4), ARV drugs and TB treatment divided by the average number of patients reported for 2014.
**Results:** The national average weighted cost/patient was $156.6, while the average annual cost/patient across facilities was $231.4 and the median was $159.1. Average unweighted costs were $257.2 in secondary level facilities and $158.7 in tertiary level facilities. Staff, ARVs and laboratory tests were the most important components of the ART costs/patient (38%, 40.4% and 16.5% respectively). Additionally, the cost per patient per facility decreases as the size of facility increases. Although secondary level facilities -that attend fewer patients- have higher costs compared to tertiary facilities, findings reveal that a larger number of patients is associated with higher costs in tertiary level facilities.
**Conclusions:** The study showed a wide variability in the average annual ART costs/patient. The differences are associated with the number of patients attended. Staff, ARVs, followed by laboratory costs are the main components of the cost/patient of ART services in the overall sample. Results from the study will help design intervention to improve efficiency in the delivery of comprehensive HIV services in Nigeria.

## TUPEE611

### IMPACT AND ECONOMIC EVALUATION OF THE KENYA MENTOR MOTHER PROGRAM (KMMP)

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**Background:** Eliminating mother-to-child transmission of HIV is possible through ensuring pregnant mothers know their HIV status, early ART initiation for the HIV-positive, adherence to treatment and retention in care of mother-baby pairs. Peer support is critical for these interventions. Kenya's Ministry of Health launched *National guidelines for peer education and psychosocial support in PMTCT (The Kenya Mentor Mother Program -KMMP)* in 2012. An external economic evaluation was done in 2014.
**Methods:** Quasi-experimental design was used. Eight KMMP intervention facilities were compared to eight implementing non-KMMP model matched on geography, HIV epidemiology and facility type. 2,997 mothers (1,541 in KMMP and 1,456 in non-KMMP facilities) with children aged 18 to 24 months were recruited. Facility ART, ANC and HIV-exposed Infant (HEI) registers, HEI cards, and HIV care patient card were reviewed. Using standardized questionnaire patients' psychosocial well-being was assessed. Cost data were collected from stakeholders, patient and facility interviews, and a review of facility fiscal records.
**Results:** 18 months MTCT rate was 5.7% in KMMP sites and 8.7% in non-KMMP facilities (AOR = 0.51, 95% CI 0.32-0.81; p < 0.012). Maternal and infant ARV uptake was 1.42 and 1.89 times higher in KMMP facilities compared to non-KMMP facilities. The risk of poor psychosocial adjustment to HIV among mothers in KMMP sites was 60% lower than that of mothers in non-KMMP sites
(AOR = 0.4, 95% CI 0.2-0.8).
The annual cost incurred per client by the facility to provide KMMP intervention was estimated at KES 13,759.17 (USD 146.37) compared to KES 11,033.85 (USD 117.38) in non-KMMP facilities. The Incremental cost per Disability Adjusted Life Year (DALY) averted using KMMP care compared to non-KMMP care was KES 20,327.74 (USD 216.25). The observed cost-benefit ratio for KMMP was 7, thus a net savings in treatment costs of HIV positive children over their lifetime are 7 times more than the intervention costs, when compared to non-KMMP PMTCT care.
**Conclusions:** PMTCT care using KMMP guidelines results in greater reduction in 18-month MTCT rate, positive health outcomes, improved maternal psychosocial wellbeing compared to non-KMMP care. It is also more cost-effective and cost beneficial compared to PMTCT care provided in non-KMMP facilities.

## TUPEE612

### WHAT ALLOCATIVE EFFICIENCY GAINS ARE POSSIBLE FOR THE WORLD WITH AVAILABLE HIV RESOURCES?

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**Background:** International funding for HIV is no longer increasing, yet there are large gaps in prevention needs and treatment scale-up to reach the UNAIDS 90-90-90 targets. Therefore, it is imperative that HIV resources are allocated as efficiently as possible. We estimated the additional impact of averting new HIV infections by optimizing allocation of HIV resources at regional and global levels.
**Methods:** We applied the Optima HIV epidemic and resource optimization model at the national and sub-national level in 42 low- and middle-income countries, representing over 80% of the global HIV burden. We modelled the HIV epidemic in each country by calibrating to demographic, epidemiological, and behavioral data from 2000 to 2014 and used data on HIV program costs, potential program coverage levels, and key outcomes. We then used an optimization algorithm, incorporating

constraints for treatment, to generate the optimal allocation of available resources to minimize new HIV infections from 2015 to 2030 for each country, aggregating at the regional and global levels.

**Results:** Our analyses suggest that cumulative new HIV infections globally can be reduced by around 10-20% (almost 6 million new infections averted) by 2030 by reallocating the current annual US$21 billion of global HIV resources. While regional priorities differ, optimization led to significant reductions in infections in all areas. Scaling up ART is the most cost-effective strategy and priority for all regions, in combination with prevention programs for key populations subject to the cost of their implementation and country-specific epidemic profile. Unless additional resources become available, our analyses suggest that countries will need to deprioritize programs with relatively high implementation costs and/or programs that do not directly reach or influence outcomes among people at greatest risk, including behavior-based programs targeting the general population.

**Conclusions:** Optimization of existing HIV resources at the regional and global levels, with a main priority to scale-up ART nuanced by country epidemic setting and prevention priorities, would significantly reduce HIV incidence.

## TUPEE613

### COST-EFFECTIVENESS OF THREE PI-BASED SECOND-LINE ANTIRETROVIRAL TREATMENT COMBINATIONS IN HIV-INFECTED PATIENTS IN SUB-SAHARAN AFRICA (ANRS 12169 -2LADY)

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**Background:** High cost of second-line antiretroviral treatment (ART) together with a decrease in funding for HIV/AIDS programs in sub-Saharan Africa strongly limit access to second-line ART in those countries. Identifying the best treatment strategies, both in terms of health benefits and costs is essential to optimize available resources. A cost-effectiveness analysis was conducted to assess three second-line combinations in Cameroon, Burkina-Faso and Senegal.

**Methods:** We used data from the randomized, non-inferiority, 48-weeks ANRS-12169 2-Lady trial. Between 2010-2012, 454 HIV-infected patients failing a first-line ART were randomly assigned to: tenofovir/emtricitabine+lopinavir/ritonavir (arm A; one of WHO recommended-regimens); abacavir/didanosine+lopinavir/ritonavir (arm B); tenofovir/emtricitabine+darunavir/ritonavir (arm C). After week 48, the follow-up was pursued until the last patient enrolled had the W48-visit. The analysis was conducted from a modified societal perspective including the following costs: comorbidities and antiretroviral drugs, laboratory tests, consultations and inpatient costs. We assessed health benefits as the number of Life Year Saved (LYS). Costs and health benefits of each strategy were estimated over a four-year period using a patient-level Markov model. Uncertainty was handled using the cost-effectiveness acceptability curves method.

**Results:** 451 patients were included in the analysis with a median follow-up [interquartile range] of 3.0 [2.5;4.0] years. The estimated cost per patient-year was €702 (arm A), €1010 (arm B) and €1184 (arm C). Arm A was significantly cheaper than arms B and C with a significant cost difference [95% Confidence Interval (CI)] of €-1063 [-1188;-935] and €-1862 [-1990;-1719], respectively. Arm A presents similar health benefits as the two others, with a non significant difference in LYS [CI 95%] (A *versus* B= 0.03 [-0.07;0.16] and A *versus* C= 0.06 [-0.05;0.18]). Cost-effectiveness acceptability curves show that in each study country, arm A had a 100% probability to be cost-effective when compared to B and C. Furthermore, the combination C would be cost-effective if the monthly price of Darunavir reduced by 75% (from €65 to €16).

**Conclusions:** Our findings suggest that the combination A provides the best economic value at current ART prices compared with the two other alternatives. Substantial price reduction of Darunavir would also make combination C cost-effective in the study countries.

## TUPEE614

### EXAMINING THE RELATIONSHIP BETWEEN QUALITY AND EFFICIENCY OF HTC AND PMTCT SERVICES SUPPLY IN KENYA AND ZAMBIA USING DATA ENVELOPMENT ANALYSIS (DEA)

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**Background:** Several efficiency studies have highlighted the importance to achieving lower costs of operation without compromising the quality of the HIV services, however little empirical evidence exists on the trade-off between economic efficiency and quality-gains. Furthermore, quality has been traditionally ignored in efficiency analyses of HIV health services. We analyzed the relationship of efficiency and quality of two HIV prevention interventions; HIV testing and counseling (HTC) and prevention of mother-to-child transmission (PMTCT) in Kenya and Zambia.

**Methods:** Using data collected in 2012-2015 by the ORPHEA project, we applied data envelopment Analysis (DEA) in 129 facilities to assess the efficiency of the synergy in the supply of HTC and PMTCT services. DEA scores were derived using an output-orientation with multi-inputs and multi-outputs. We also estimated a process-quality index using clinical vignettes to assess levels of competence of health staff. We identified quadrants where facilities fall into, according to their efficiency and quality scores.

**Results:** The quality score varied between 20% and 70%, and 40% and 80% for PMTCT and HTC services, respectively. The efficiency score ranged from 10% to 95%, and from 1% to 98% for PMTCT and HTC services, respectively. For PMTCT services, 13% of the facilities showed high-efficiency and high-quality, 31% low-efficiency and low-quality, 3% low-efficiency and high-quality and 53% high-efficiency and low-quality. Regarding HTC services, 19% of the facilities display high-efficiency and high-quality, 21% low-efficiency and low-quality, 14% low-efficiency and high-quality and 45% high-efficiency and low-quality.

**Conclusions:** There are facilities with high efficiency and quality offering HTC and PMTCT services. However an important challenge remains for improving quality and efficiency among facilities with low levels of efficiency and quality. Remarkably, the proportion of facilities located in the quadrant of high-efficiency and low-quality for HTC and PMTCT services is the highest among the four quadrants - highlighting the crucial trade-off between these elements of services provision. Additional exploration of facilities that underperform in one of the two measures is needed, particularly those with high efficiency and low quality, in order to identify the mechanisms that can improve facility performance without compromising these two competing outcomes.

## TUPEE615

### COST-ANALYSIS OF THE PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV/AIDS SERVICE IN ETHIOPIA: URBAN-RURAL HEALTH FACILITIES SETTING

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**Background:** Local context costing evidence continues to be scarce in Ethiopia while it is relevant for health care planning, budgeting and cost-effectiveness analysis. This study aimed to identify, measure and value the cost of providing prevention of mother-to-child transmission of HIV/AIDS (PMTCT) service across heterogeneous prevalence (high, low) and socio-economic status (urban, rural) contexts.

**Methods:** A total of twelve health facilities from six regions (Amhara, South Nations and Nationality Peoples (SNNP), Harrar, Dire Dawa, Oromia and Addis Ababa) are purposively selected from the latest 2012 ANC Sentinel HIV prevalence report (EPHI, 2014). Six health facilities with the highest HIV prevalence (8.1% to 17.3%) among pregnant women were chosen in urban setting and six health facilities with the lowest prevalence rate (0.0% to 0.1%) were selected from the rural setting. We applied an ingredient based costing approach to identify, measure and value the resource used for the provision of comprehensive PMTCT service at the lowest health service unit. The analysis was conducted across different PMTCT service packages and major resource ingredients. We applied a 3 % discount rate, and adjusted inflation to the base year (2014).

**Results:** The unit cost per pregnant women and infant pair per year (PPY) range from 6,280.39 ETB (319.28 USD) to 21,620.19 ETB (1,099.12 USD) in the urban highly HIV prevalent health facilities. In rural low HIV prevalent health facilities, the cost ranges from 4,322.62 ETB (219.75 USD) to 7,538.46 ETB (383.24 USD). PMTCT service provision in the urban health facilities costs more than twice the cost in rural health facilities. Consumables (including antiretroviral treatment drugs) and infrastructure are the major cost drivers in the urban and rural health facilities.

Anti-retroviral treatment option B+ follow-up and counseling service accounted for the highest proportion of costs, which ranges from 58% to 72 %, across the PMTCT service continuum.
**Conclusions:** The analysis suggests that resource used for PMTCT service packages varied across health facilities and HIV prevalence settings. Providing PMTCT service in the high HIV prevalent urban health facility settings cost more than the rural. Context specific costing are vital to provide local relevant evidences for health service management and priority setting.

## TUPEE616

### HIV resource allocation and budgetary policies under conditions of uncertainty

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**Background:** Decision modelling now plays a key role in determining which HIV interventions are prioritised for funding, and in which populations and geographical regions. This process is based on the costs and health outcomes expected to be generated by different programmes. However, these costs are uncertain, and where costs are unexpectedly high this may result in planned programmes becoming unaffordable. This can happen for a range of reasons, including unanticipated epidemiological conditions. This work examines how decision makers react to unexpected cost variances, how this impacts on the health generated by HIV funding and what might be done to avoid costly responses to uncertainty.
**Methods:** We use a transmission model to predict the costs and quality adjusted life years (QALYs) associated with investing a fixed HIV budget across six regions for 15 years. The model reflects a sub-Saharan African setting with a generalised HIV epidemic in which regions differ in terms of the proportion of people living with HIV. HIV budgets of $0-30 per capita are considered. Health care decision makers can choose to invest in one or more interventions (late ART, male voluntary circumcision or early ART) in each region at a range of coverage levels. Uncertainty in key parameters (HIV prevalence, intervention costs and intervention effects) is propagated through the model using Monte Carlo simulation.
**Results:** If we assume that decision makers are required to remain within their regional planned budgets, the QALYs generated by the HIV budget are 15% lower than expected when the HIV budget is $10 per capita and 19% lower when it is $20 per capita. This reduces to 4% and 9% if we assume decision makers can re-allocate funds across regions in response to uncertainty. Research that reduced uncertainty could increase health to the level originally expected.
**Conclusions:** Current predictions of the health generated by HIV budgets do not take into account that decision makers may need to alter planned programmes in order to remain within programme budgets. This reality may substantially reduce the health generated by HIV spending. Efforts to re-design budgetary policies or reduce uncertainty via research can increase health.

## TUPEE617

### Economic analysis of effectiveness of investments in HIV prevention services among key population groups in Ukraine

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**Background:** Economic instability in the country and limited availability of resources for HIV/AIDS programs in the subsequent years may significantly limit availability of HIV prevention services for key populations (KPs). Understanding returns of investment into HIV prevention is especially important given the fact that in 2017 the funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) for Ukraine will cease, and the country will need to undertake responsibility for the funding of such programs.
**Methods:** Cost Benefit Analysis (CBA) was used to project costs and benefits of investment in HIV prevention activities among people who inject drugs (PWID), sex workers (SWs), and men having sex with men. The prevention and treatment costs for two different scenarios of budget allocations were assessed: the availability of funding for HIV prevention versus termination of HIV prevention programs for KPs beginning in 2017-2018 with phasing out of the GFATM funding. AIDS Epidemic Model (AEM) was used to project epidemic trends for both scenarios in three different regions of Ukraine, as well as for the whole country.
**Results:** For the national level the benefit-to-cost ratio of providing prevention services to KPs is 2.17, which is more than twice higher than the feasibility threshold for economic effectiveness. Similar results were obtained for Odessa and Lvov regions (2.2 and 2.01 respectively) For Kherson region the benefit-to-cost ratio was 4.8.
**Conclusions:** These results show that each dollar invested in existing HIV prevention programs by 2030 can save $2.17 for the funding agencies due to savings on treatment and care for prevented HIV cases. The results of the analysis should serve as an additional argument for decision-making on support to HIV prevention programs at the regional level and nationwide, as well as securing their funding from state and local budgets. It should be also noted that prevention programs implemented in Ukraine" also cover prevention of hepatitis B and C, and STIs. The averted costs of treatment and other components of medical servicing related to these infections are not included in the analysis, thus, prevention programs implementation benefits might turn out even higher.

## TUPEE618

### Determinants of efficiency of the supply of PMTCT and HTC services in 4 countries in Africa: results of ORPHEA project

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**Background:** Limited evidence on the efficiency and its determinants of HIV prevention-interventions is a barrier to creating effective policy. The ORPHEA project aimed to estimate average costs per service and to identify determinants of efficiency for two HIV-prevention interventions: prevention of mother-to-child transmission (PMTCT) and HIV testing and counseling (HTC) in Kenya, Zambia, Rwanda and South Africa.
**Methods:** Input costs and intervention output data were collected retrospectively by month for 2011/2012 as part of the ORPHEA project. The analytical sample comprised around 180 health facilities for each intervention. We assessed the impact of determinants such as scale and labor composition, and management characteristics at the facility level such as structure and governance, staff composition and dedication, accountability and supervision, incentives and sanctions, on the heterogeneity of PMTCT and HTC costs per service at the facility level.
**Results:** Aspects such as scale of production, supervision, labor dedication, funding based on inputs management, regular financial reporting, and staff price per hour, explained nearly 70% of the variation in costs of HTC services (cost per individual tested). Characteristics associated with lower HTC unit costs were scale of production and supervision of HIV units. For PMTCT services, the scale of production and management aspects such as staff price and levels of specialization, and funding based on management performance, explained around 40% of the variation in unit costs. The most important factor linked to lower PMTCT unit costs was scale of production.
**Conclusions:** There is a large potential to increase efficiency within current financial and structural constraints of health systems. Unit-cost variation is explained by other constraints different from scale. Besides de scale of production, modifiable characteristics at the health facility level related to management aspects such as supervision, staff price and specialization, labor dedication and funding based on management performance, seem to be policy variables to be addressed through interventions to improve efficiency.

## TUPEE619

### IMPROVING COST-EFFECTIVENESS BY MANAGING HIV AS A CHRONIC DISEASE IN UGANDA

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**Background:** The chronic care model (CCM) is an integrated, population-based approach to providing health care for those with chronic diseases that involves patient self-management, delivery system design and decision-support for clinicians and patients to ensure evidence-based care. Its effectiveness and efficiency in managing people with HIV is unknown in low resource settings. We sought to determine this in Uganda.
**Description:** Orientation was conducted by the “team” (improvement experts from USAID’s ASSIST Project, with clinicians involved in pilot implementation of CCM and district Ministry of Health staff) and 25 staff from participating facilities. Material covered ranged from identifying service delivery problems and implementing changes to address them to empowering patients to actively manage their condition.
Following orientation the team conducted eight monthly visits to each participating clinic. Team members provided feedback to clinic staff on successful practices, performance gaps and ideas on addressing them. A staff member from each facility visited another participating site to learn about changes implemented there, and subsequently shared best practices. The team also conducted a learning session with 29 participating facility workers.
Changes implemented include provision of visual reminders of recommended HIV patient care practices, written appointment reminders for patients, fastidious tracking of patient CD4s and acting on their findings, and early identification and treatment for tuberculosis co-infection, among others.
**Lessons learned:** This controlled, pre/post-intervention evaluation used difference-in-differences analysis controlling for confounders in three facilities in one intervention and one control district in central Uganda.
Results showed the odds of increased CD4 in the intervention group was 3.2 times higher than the control group (p=0.022). Clinician-reported ART adherence to ART was 60% (p = 0.001) more likely to be higher in the intervention group. The intervention cost $11,740 for 7,016 patients enrolled for ART care ($1.67/patient). Incremental cost-effectiveness ratios were $6.90 per additional patient with improved CD4 and $3.40 per additional ART patient with the same or better adherence.
**Conclusions/Next steps:** Findings suggest that for modest expenditure, it is possible to improve process and outcome indicators of quality of care. We recommended implementing the CCM in Uganda and it may be suitable for application in similar settings.

## TUPEE620

### ECONOMIC AND EPIDEMIOLOGICAL IMPACT OF A PUBLIC-PRIVATE PARTNERSHIP: THE CASE OF THE AFRICAN COMPREHENSIVE HIV/AIDS PARTNERSHIP (ACHAP)

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**Background:** Botswana reached the height of AIDS epidemic in year 2001 with the adult HIV prevalence (15-49 years) estimated 27%, then one of the highest country prevalence figure in the world. This situation led to a novel public health initiative: a public-private partnership, ACHAP, between The Merck Foundation (TMF), Bill and Melinda Gates Foundation (BMGF) and the Government of Botswana. Questions remains over the value of such models if it is to be adopted elsewhere. This abstracts present an analysis of the economic and epidemiological impact of this model.
**Methods:** This analysis uses Spectrum modelling system called Goals model for analysing impact of ART and circumcision interventions supported by ACHAP. Model has been set up for Botswana using all available data sources on Botswana.
**Results:** By 2014, SMC program averted an estimated 7,470 infections. About 42,000 infections to be averted by 2030, which is One (1) infection averted for every 2 male circumcisions performed. Infections averted will also lead to future deaths averted. ART cumulatively averted 110,000 new infections during the period 2000-2014. Combined ART/SMC new infections averted with ACHAP support is 114,000 new infections from 2001 to 2014.
ART program averted an estimated 165,000 deaths from 2001 to 2014 or 48%, or one (1) death averted for 9 persons put on treatment.
Economic benefits of circumcision are 30 times greater its costs. Estimated infections averted $351.5 million future costs to Botswana compared to $11.6 million as cost of 101,680 SMC’s. Costed ART support was $168.4 million and ART saved $814 million hence economic benefits exceed costs 5 fold.
ART and SMC cost was $180 million, but ART and SMC Combined saved $843.6 million. The cost ratio is $4.7/$1.0 cost. Benefits may be significantly higher if other benefits are considered.
**Conclusions:** ACHAP as a Public Private Partnership has valuably contributed economically, epidemiologically and socially to Botswana.

## TUPEE621

### ESTIMATING THE ECONOMIC COSTS OF CLIENTS ACCESSING INTEGRATED SEXUAL AND REPRODUCTIVE HEALTH AND HIV SERVICES IN ZIMBABWE

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**Background:** Integration has been widely reported as a good model for improving access to sexual and reproductive health (SRH) and HIV services and may prove cost-effective, reducing frequent health facility visits and patient costs. As limited data exists on costs of accessing integrated SRH and HIV services from the client’s perspective we evaluated burden and impact of costs on clients seeking integrated SRH and HIV services (HTC, TB screening, STI screening and treatment, Family Planning, and Cervical Cancer screening).
**Methods:** Exit interviews were held (February-April 2015) with clients (n=856) at three purposively selected integrated SRH and HIV clinics in Zimbabwe (Harare, Chitungwiza, and Bulawayo). Data included employment status, monthly earnings, travel time to, accessing services and from facility, service payments, transport expenditures, and other incidentals. Costs were analysed using StataCorp 2013. All costs were analysed in 2014 constant US dollars.
**Results:** Most clients were either unemployed (37%), unskilled or semi-skilled (30%), and the rest professionals (9%), students (4%) and other (20%). Clients incurred zero expenses for services as they were fully borne by the provider. In principle availability of integrated services free of charge (at point of use) ought to encourage take-up of services. However, clients incurred costs of transport ($1.67), other incidental expenses ($1.16), and costs of time seeking services ($4.86). Time spent seeking services had the highest proportional contribution (63%) to client cost per visit in comparison to transport (22%), and other incidental expenses (15%). Waiting time at the facility (averaging 3 hours and 4 minutes) contributed more to cost of time (63%) in comparison to travel time to (18%) and from clinics (18%). Mean client cost per visit was $7.69 accounting for more than 3 times the daily family income ($2.13).
**Conclusions:** Despite incurring zero service expenses, clients nonetheless incurred other significant expenses. Elsewhere, client costs impose considerable financial burdens on households and clients, and reduce health seeking especially among the poorest. Providers of integrated SRH and HIV services need to minimize impact of client costs by situating services closer to communities, offering incentives or subsidies, and reducing waiting times at integrated facilities.

## TUPEE622

### EVALUATING THE RELATIVE ECONOMIC COSTS OF INTEGRATING SEXUAL AND REPRODUCTIVE HEALTH, AND HIV SERVICES IN FOUR OPERATIONAL SERVICE DELIVERY MODALITIES IN ZIMBABWE

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**Background:** Women in sub-Saharan Africa face huge socio-economic inequities despite advances in sexual and reproductive health (SRH) service delivery. Integrating SRH and HIV services may help fulfill the Millenium Development Goals, and may also prove to be cost-effective as it reduces need for frequent health facility visits. We evaluated relative unit costs of five integrated SRH and HIV services within four PSI Zimbabwe run integration models.

**Methods:** Taking a provider perspective we conducted retrospective facility based costing at four purposively selected clinics integrating SRH and HIV services [PSI/Z directly-managed, PSI/Z partner-managed, Public Private Partnership (PPP), and PSI/Z directly-managed outreach]. We collected economic and financial costs for 2014 and estimated cost per visit of five integrated services (HTC, TB screening, STI screening and treatment, Family Planning, and Cervical Cancer screening). We combined bottom up (quantifying each ingredient or resource component) and step down costing (step wise allocation of costs to all overhead departments and then to final cost centres) and analysed costs in 2014 constant US dollars.
**Results:** Unit costs for the five integrated services were lowest at the PPP clinic (Chitungwiza Profam) and highest at the PSI partner managed site (Mutare). Costs per visit for the five integrated SRH and HIV services ranged from US$6.22 (TB screening) at the directly-managed clinic to US$193 (Cervical-Cancer screening) at the partner-managed clinic. Costs per visit varied across the four integrated models with highest variability for STI screening and treatment (US$9.36 for PPP and US$148 for outreach). HTC showed least variability from US$32 for outreach to US$41 at Chitungwiza NSC. Main cost drivers were personnel, management and administration costs, and to a lesser extent supplies.
**Conclusions:** Unit cost variability, and percentage distribution of cost components suggests potential for cost reductions. Interventions that can increase demand for integrated SRH and HIV services can help achieve lower recurrent costs particularly with respect to personnel, and management and administration costs, thereby reducing unit costs. Where possible, integrated SRH and HIV service providers in Zimbabwe should negotiate lower drugs, diagnostics and supplies prices as these were an important contributor to unit costs of services.

## TUPEE623

### ARE HIV PREP COST-EFFECTIVE ANALYSES COMPREHENSIVE? THE DEVELOPMENT OF A COMPREHENSIVE CLINICAL ECONOMIC ANALYSIS FRAMEWORK

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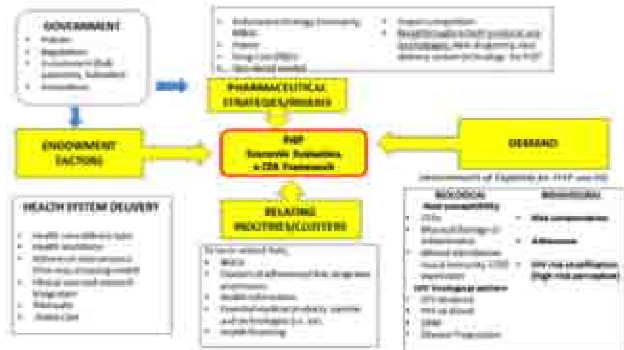
**Background:** Globally, the public health emphasis centers on reducing new HIV infections through the use of new prophylactic tools. However, these efforts are dampened by the cost of PrEP drugs and its implementation, which represents a barrier to the response to avert HIV infections in individuals at risk. The purpose of this study was to review PrEP cost-effectiveness analysis (CEA) studies and identify methodology gaps. The objective was to develop a comprehensive model for CEA of HIV pre-exposure prophylaxis that would accurately inform program policy and planning.
**Description:** We researched PrEP cost-effectiveness studies from 2007-2015. They were catalogued by CEA from (1) demonstration projects and open-label trials, and (2) mathematical modeling studies based on clinical trials results, proxies and assumptions. We categorized the gaps in four areas using the Porter's diamond: demand, endowment factors and pharmaceutical strategies/rivalry, and relating industries.
**Lessons learned:** We analyzed five PrEP demonstration projects and open label trials, and eighteen modeling studies. We found no studies of PrEP implementation in real clinical practice settings. The methodology gaps were included in the four fields as depicted in figure 1.




*[Figure 1. HIV PrEP Comprehensive CEA Framework]*

Examples of major gaps included the lack of: (1) behavioral and biological risk stratification, (2) the estimated impact on health care delivery systems (i.e. PrEP adherence interventions) and (3) policy and regulatory considerations such as drug patent regulations including generic drugs and substitutes.

Based on these gaps and using Porter's diamond, we elaborated a framework for a comprehensive PrEP behavioral- biomedical-economic analysis model.
**Conclusions/Next steps:** Cost-effectiveness studies suffer from important methodology gaps including the lack of inclusion of key biological, behavioral and economic conditions. Our framework will guide cost effectiveness analysis that yield reliable results to assist governments in planning to scale up PrEP implementation, expand drug access for at-risk populations and ultimately bend the curve of new infections.

# PHARMACO-ECONOMICS

## TUPEE624

### DIFFERENCES IN ANTIRETROVIRAL DRUG PRICES BETWEEN COUNTRIES WITHIN AND OUTSIDE SUB-SAHARAN AFRICA

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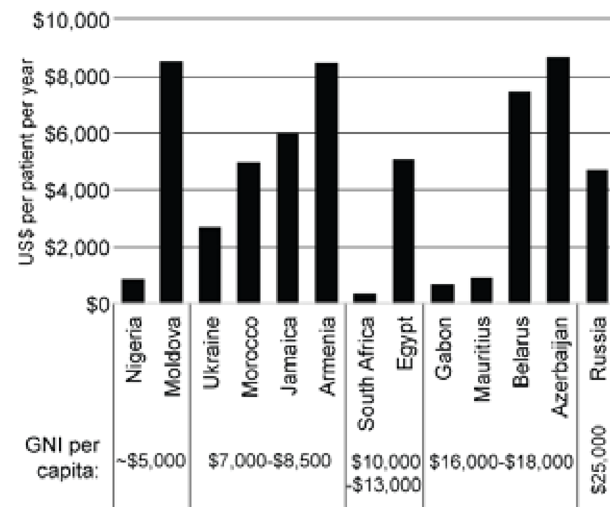
**Background:** Antiretroviral (ARV) prices have fallen substantially in low-income countries, but low prices may not be consistently available in middle-income countries with large HIV epidemics. Several key antiretrovirals are still on patent in middle-income countries.
**Methods:** Prices and transactions for 8 ARVs used in national treatment programmes (2013-2015) were extracted from the WHO Global Price Reporting Mechanism database for >100 countries, and a Russian government database. Prices were compared between countries, using World Bank data on per-capita gross national income (GNI, US$ PPP).
**Results:** Prices of generic ARVs in sub-Saharan Africa were not significantly different to prices outside sub-Saharan Africa. However, two originator drugs had significantly higher prices when sold outside sub-Saharan Africa: LPV/r $360 (nonSSA) vs $232 (SSA), DRV $5760 (nonSSA) vs $657 (SSA). There were large differences in darunavir prices between countries with similar GNI (Figure). Prices of generic drugs also differed significantly between countries in Africa with similar GNI. For example TDF/FTC cost $124 in Senegal versus $55 in Kenya; ABC cost $216 in Mauritius versus $113 in Botswana. In Russia, which was reclassified as high-income in 2013, but has a large untreated HIV-positive population, ARV prices were significantly higher than in sub-Saharan Africa: ATV/r was 647% higher, LPV/r 581% higher, DRV/r 592% higher, TDF/FTC 3600% higher (Table).
**Conclusions:** There are still significant differences in HIV drug prices between countries with similar Gross National Income. Patent restrictions in countries with large epidemics (e.g Russia) lead to very high prices. Mechanisms to ensure fair pricing across middle-income countries need to be improved to ensure the sustainable treatment access.




*[Price differences for darunavir between countries with similar Gross National Income per capita]*

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| Drug | Originator / Sub-Saharan Africa | Originator / Non Sub-Saharan Africa | Generic / Sub-Saharan Africa | Generic / Non Sub-Saharan Africa | Russia (2015) |
|---|---|---|---|---|---|
| ATV-r | - | - | $228 | $234 | $1514 |
| LPV-r | $232 | $360 | $247 | $246 | $1435 |
| DRV | $657 | $5760 | $792 | - | $4695 |
| TDF+FTC | - | $91 | $64 | $80 | $2313 |
| TDF+3TC | - | - | $54 | $59 | $1458 |
| TDF+3TC+EFV | - | - | $130 | $129 | $2447 |
| ABC | - | $242 | $146 | $136 | $778 |
| RAL | - | $2767 | - | - | $6424 |

*[Antiretroviral average price per patient per year (2013-2015)]*

## TUPEE625

### COST-EFFECTIVENESS OF E/C/F/TAF IN THE UNITED KINGDOM: ASSESSMENT THROUGH A NOVEL INDIVIDUAL PATIENT SIMULATION

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**Background:** E/C/F/TAF (elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide) is a novel antiretroviral therapy for HIV. E/C/F/TAF has been investigated in an extensive clinical trial programme including treatment naïve, virologically suppressed, mild to moderate renal impairment and adolescent patients. In addition to high rates of efficacy in adult HIV patients (≥92% suppressed HIV-1 RNA < 50 copies/mL at Week 48), E/C/F/TAF is also associated with a favourable safety profile, including fewer bone and renal off target effects versus regimens containing tenofovir disoproxil fumarate (TDF). The objective of this study was to evaluate the cost-effectiveness of E/C/F/TAF versus relevant comparators in the UK healthcare setting.
**Methods:** An individual patient simulation model was developed to calculate the cost and QALY impact of treatment-related adverse events and non-AIDS related comorbidities (NARCs), in conjunction with CD4 count and viral load historically. These are not typically considered by HIV cost-effectiveness models. The analysis also considered the impact of adherence, resistance and tolerability on virologic failure and treatment choice as patients moved through the modelled treatment pathway. Literature reviews and input validation were conducted to populate the model. Relative efficacy of treatment regimens was established through a systematic literature review and network-meta analysis. Comorbid events associated to hypertension, fracture, cardiovascular, renal, and diabetes were predicted using a set of integrated regression models, derived from the literature and the Data Collection on Adverse events of Anti-HIV Drugs (D:A:D) cohort.
**Results:** The comparators for E/C/F/TAF were the most commonly used integrase inhibitor regimens in the UK: E/C/F/TDF, F/TDF + raltegravir (RAL) and dolutegravir/abacavir/lamivudine (DTG/ABC/3TC). E/C/F/TAF accrued 11.27 QALYs, more than comparators: E/C/F/TDF (11.16), F/TDF+RAL (11.21), and DTG/ABC/3TC (11.22). E/C/F/TAF is associated with lower overall costs against these comparators (-£59,438 vs. E/C/F/TDF, -£54,232 vs. F/TDF+RAL, -£52,027 vs. DTG/ABC/3TC) over a 20 year time horizon. Therefore, E/C/F/TAF dominates E/C/F/TDF, F/TDF+RAL and DTG/ABC/3TC. These results were robust in deterministic and probabilistic sensitivity analyses.
**Conclusions:** This study demonstrates that E/C/F/TAF is cost-effective versus E/C/F/TDF, F/TDF+RAL and DTG/ABC/3TC in the UK setting. By considering a wide range of factors influencing costs and health outcomes, including adverse events and NARCs, this result is likely to reflect the benefits of E/C/F/TAF beyond virological suppression.

## TUPEE626

### ACCOUNTING FOR NON-AIDS RELATED COMORBIDITIES (NARCS) IN AN INDIVIDUAL PATIENT SIMULATION MODEL FOR HUMAN IMMUNODEFICIENCY VIRUS (HIV): IMPACT ON COSTS AND QUALITY-ADJUSTED LIFE-YEARS

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**Background:** HIV affects approximately 1.2 million people across Western and Central Europe. People living with HIV (PLHIV) can remain virologically suppressed providing they adhere to their antiretroviral treatment (ART). However, PLHIV are more likely to develop NARCs such as diabetes, chronic kidney disease (CKD) and cardiovascular disease (CVD) than the general population. Our objective was to estimate the impact of NARCs associated with different ART regimens on lifetime costs and Quality-Adjusted Life-Years (QALYs).
**Methods:** We developed an individual patient simulation model to predict clinical and economic outcomes of ART in treatment naïve patients. Patients progress through a clinically validated treatment pathway based on their previous treatments and standard of care. CD4 count, patient's characteristics and current ART were used to predict the NARCs (hypertension, bone fracture, diabetes, CKD and CVD) using published HIV specific risk equations mainly from the Data Collection on Adverse events of Anti-HIV Drugs (D:A:D) cohort. We utilised the model to estimate lifetime costs and QALYs for four ART regimens and their subsequent treatment pathways; E/C/F/TAF, E/C/F/TDF, DTG/ABC/3TC and R/F/TDF.
**Results:** Our model predicts that the mean lifetime costs associated with NARCs ranges from £6,420 for PLHIV starting on E/C/F/TAF to £9,207 for PLHIV starting on E/C/F/TDF. Mean lifetime QALY decrement associated with NARCs ranges from 0.52 for PLHIV starting on E/C/F/TDF to 0.63 for PLHIV starting on R/F/TDF. The mean costs for PLHIV who develop diabetes, CKD and CVD were £1,841, £13,952 and £973 respectively. The mean QALY decrements for the same NARCs were 0.24, 0.09 and 0.78 respectively.
**Conclusions:** To our knowledge, this is the first HIV model to incorporate NARCs in estimates of costs and QALYs for specific ART regimens. The additional cost and QALY loss of NARCs in PLHIV accounts for more than 15% of non-ART costs and needs to be taken into consideration when assessing ART regimens impact on patients and healthcare systems.

## TUPEE627

### ACCOUNTING FOR NON-AIDS RELATED COMORBIDITIES (NARCS) IN AN INDIVIDUAL PATIENT SIMULATION MODEL FOR HUMAN IMMUNODEFICIENCY VIRUS (HIV): IMPLEMENTATION AND PREDICTION

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**Background:** HIV affects approximately 1.2 million people across Western and Central Europe. People living with HIV (PLHIV) can remain virologically suppressed providing they adhere to their antiretroviral treatment (ART). However, PLHIV have been shown to be more likely to develop NARCs such as diabetes, chronic kidney disease (CKD) and cardiovascular disease (CVD) than the general population. Very few studies specifically assess the association of NARCs with specific ART regimens. Therefore, our objective was to estimate the proportion of PLHIV developing NARCs associated with different ART regimens.
**Methods:** We developed an individual patient simulation model to predict clinical and economic outcomes of ART in treatment naïve patients. Patients progress through a clinically validated treatment pathway based on their previous treatments and standard of care. CD4 count, patient's characteristics and current ART were used to predict the NARCs (hypertension, bone fracture, diabetes, CKD and CVD) using published HIV-specific risk equations mainly from the Data Collection on Adverse events of Anti-HIV Drugs (D:A:D) cohort. We utilised the model to estimate the proportion of PLHIV developing NARCs over a lifetime for four ART regimens and subsequent treatment pathways; E/C/F/TAF, E/C/F/TDF, DTG/ABC/3TC and R/F/TDF.
**Results:** Our model predicts that the proportion of PLHIV developing a NARC ranged from 58.7% for PLHIV starting on E/C/F/TAF to 61.4% for PLHIV starting on DTG/ABC/3TC. The proportion developing NARCs across treatment strategies ranged between 17.2% and 33.8%; 18.1% and 32.3%; 23.1% and 37.7% for diabetes, CKD and CVD respectively. In addition, between 15.9% and 17.7% of PLHIV developed multiple NARCs depending on their initial treatment. PLHIV starting on E/C/F/TAF developed statistically significantly fewer occurrences of CKD than PLHIV starting on either E/C/F/TDF or R/F/TDF (p< 0.01).

**Conclusions:** To our knowledge, this is the first model to predict the proportion of PLHIV developing NARCs for specific ART regimens. Based on the high estimated proportions of NARCs as presented, with some statistically significant differences seen across treatment strategies, the impact of NARCs should be incorporated when considering the long term health and economic outcomes of ART.

## TUPEE628

### COST-CONSEQUENCES AND HEALTH OUTCOMES OF COFORMULATED RILPIVIRINE, EMTRICITABINE AND TENOFOVIR ALAFENAMIDE (R/F/TAF), A NOVEL ORAL SINGLE-TABLET REGIMEN IN HIV PATIENTS IN THE UNITED STATES

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**Background:** Highly effective antiretroviral (ARV) therapies have transformed treatment of HIV from acute to long-term chronic-care. HIV patients are living longer and treated earlier. With increasing age, comorbidities such as chronic kidney disease (CKD) and cardiovascular disease (CVD) are increasing. R/F/TAF, a novel ARV, has demonstrated bioequivalence to the components of coformulated riplivirine, emtricitabine, and tenofovir alafenamide, with potentially improved renal, CVD, and bone safety profiles.
Objective is to estimate health outcomes associated with R/F/TAF in treatment-naïve (TN) and virally suppressed treatment-experienced (TE) HIV patients compared to selected TDF and abacavir (ABC) containing regimens.
**Methods:** A cost-consequence analyses (CCA) was developed using an event simulation framework; the framework considers patients' conditions and events impacting these conditions. Inputs were drawn from published randomized controlled trials, the peer-reviewed literature, and real-world database analyses. Model structure, assumptions, and inputs were validated by a panel of experts in HIV, nephrology, CVD, endocrinology and skeletal abnormalities. The analysis compared R/F/TAF to R/F/TDF, F/TDF+dolutegravir (DTG), and efavirenz/F/TDF (CKD outcomes) and to DTG/ABC/3TC (CVD outcomes). The model assessed time horizons of 1-5 years.
**Results:** Table 1 summarizes the 5-year events predicted for a simulated cohort of 1000 US insured patients.
Compared to regimens with TDF backbones, R/F/TAF significantly reduced the number of patients predicted to progress to CKD-III. Additionally, patients treated with R/F/TAF are predicted to experience signifincantly reduced CVD events compared to those treated with DTG/ABC/3TC.
As a result, the proportion switching from first line was reduced, and time to first switch increased for patients treated with R/F/TAF compared to all comparators. This resulted in less total treatment failure that was observed in later lines of therapy.
Results were similar in TN and TE patients and were robust under various sensitivity analyses.

| Event | Treatment Naive Patients | | | | Treatment Experienced Patients | | | |
|---|---|---|---|---|---|---|---|---|
| | R/F/ TAF | R/F/ TDF | EFV/F/ TDF | DTG/ ABC/3TC | R/F/ TAF | R/F/ TDF | EFV/F/ TDF | DTG/ ABC/3TC |
| CKD III, n (NNT) | 43 | 67 (41) | 62 (53) | 43 (NA) | 55 | 84 (34) | 79 (42) | 54 (NA) |
| CVD, n (NNT) | 33 | 32 (NA) | 29 (NA) | 43 (100) | 65 | 62 (NA) | 58 (NA) | 82 (59) |
| Treatment Failure, n | 886 | 949 | 1,303 | 1,073 | 857 | 930 | 1,185 | 1,124 |
| 5 Year Persistence, Line 1 | 54% | 46% | 30% | 41% | 56% | 47% | 35% | 36% |
| Time to First Switch (months) | 45 | 42 | 35 | 40 | 45 | 42 | 37 | 37 |

*[Table 1: Health Outcomes Results]*

**Conclusions:** R/F/TAF is estimated to reduce comorbid events, increase first line persistence, reduce switching to second line and salvage therapies, and improve patient health outcomes.

# MANAGING HIV SUPPLY CHAIN CHALLENGES WITH LIMITED RESOURCES

## TUPEE629

### PUBLIC-HEALTH PATENT LICENCES: A SHIELD FROM ESCALATING COST BURDEN OF UNIVERSAL ACCESS TO ARVS IN RESOURCE LIMITED SETTINGS?

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**Background:** Intellectual property licenses played an important role in speeding access to patented Antiretroviral medicines (ARVs) in certain low- and middle-income countries (LMIC) in early 2000s. With the formation of United Nations-backed Medicines Patent Pool (MPP) in late 2010, ARV licensing gained momentum during the period 2011-2015, ensuring availability of latest ARVs in over 100 countries that may have otherwise not received access to those medicines. While access importance of such licenses is known, this paper uses financial approaches to analyse return on investment for public-health oriented patent licences.
**Methods:** MPP is a not-for-profit, funded by UNITAID through grants till 2020: this is MPP's total cost in obtaining licenses from originators and ensuring sufficient generic players compete to distribute low-cost ARVs in LMICs.
Savings resulting from low-cost medicines are computed for each drug by multiplying the differential between originator pharmaceutical company's tiered price and projected average generic price, multiplied with forecasted use of that drug during the period 2016-2025; WHO-MPP's forecasts (presented at IAS-2015) for ARVs is used for this calculation. Applicable generic price is computed using historical generic price evolution in similar competitive pharmaceutical markets. Savings are counted only in incremental countries where generics are distributed as result of MPP agreements due to "unblocking" of patents, and only until expiry of those patents. Projected savings and expected costs are discounted with UK treasury rate. A series of financial analyses were carried out on costs and savings.
**Results:** Savings till date through MPP agreements are estimated at $160 million, representing a cost-to-benefit ratio of 1:7, which means for every dollar spent, MPP's public-health oriented licenses saved $7. Savings would increase as newer ARVs such as dolutegravir are used in LMICs. By 2028, total direct savings generated by the MPP are estimated at $1.16 billion, representing a benefit ratio of 1:22, translating into a saving of $58 per patient year. Internal rate of rerurn, or IRR of 235% and proforma annualized return on investment is 108%.
**Conclusions:** The MPP model shows that investments in public-health oriented patent licenses deliver significant financial returns, which will increase substantially, providing shield from escalating cost burden of universal access.

# KEY POPULATIONS IN HUMANITARIAN SETTINGS AND FRAGILE CONTEXTS

## TUPEE630

### COMBINATION PREVENTION: WHAT WORKS IN HUMANITARIAN SETTINGS - A NEEDS ASSESSMENT FOR CHILDREN AND ADOLESCENTS IN KAKUMA REFUGEE CAMP IN KENYA

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**Background:** This paper highlights the needs of children and adolescents living with HIV/AIDS in Kakuma refugee camp in Turkana County, Kenya, which for hosts 188, 453 refugees, majority being < 18 years old. The camp's location, interaction of refugees and host community, low literacy levels and poverty pose a great risk to its population, particularly adolescents to HIV/AIDS. Turkana County has one of the highest prevalence of HIV at 7.6%.
**Methods:** This is a qualitative study, conducted from four health facilities, exploring key components of quality of health care for children and adolescents from the perspectives of health providers and guardians: prevention of mother to child transmission, quality of pediatric care, adolescent health literacy, community support, appropriate package of service, provider competencies, facility characteristics, equity and non-discrimination, data and quality improvement, and adolescent participation. 14 key informants were interviewed. 6 focus group discussions were held at Kakuma refugee camp and host community. Direct observations were conducted at health facilities. Purposive sampling was employed.
**Results:** Referral chain for pregnant mothers throughout the period of their pregnancy existed. Community health workers acted as linkages between peer mother networks and pregnant mothers, including those living with HIV. This ensured that

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the child's progress up to their transition to adolescence was adequately monitored. The structures of the health facilities were dilapidated, compromising confidentiality and privacy of patients. There was lack of active channels of information provision. Condoms were distributed on a need basis or at designated areas without requisite training on correct and consistent use. Service providers were not sufficiently trained to cater specifically for children and adolescents' sexual and reproductive health needs. There was little evidence of adolescent participation in programming.
**Conclusions:** Combination prevention in humanitarian situations needs to be contextual. In Kakuma, the underlying issues are poverty and low literacy levels. A peer approach which is successful for the case of mothers can be applied to adolescents throughout the implementation of evidence-based behavioral interventions to circumvent the low literacy levels. In addition, community health workers and incentive workers can be trained to supplement the health workers in the facility and carry out outreach programmes.

## TUPEE631

### IMPLICATION OF SAME SEX MARRIAGE ACT 2013 ON HIV EPIDEMIC AMONG MEN WHO HAVE SEX WITH MEN IN NIGERIA

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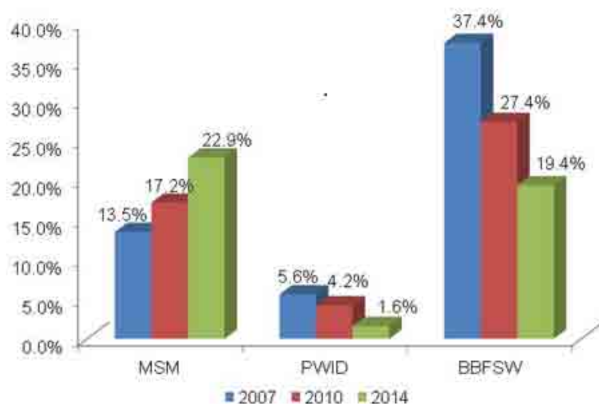
**Background:** The same-sex-marriage-(prohibition)-Act 2013 of Nigeria stipulates a jail term of 14-years-imprisonment for same-sex-marriage-contract and 10-years-imprisonment for operating-a-gay-club, societies and organization or supporting and sustaining such organizations. The implication of this on the health-and well-being of Men-who-have-sex-with-men (MSM) had not been-documented. Society-for-Family-Health, a foremost-Non-Governmental-Organization implementing a Global-Fund-and-United States-Government-funded programme for key-populations (KPs) in Nigeria constituted a team to determine the effect of the Act on programming for MSM and the critical HIV-indicators like HIV-Testing-Services-uptake, HIV-Prevalence, Condom-use and STI-treatment among MSMs.
**Description:** A desk-review of available-national-data was carried out using the Integrated-Biological-and-Behavioral-Surveillance-Survey-(IBBSS) 2007, 2010 and 2014 and programme-reports. The survey-data covered the whole country for all KPs and the programme reports were for selected-States with-emphasis-on-the-MSMs.
**Lessons learned:** The programme-report showed that peer-education-sessions-with-MSM were held in small-cohorts at high-cost because of the fear of harassment-by-the-security-forces. The review of the survey revealed that there had been a-consistent-decline in the prevalence-of-HIV-among the brothel-based Female-Sex-Workers (BBFSW), People-who-inject-drugs-(PWID) from 2007 to 2014. In stark contrast, HIV-prevalence among-MSM has steadily-risen from 13.5% in 2007 to 22.9% in 2014 as shown in figure 1.




*[Figure 1. HIV Prevalence of Key Populations in Nigeria. IBBSS 2014]*

The-misconception about HIV-transmission was highest-among-the-MSM compared to other-members of the-KPs. Unusual-genital-discharge was experienced by 13.0% of MSM compared to 9.0% among PWIDs. Condom-use with commercial-partners was lowest among MSM. Radio was the main-source-of-information-on-HIV-and-AIDS among the MSM.
**Conclusions/Next steps:** The prevalence-of-HIV among-the-KPs especially-MSM was higher-than-the-national-average of 3.4% reported in the-National-and-Reproductive-Health-Survey Plus 2012. The National-Agency-for-the-Control-of-AIDS needs to come out with a policy-statement that will address the health-needs of MSM particularly on HIV-transmission as some of them have female-partners who serve as bridge to the general-population without contravening the Act. There is need to continue to intensify-effective-intervention-programmes for the prevention of HIV among the KPs particularly the MSM through constructive-engagement of law-enforcement-agents on the public-health-significance-of HIV for the good-of-all-people.

# LESSONS LEARNED FOR HIV IN THE CONTEXT OF THE MILLENNIUM DEVELOPMENT GOALS (MDGS)

## TUPEE632

### EDCTP AS A MODEL FOR EUROPE-AFRICA PARTNERSHIP ON HIV/AIDS RESEARCH: ACHIEVEMENTS AND FUTURE DIRECTIONS

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**Background:** The goals of the European & Developing Countries Clinical Trials Partnership (EDCTP) are to support collaborative research that accelerates the clinical development of new or improved interventions (drugs, vaccines, diagnostics) to prevent or treat HIV/AIDS, tuberculosis (TB), malaria and other poverty-related and neglected infectious diseases (PRDs) and to promote capacity building and networking in sub-Saharan Africa (SSA).
**Description:** EDCTP was established to pool resources and provide a research cooperation platform for HIV, malaria and TB between European/SSA countries. Under EDCTP1 (2003-2015) 254 grants (208 M€) were awarded; 68 on HIV and HIV/TB (68.5 M€; 32.9%), including 30 HIV trials (17 drug, 3 microbicide, 8 vaccine, and 2 on e-devices) and 9 HIV/TB co-infection trials. The 68 grants involved collaboration between 67 institutions from 13 European countries and 88 institutions from 24 African countries.
**Lessons learned:** EDCTP trials influenced national/international policies through adult/paediatric/adolescent and HIV/TB co-infection treatment trials, including initiation studies and pharmacogenomics. The CHAPAS-1 trial supported FDA approval and registration of a paediatric ARV formulation (Pedimune) in SSA. The PROMISE PrEP study recommended prophylaxis is administered to children breastfeeding from untreated HIV-positive mothers to minimise transmission risk.
**Conclusions/Next steps:** EDCTP-funded trials have contributed to the progress towards the Millennium Development Goals, HIV global health policy and strengthened clinical research capacity in Africa. EDCTP will continue supporting trials, clinical capacity building and networking, in collaboration with global health initiatives and funders. EDCTP2 (2014-2024) will receive ≤€ 683 million from the European Union and matching funding from European Participating States. The ~ €1.3bn budget will support phase I-IV clinical trials in SSA and contribute towards achieving the Sustainable Development Goals. EDCTP2 also aims to: promote greater alignment and coordination of national research programmes on PRDs; increase financial contributions from developing countries; and leverage cofunding from public/private sources. African nations can now become EDCTP members, providing a strong and equal European-African partnership. EDCTP2 calls for proposals are broad, aiming to address research areas of importance to SSA not already funded. To date, calls have covered diagnostics, treatment and research capacity development, with future calls expected to address gaps in treatment/ prevention of HIV/AIDS and other PRDs in SSA.

## TUPEE633

### LESSONS LEARNED FROM IMPLEMENTATION OF OPTION B+ IN LESOTHO WILL INFORM ROLL-OUT OF TEST AND TREAT

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**Background:** At 23%, Lesotho has the second highest adult HIV prevalence in the world and 57% of HIV-infected adults are women. Coverage of adult and pediatric antiretroviral treatment (ART) remains low at 35% and 30%, respectively. The country adopted World Health Organization Option B+ guidelines in April 2013, and countrywide coverage was complete by Q1 of 2014. Lesotho is set to adopt new test and treat guidelines early in 2016. Implementation of Option B+ will inform implementation of these new guidelines.
**Description:** The Elizabeth Glaser Pediatrics AIDS Foundation (EGPAF) is a leading clinical partner supporting the Ministry of Health in Lesotho and supported roll out of Option B+ guidelines countrywide. Routine programmatic data were collected

from all antenatal facilities to inform progress. After one year of Option B+ implementation, a cross-sectional review of routine prevention of mother-to-child HIV transmission program data from 17 high volume sites was done to analyze the proportion of women remaining alive and on ART at three, six, and 12-months after Option B+/ART initiation and to assess rates of early mother-to-child HIV transmission (MTCT) at six weeks, 14 weeks, and 9-12 months postpartum.
**Lessons learned:** Rapid adaptation resulted in successful, rapid countrywide scale-up of Option B+ and increased enrollment of pregnant women on ART from 11% in Q1 of 2013 to 94% in Q1 of 2014. Retention rates for women initiating Option B+ for their health were higher at 12 months compared those initiating Option B+ for prevention (81% versus 76%, respectively). Overall MTCT rates were low (2.5%) at nine months, but lower for women enrolled in Option B+ for their own health compared to women enrolled in Option B+ for prevention of transmission (1% versus 2.9%).
**Conclusions/Next steps:** Lesotho demonstrated capability for rapid (<1 year) scale up of Option B+ and high acceptability of lifelong treatment initiation among pregnant and breastfeeding women regardless of their disease status. This enrollment success provides the impetus for the national rollout of test and treat. However, improved adherence and retention are needed and will require development of enhanced messaging for both healthcare providers and for patients regarding the rationale and benefits of universal ART.

## Challenges and opportunities for HIV in the context of the Sustainable Development Goals (SDGs)

### TUPEE634

### Patents, public health and the SDGs: are least developed countries (LDCs) making full use of public health safeguards under WTO's TRIPS agreement to ensure sustainable access to affordable generic medicines?

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**Background:** For ensuring health lives, SDG 3 specifically calls for use of the Doha Declaration. Developing country experience shows TRIPS flexibilities must be incorporated &used to the fullest to ensure access to affordable medicines through import/local production. For the world's poorest countries, two recent hard won victories at the WTO have given them till 2021 for TRIPS compliance & till 2033 to enforce/grant pharmaceutical patents putting them in an ideal position to heed the calling of the SDGs.
**Methods:** To determine whether LDCs are in fact making use of the transition period and TRIPS flexibilities, the study:
(a) compiled &analysed LDC patent laws to determine coherence with public health objectives;
(b) identified potential impact on access to medicines due to early TRIPS compliance/non-inclusion of TRIPS flexibilities;
(c) proposed recommendations for law/policy makers.
**Results:** Despite the 2021 transition period, most LDCs appear to have complied with TRIPS including African LDCs who are members of OAPI. Afghanistan, Bangladesh, DRC, Madagascar, Myanmar & Nepal are considering Bills for early TRIPS compliance. Importantly, Cambodia,Burundi,Madagascar, Uganda, Rwanda & Zanzibar are making use of the pharmaceuticals transition period. The incorporation of TRIPS flexibilities in LDC laws is varied. For instance:
(a) only Zanzibar, Samoa, Burundi, Rwanda have safeguards against patent evergreening;
(b) for parallel imports, 11 LDCs have national & 13 have regional exhaustion limiting their ability to import lower-cost patented medicines;
(c) OAPI, Yemen, Mozambique, Cambodia, Angola, CapeVerde, Madagascar, Lesotho, SouthSudan, Rwanda & SierraLeone criminalise patent infringement that has a chilling effect on generic production/import. LDCs in WTO accession or FTA negotiations face TRIPS-plus demands. Positive attempts at including TRIPS flexibilities were observed in the East African Community LDC members.
**Conclusions:** LDCs have already used Doha Declaration/TRIPS flexibilities for access to generic ARVs. Facing disproportionate impact of NCDs (cancer incidence: 82% in 2030), such measures will be increasingly important as the TRIPS transition period ends, countries graduate LDC status &financial aid decreases. For local/regional pharmaceutical production, LDC transition period is crucial. Global Commission on HIV&law recommends suspending TRIPS for medicines &the recent Ebola crisis in Western African LDCs has raised serious questions on whether patents incentivise research for diseases affecting LDCs. Till a new paradigm emerges, access, equity, rights &the SDG health commitments require that LDCs make full use of the TRIPS transition period &amend their laws to include all TRIPS flexibilities.

## Scale up of paediatric diagnosis

### TUPEE635

### Six years of early infant diagnosis in Haiti, consolidating the program to support elimination of mother to child transmission efforts (2009-2014)

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**Background:** Dried blood spot HIV DNA PCR is a key component of PMTCT strategy. The Haitian National EID program started in September 2009. The rate of transmission has fallen from 26.3% in 2009 to 5.1% in 2014. The number of sites with EID capacity has grown from 25 in 2009 to 120 in 2014. This covers the majority of the Haitian population.
**Description:** The EID program is a partnership between the Haitian Ministry of Health, PEPFAR, The National Laboratory, Gheskio and other NGOs. The Caris Foundation is responsible for the training, specimen collection, result delivery and follow up of HIV positive infants identified.
From 1st September 2009 - 31st December 2194, 9886 infants were tested. This represents 85% of HIV positive pregnant women who were identified nationally for the same period. The median age of 1st PCR test has fallen from 12 weeks in 2009 to 8 weeks in 2014. The median turnaround time, from blood draw to return of PCR result to health provider was 21.0 days. Median time for laboratory testing was 7.3 days and median delivery of PCR result from the lab to health providers was 1.0 day due to an automated electronic system. 100% of results were returned to health providers.
Of the 736 identified as HIV positive, 733 (99.6%) were enrolled into clinical care (defined as returning for at least 1 clinical appointment after testing) and 558 (75.8%) were stared on ARV treatment.
**Lessons learned:** Scaling up the EID program has been successful and led to national coverage over 6 years. The testing processes have been merged with clinical follow up of children identified as positive. This has led to the possibility of reporting on clinical outcomes and improved the number of children started on ARVs. Electronic automation of result delivery and specimen processing has led to decreases in turnaround.
**Conclusions/Next steps:** The EID program needs to drive the elimination campaign in terms of targeting mother-child pairs to receive optimal PMTCT interventions. Further integration between PCR testing and follow up of HIV positive infants will improve the number of children initiated on ARVS and could reduce mortality.

## Scale-up of HIV self-testing

### TUPEE636

### Can 'late-read' of self-test devices be used as a quality assurance measure? Results of a pilot HIV self-test project in Zimbabwe

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**Background:** HIV self-testing (HIVST) may increase testing uptake. Critical to success is HIVST accuracy and quality assurance (QA). We evaluated the potential for 'late-read' of self-test devices as a QA measure.
**Methods:** We conducted supervised self-testing of Oraquick rapid tests, where participants self-tested, and recorded their result, followed by confirmatory testing. Self-test devices were immediately read by study staff. Between 2-6 months after testing, we late read test devices and compared with real-time results to assess late-read validity. We subsequently conducted a HIVST observational study. 695 participants opting to self-test were asked to anonymously return their used test device along with a self-administered questionnaire (SAQ) reporting their test result to a drop-box in their community, and participated in a post-test telephone survey. Test devices were collected weekly, late read, and compared to self-reported results.
**Results:** 201 supervised self-tests were included in the late-read validation study. 9 (4%) tests had faded test lines at the time of late-read. Results are in Table 1.

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| | N | Sensitivity | Specificity | Agreement | Kappa statistic |
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| **All results** | 201 | 100% (80.5%, 100%) | 96.6% (92.7%, 98.7%) | 93.5% | 73.9% (61.2%, 86.6%) |
| **Faint positive dropped** | 192 | 100% (78.2%, 100%) | 99.4% (96.8%, 100) | 96.9% | 84.7% (73.0%, 96.3%) |

*[Table 1: Real time versus late read of supervised self-test results]*

In our observational study 541 (78%) self-testers returned their used test devices, 73% returned the SAQ with test result indicated, and 622 (89%) participated in the telephone survey. Late-read HIV prevalence was 13% versus reported HIV prevalence of 8%. 92% of HIV-ve per late-read were reported HIV-ve by SAQ. Accurate reporting of HIV+ve results were less good, with 71% agreement on SAQ, however, telephone survey results were significantly more likely to be HIV+ve than SAQ results (P< 0.01, data not shown).
**Conclusions:** Supervised self-testing results demonstrated excellent agreement between real-time and late-read, suggesting late-read is a valid QA measure. Observational study participants were largely willing to return used test devices and report their results, necessary steps for QA of HIVST accuracy. Significant differences in reporting HIV+ve results between telephone survey and SAQ plus qualitative data (not presented here) indicating reluctance to disclose HIV status, supports reporting bias. Late-read is a potential strategy for QA of HIVST accuracy, however, measures to address potential reporting bias of results should be considered.

## ADHERENCE TO ANTIRETROVIRAL THERAPY, INCLUDING WHEN USED AS PREVENTION OR FOR CHEMOPROPHYLAXIS

## TUPED637

### BARRIERS TO ANTIRETROVIRAL TREATMENT ADHERENCE IN HIV-INFECTED LONG-TERM TREATED ADOLESCENTS AND ADULTS IN UGANDA

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**Background:** Long-term success of antiretroviral therapy for HIV requires near-perfect adherence, maintained throughout one's lifetime. However perception and patterns of adherence may change during the life course. We assessed challenges to long-term adherence in adolescents and adults in three HIV treatment regional centers in Uganda.
**Methods:** We conducted 24 in-depth interviews and 2 focus group discussions with a total of 33 health-care providers and expert clients. Interview topics included experiences with patients on long-term treatment with either declining or persistent non-adherence. Transcribed texts were coded and analyzed based on the social-ecological framework.
**Results:** Common themes to adults and adolescents were challenges with disclosure in intimate relationships, side effects upon treatment switch, erratic supply of drugs and change of brands with unfavorable taste. In adolescents main themes included lack of family and clinical support including facilitating caretakers for early and progressive disclosure of HIV status prior to adolescence, transitioning to adult-based care and declining peer-to-peer support groups. In addition there was also experimentation with treatment holidays, perceived discrimination and experienced stigma in boarding schools. In adults, temporary economic migrants had poor appointment keeping citing lack of transport, premise for being healthy hence prioritizing business to drug refills, political conflicts hindering their travel and reluctance to transfer out to nearby facilities.
**Conclusions:** Adherence counseling and support should be adaptive to different life stages and to the emerging life course challenges in long-term treated patients, and should be supported by sufficient well-trained counselors and appropriate supportive guidelines. Moreover, programs should also address constraints experienced by temporary economic migrants to ensure continuity of treatment within the host country.

## EXPERIENCES AND IMPACTS OF HIV-RELATED STIGMA

## TUPED638

### PSYCHOSOCIAL MANAGEMENT OF INTERNALISED HIV STIGMA, IN THE LOW PREVALENCE CONTEXT OF TURKEY

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**Background:** The paper explores how people living with HIV (PLHIV) experience and manage internalised stigma in Turkey, a low prevalence, conservative setting with very little and sporadic interventions on HIV/AIDS. Previous data show that internalised (or felt) stigma is higher and more powerful than enacted stigma in Turkey. Yet, being one of the most important obstacles in front of PLHIV's empowerment and participation, internalised stigma remains relatively under-researched in the overall stigma literature, as well as in the specific context of low prevalence settings.
**Methods:** Data were generated through narrative interviews with 28 PLHIV including key populations, interviews with 32 key informants and participant observation in a civil society programme offering direct support to PLHIV. Theoretical sampling, based on an intersectional approach was used. Social constructionist perspective to stigma and health psychology guided data analysis, in which thematic and narrative techniques were used.
**Results:** Main drivers of internalised stigma were identified as perceived 'failure' to fulfill family-related social roles and discrimination from healthcare providers. The paper focuses more on the effects of internalized stigma and on the active management strategies employed by PLHIV. Internalised stigma manifested itself in perceived responsibility, perceived shift in one's 'ideal' social identity, and feelings of shame and fear. Apart from preventing PLHIV from seeking treatment and professional psychological support, it also hindered participation in peer/support groups, made PLHIV 'keep a low profile' in healthcare settings and workplaces. Due to the internalised stigma, many reported cases of discrimination were perceived as 'justifiable differential treatment' and PLHIV were reluctant to take legal action. A number of psychosocial strategies for maintaining or enhancing a positive self-concept were identified, including passive acceptance versus 'resistance thinking', positive reappraisal and spiritual beliefs/practices.
**Conclusions:** Experiences differing in terms of gender, sexual orientation, and participants' involvement in activism, pointed out the intersectional character of internalised stigma and suggested that stigma management strategies should be conceptualised in non-linear and non-dichotomised terms. The roles of perceived risk and responsibility and the positive effect of peer support are demonstrated as particularly important in a low prevalence setting and suggested the urgent need for awareness-raising and stigma-reduction interventions in Turkey.

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# ORAL ABSTRACT SESSIONS

## WEAA01 ACUTE HIV INFECTION: THE BATTLE BEGINS

### WEAA0101

### TH17 CELLS ARE PREFERENTIALLY INFECTED IN THE FIRST 48 HOURS AFTER VAGINAL TRANSMISSION OF SIVMAC239 IN MACAQUES

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**Background:** Macaque vaginal challenge with SIV is utilized to reproduce the circumstances of male-to-female HIV transmission. This model has provided insights into HIV vaginal transmission, but the critical window of the earliest events taking place after mucosal exposure remains undefined.
**Methods:** We have recently developed a SIV-based dual reporter expression vector that facilitates the efficient identification of transmission susceptible sites in the rhesus macaque FRT after vaginal exposure. This system demonstrated that initial infection events can be widespread throughout the female reproductive tract (FRT), highly variable in their localization, and that T cells are the primary target in initial infection. Because this system efficiently identifies regions of susceptibility to infection in the FRT, we have determined that we can identify small foci of SIVmac239 infection 48 hours after vaginal challenge with a mixture of wildtype SIVmac239 and the LICh dual reporter. Utilizing this novel approach to SIV challenge, we routinely identify SIVmac239 infected cells revealing their localization and fates in the FRT 48 hours after vaginal challenge.
**Results:** Foci of infection with SIVmac239 are found throughout the female reproductive tract, from labia to ovary. We find that T cells are the major targets, and there is a strong bias for those with a Th17 phenotype. Infection of immature dendritic cells and macrophages is also observed representing approximately 25% of infected cells. 48 hours post inoculation, we find host responses to infection, evidenced by apoptosis, cell lysis, and phagocytosis of infected cells. RNA-Seq profiling of gene expression in tissues where SIV infection was established indicate that inflammatory responses and epithelial repair processes are occurring.
**Conclusions:** Defining the location and phenotype of SIV infected cell foci and early host responses informs the development of interventions designed to decrease HIV acquisition. Preferential infection of Th17 cells could explain the known conditions that increase HIV acquisition, including sexually transmitted infections and bacterial vaginosis. How these conditions precisely influence mucosal barrier function or the density of target cells remains to be determined. However, the system presented here provides essential sampling of these foci, facilitating characterization of the earliest host responses to SIV/HIV infection.

### WEAA0102

### EFFECT OF INJECTABLE HORMONAL CONTRACEPTIVES ON VAGINAL EPITHELIUM THICKNESS AND GENITAL HIV TARGET CELL DENSITY IN WOMEN RECENTLY INFECTED WITH HIV

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**Background:** Vaginal epithelial thinning and/or increased density of mucosal HIV-1 target cells are possible mechanisms by which injectable hormonal contraceptives (HCs) may increase risk for HIV-1 infection in HIV-1 negative women and the risk of her transmitting to her partner if infected. Here, the influence of injectable HCs on genital epithelial thickness, mucosal HIV-1 target cell density and depth in women with acute HIV infection was investigated.
**Methods:** CD4+ T cell and CD68+ macrophage density, both target cells for HIV infection, was measured by immunofluorescent staining in vaginal tissue biopsies from acutely-infected women who were either using injectable HCs or not using contraception. Concentrations of 48 cytokines measured in cervico-vaginal lavage (CVL). Blood CD4 counts and plasma viral loads were performed during acute infection and 12 months post-infection.
**Results:** Vaginal epithelial thickness was similar in women using injectable HCs compared to non-injectable HC users. The frequency of CD4+ T cells in the vaginal squamous epithelium of injectable HC users was significantly higher than non-injectable HC users (p=0.028). CD68+ macrophage cell density did not differ between women using injectable HCs and those not using injectable HCs, although macrophages were closer to the vaginal luminal surface in injectable HC users than those not using HCs (p=0.021). Furthermore, the frequency of mucosal CD68+ macrophages during the acute infection were positively associated with the concentration of the RANTES (beta coefficient (β)=0.779, p=0.024), MCP-1 (β=0.453, p=0.041), IP-10 (β=0.568, p=0.042), IL-7 (β=1.332, *p*=0.018), IL-9 (β=0.336, p=0.015), and IL-17 (β=1.058, p=0.007) in CVL, after adjusting for multiple comparisons.
**Conclusions:** Women using injectable HC users had increased frequencies of CD4+ T cells in their vaginal stratified epithelium than those not using injectable HCs. CD68+ macrophages correlated with a broad panel of mucosal cytokines. This study provides valuable insight into possible underlying mechanisms by which genital inflammation may increase HIV-1 risk and subsequent clinical phenotypes during HIV-1 disease course, such as viral set point.

### WEAA0103

### CHARACTERIZATION OF EARLY EVENTS OF SIVAGM DISSEMINATION FOLLOWING INTRARECTAL INOCULATION IN ADULT AGMS

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**Background:** African Green Monkeys (AGMs) do not normally progress to AIDS. Instead, they maintain a lifelong infection in spite of high viral replication. We investigated the impact of early virus replication and dissemination on the outcome of SIVsab infection in AGMs.
**Methods:** 29 adult male AGMs were intrarectally inoculated with SIVsab and serially sacrificed at 1-12 and 42+ days postinfection (dpi). Virus spread was monitored by PCR. vRNA and vDNA were quantified in 38 different tissues from each animal, including the site of inoculation**.** Plasma viral loads were quantified by standard RT-PCR and single copy assay (SCA). The PCR results were confirmed by extensive *in situ* hybridizations. Single genome amplification was performed to assess the bottleneck of SIV transmission.
**Results:** Plasma viremia was detectable as early as 2 dpi by SCA and 6 dpi by conventional PCR. vRNA and vDNA were detectable at the site of entry and draining LN as early as 1-3 dpi, in PBMCs at 3-4 dpi, in peripheral gut and lymphatics at 4-6 dpi and all other tissues 6 dpi. The highest levels of both vDNA and vRNA were found at the site of entry, LNs, peripheral gut and spleen. Multiple transmitted/founder viral variants were detected in all animals.
**Conclusions:** Early virus enrichment occurred at the site of entry, where the virus became detectable by 1-3 dpi. Plasma virus also became detectable very early, which indicates that the initial viral expansion and dissemination were nearly simultaneous. Furthermore, virus was detected early in the distal LNs, indicating rapid viral dissemination through the lymphatic system, in addition to the bloodstream. Multiple transmitted/founder viruses were identified in all animals, demonstrating that there is little bottleneck of virus transmission. These results are similar to the early viral dynamics of rectal transmission in adult male rhesus macaques, indicating that following rectal transmission there is little opportunity to prevent virus spread.

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## WEAA0104

### EARLY TREATMENT OF HYPERACUTE HIV INFECTION IMPACTS PHENOTYPE AND CLONAL REPERTOIRE OF HIV-SPECIFIC CD8+ T CELLS

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**Background:** Although natural immunity in some cases can lead to prolonged HIV suppression, it does not completely eliminate the virus. Consequently most of what we know regarding the nature of HIV-specific responses is based on inadequate responses generated in the setting of high levels of persistent plasma viremia and marked CD4 cell decline in acute infection. We investigated the impact of antigen withdrawal through very early treatment of hyperacute infection on the functional qualities of HIV-specific CD8+ T cell responses.
**Methods:** 10 subjects who initiated ART in Fiebig stage 1 and 12 subjects with untreated hyperacute HIV infection (UTx) were studied. We conducted a comparative longitudinal analysis of the clonality, phenotype and functional profile of HIV-specific CD8+ T cell responses generated during treated and untreated hyperacute infection. HIV-specific CD8+ T cells were measured using MHC class I tetramers. T cell receptors (TCR) were sequenced from tetramer sorted CD8+ T cells.
**Results:** In spite of rapid plasma virus suppression and blunted peak viremia, HIV-specific CD8+ T cell responses were detected in 7 of 10 (70%) ETx subjects studied, compared to 90% detection rate in UTx. Phenotypic analysis of tetramer+ cells showed that responses in ETx subjects expressed higher levels of interleukin-7 receptor alpha (CD127+), a marker associated with the development of long term memory, compared to untreated subjects (*=0.0001*). ETx responses were more fully differentiated with terminally differentiated effector cells account for the 90% of the responses (*p=0.0001*) whereas untreated responses were less differentiated, with effector cells account for 90% of the response (*p=0.0001*). Combined tetramer ICS staining of 2 ETx had >70% tetramer+ cells secreting IFN-g compared to < 20% in UTx. Furthermore, longitudinal TCR analysis of tetramer sorted cells obtained from ETx revealed striking clonal stability over time whereas UTx responses were characterized by successive waves of clonal loss and emergency of new clonotypes over time.
**Conclusions:** We show that very early ART is associated with measurable CD8+T cell responses that are phenotypically and functionally superior to untreated hyperacute HIV infection. Our data suggest that prompt curtailment of HIV replication result in more functionally competent immune responses with potential for long-term survival.

## WEAA0105LB

### EXHAUSTION OF ACTIVATED CD8 T CELLS PREDICTS DISEASE PROGRESSION IN PRIMARY HIV-1 INFECTION

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**Background:** The rate at which HIV-1 infected individuals progress to AIDS is highly variable and impacted by T cell immunity. CD8 T cell inhibitory molecules are up-regulated in HIV-1 infection and associate with T cell dysfunction. Here we aimed to determine whether CD8 T cell immune checkpoint markers PD-1, Lag-3 and Tim-3 are associated with immune activation and disease progression.
**Methods:** We evaluated participants (n=122) with primary HIV infection (PHI) randomised to receive short-course ART, or no therapy, in the SPARTAC trial. Expression of PD-1, Tim-3, Lag-3 and CD38 on CD8 T cells from the closest pre-therapy time-point to seroconversion was measured by flow cytometry, and correlated with surrogate markers of HIV disease (HIV-1 plasma viral load (pVL) and CD4 T cell count) and the trial endpoint (time to CD4 count < 350 cells/µl or initiation of long-term antiretroviral therapy). To explore the functional significance of these markers, co-expression of Eomes, T-bet and CD39 was assessed.
**Results:** Expression of PD-1 on bulk and CD38 CD8 T cells correlated with pVL and CD4 count, and predicted the trial endpoint. Lag-3 expression was associated with pVL but not CD4 count. For all exhaustion markers, expression on CD38 CD8 T cells increased the strength of the associations. In Cox models, progression to the trial endpoint was most marked for PD-1/CD38 co-expressing cells, with evidence for a stronger effect within 12 weeks from seroconversion. The effect of PD-1 and Lag-3 expression on CD8 T cells retained statistical significance in Cox proportional hazards models including antiretroviral therapy and CD4 count, but not pVL as co-variants (HR 1.76; p=0.047 and HR 1.46; p=0.024 respectively). In a cohort of similar individuals with untreated PHI we demonstrated strong associations of PD-1 and Lag-3 with the T-bet$^{dim}$/Eomes$^{hi}$ CD8 population and CD39 expression, suggesting the expression of these markers during PHI represents functional exhaustion.
**Conclusions:** Expression of 'exhaustion' or 'immune checkpoint' markers in early HIV infection is associated with clinical progression, and may be impacted by immune activation and timing of therapy. New markers to identify exhausted T cells and novel interventions to reverse exhaustion may inform the development of new immunotherapeutic approaches.

## WEAA0106LB

### HIV CURE RESEARCH IN A NOVEL POPULATION OF SOUTH AFRICAN HYPER-ACUTE HIV INFECTIONS DETECTED IN THE BLOOD DONATION SETTING: THE MONITORING AND ACUTE TREATMENT OF HIV STUDY (MATHS)

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**Background:** All blood donations in South Africa are tested in parallel for HIV antibody and for RNA using highly sensitive individual-donation nucleic acid testing (ID-NAT). About 60 South African donors per year are detected to have RNA but not antibody (Fiebig stages I and II). We reasoned that with rapid initiation of antiretroviral therapy (ART), this population could be important for studying elimination of the HIV reservoir and HIV Cure.
**Methods:** We plan to enrol 50-75 Fiebig stage I and II HIV infected persons detected at the time of blood donation. HIV antibody (Abbott Prism HIV O Plus) and HIV RNA ID-NAT (Griffols, Emeryville, CA) were measured on samples taken at donation and enrolment. In collaboration with Right to Care Health Services, ART with Raltegravir/FTC/TDF is initiated at enrolment and switched to EFV/FTC/TDF at 6 months. HIV reservoir will be measured prospectively on leukocytes obtained from peripheral blood and plasma/leukapheresis. Finally, 25 Elite controllers, defined as antibody positive but HIV RNA negative on ID-NAT, are followed for HIV virology and immunology without treatment.
**Results:** Since October 2015, we have enrolled 14 donors with hyperacute HIV infection, median age 26 years, 10 female, 12 Black, 1 Asian and 1 White, mean HIV RNA 506,000 copies and mean CD4 547 cells/mm$^3$. Enrolment occurred a median of 13 days after donation and ART was initiated a median of 2 days after enrolment. Participants were Fiebig stages I (n=9) and II (n=5) at donation and Fiebig stages I (n=1), II (n=6) and III (n=7) at enrolment. In 9 evaluable participants, viral suppression (< 20 copies/mL on a sensitive viral load assay) occurred after a median of 35 days on ART. To date, 7 Elite controllers have been enrolled.
**Conclusions:** This study provides proof of principle that a partnership between the national blood service and a treatment NGO can be used to detect and rapidly treat persons with hyperacute HIV infection in South Africa. Initial results suggest that half of enrolees were still in Fiebig stage I/II at enrolment and that rapid viral suppression can be achieved once they are started on ART.

# WEAB01 SUPPORTING THREE GENERATIONS OF HEALTHY MOTHERS AND HEALTHY BABIES

## WEAB0101

### ACCEPTABILITY OF EARLY HIV TREATMENT AMONG SOUTH AFRICAN WOMEN

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**Background:** WHO guidelines recommend immediate initiation of antiretroviral therapy (ART) for all individuals at HIV diagnosis regardless of CD4 count. There is a concern among some health care providers that there will be low uptake and/or poor adherence for ART in patients who are well and have high CD4 counts, but there is little data on uptake of earlier ART in resource-poor settings. This study assessed the acceptability of earlier treatment among HIV-positive South African women in a 10-year prospective cohort study (CAPRISA 002).

**Methods:** CD4 count and HIV viral load were measured 3-monthly from acute infection until five years post-ART initiation for CAPRISA 002 participants. Acceptability of earlier ART initiation was assessed by
(i) describing temporal trends of CD4 count at initiation in relation to WHO guidance,
(ii) virological suppression rates post-ART initiation at different CD4 count thresholds, and
(iii) administration of a standardized questionnaire.

**Results:** A total of 170/232 (73.3%) CAPRISA002 participants had initiated ART between January 2006 and December 2015. Mean CD4 count at initiation was 216 cells/µl [standard deviation (SD) 73.0; range 135-372] before 2010, and substantially increased to 531 cells/µl (SD 183; range 272-1095) by 2015 (p< 0.001). Median viral load simultaneously decreased from 5.3 [interquartile range (IQR) 4.6-5.8] to 4.1 (IQR 3.4-4.6) log copies/ml (p=0.004). Virological suppression rates at 3, 6, 12 and 18 months were consistently above 85% with no statistically significant differences for participants starting ART at higher versus lower CD4 count thresholds (Table). An early ART questionnaire revealed that 40/51 (78.4%) participants were willing to start ART at CD4 500 cells/µl or above, while 11/51 (21.6%) were unwilling. Within six months of questionnaire administration 28/40 (70.0%) and 6/11(54.5%) participants had initiated treatment (p=0.472).

| CD4 Count at Initiation (cells/µl) | 3 months | 6 months | 12 months | 18 months |
|---|---|---|---|---|
| <350 (n=77) | 87.9% (51/58) | 85.9% (67/78) | 87.8% (65/74) | 92.8% (65/70) |
| ≥350 (n=80) | 95.3% (61/64) | 92.7% (51/55) | 92.1% (35/38) | 100% (26/26) |
| P-value | 0.190 | 0.273 | 0.544 | 0.319 |
| <500 (n=132) | 92.2% (94/102) | 88.5% (100/113) | 88.0% (88/100) | 94.4% (85/90) |
| ≥500 (n=35) | 90.0% (18/20) | 90.0% (18/20) | 100% (12/12) | 100% (6/6) |
| P-value | 1.000 | 1.000 | 0.357 | 1.000 |

*[Virological suppression after ART initiation at different CD4 count thresholds]*

**Conclusions:** Temporal increases in CD4 counts, high virological suppression rates, and positive patient perceptions confirm high acceptability of ART irrespective of CD4 treatment threshold for the majority of patients in this population.

## WEAB0102

### TIMING OF PREGNANCY AMONG HIV-POSITIVE WOMEN, POSTPARTUM RETENTION AND RISK OF VIROLOGIC FAILURE

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**Background:** The wide implementation of the PMTCT Option B+ approach in South Africa warrants a closer examination of postpartum antiretroviral therapy (ART) outcomes. In this study we examine the association between timing of the first pregnancy with the risk and predictors of postpartum ART failure and disengagement from HIV care in South Africa.

**Methods:** This is a retrospective cohort study of 5780 HIV positive women 15 to 49 years of age, initiated on ART between 2004 and September 2014 in Johannesburg, South Africa. The incidence and predictors of ART failure (two consecutive viral load>1000 copies/ml) and loss to follow up (LTFU, >3 months late for a scheduled visit) during 24 months post-delivery/equivalent time were assessed using Cox proportional hazards modelling.

**Results:** Compared to non-pregnant women (Rate 5.6 per 100PY), women were more likely to be LTFU after a prevalent (Rate 13.7 per 100PY; HR 8.2, 95%CI: 6.3-10.6) or an incident pregnancy (Rate 10.1 per 100PY; HR 5.0, 95%CI: 4.0-6.2). The risks of ART failure following an incident pregnancy (Rate 5.9 per 100PY; HR 2.2, 95% CI: 1.6 - 2.9) and in the risk in the non-pregnant group (Rate 7.6 per 100PY; HR 1.9, 95% CI: 1.4 - 2.6) were higher than the risk after a prevalent pregnancy (Rate 4.9 per 100PY). Predictors of postpartum ART failure were being anaemic at delivery (HR 1.25, 95% CI: 1.01 - 1.54), having a low CD4 (< 350 cells) (HR 1.9, 95% CI: 1.6 - 2.4) and meeting the definition for LTFU (HR 1.4, 95%CI: 1.1-1.9). When stratified by CD4 count, among women with low CD4 (< 350) at delivery, the hazard of failure in the incident pregnancy group remained higher than in the prevalent pregnancy group (HR 2.5, 95% CI: 1.8-3.5). There was no difference in the high CD4 strata.

**Conclusions:** The risk of HIV treatment failure remains high among postpartum women, particularly those who conceive while on ART. The results highlight the importance of strengthening retention and monitoring efforts for postpartum women to sustain the benefits of the PMTCT program.

## WEAB0103

### ADVERSE OBSTETRICAL OUTCOMES AMONG HIV-POSITIVE AND HIV-NEGATIVE MOTHER-INFANT PAIRS IN NIGERIA AND SOUTH AFRICA: FINDINGS FROM THE INFANT STUDY

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**Background:** Sub-Saharan Africa has disproportionately high rates of infant morbidity and mortality. Healthy obstetrical outcomes are critical for establishing strong developmental trajectories, especially among infants exposed to HIV perinatally. This analysis was designed to identify the prevalence and correlates of adverse neonatal outcomes among HIV+ and HIV- mothers and their infants.

**Methods:** The INFANT study is a longitudinal cohort of healthy HIV+ and HIV- mother-infant pairs recruited from B Clinic in Khayelitsha, South Africa and Plateau State Specialist Hospital in Jos, Nigeria (April 2013 to March 2015). Adverse obstetrical outcomes included low birth weight
(< 2500g), small for gestational age (< 10 percentile), pre-term birth (< 37 weeks) and a composite outcome for any adverse outcome. Using odds ratios (OR) and 95% confidence intervals (CI), bivariable and multivariable logistic regressions determined association between HIV and adverse obstetrical outcomes.

**Results:** A total of 680 mother-infant pairs were recruited into the study - 490 pairs with HIV+ mothers and 190 with HIV- mothers. The mother's median age was 29 years (IQR: 25-33), 147 (21.65%) had less than elementary school education, 503 (74.19%) were married, and 477 (70.25%) lived without running water. A total of 170 (25.00%) births had an adverse obstetrical outcome - 30 (4.41%) with low birth weight, 92 (13.53%) were small for gestational age, and 71 (10.44%) were pre-term. Adverse outcomes were higher among mothers with HIV (OR:1.52, 95% CI:1.08-2.13), those with less than elementary school (OR:1.49, 95% CI:1.12-1.97) and those without running water (OR:1.48, 95%CI:1.06-2.05). Married mothers (OR:0.55, 95%CI:0.98-0.81) and mothers from the Khayelitsha site (OR:0.35, 95% CI: 0.24-0.50) had lower odds of adverse outcomes. After adjusting for education, running water, marital status and study site, mothers living with HIV had significantly higher odds of adverse obstetrical outcomes (AOR: 1.45, 95% CI:1.03-2.04).

**Conclusions:** Although this study was designed to include healthy births, 25% of mother-infant pairs had an adverse obstetrical outcome, and 45% higher odds were documented among mothers with HIV. Comprehensive antenatal care for all women, including those living with HIV, is needed to optimize maternal and child health.

## WEAB0104

### HIGH PROPORTION OF DEATHS ATTRIBUTABLE TO HIV AMONG POST-PARTUM WOMEN IN BOTSWANA DESPITE WIDESPREAD UPTAKE OF ART

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**Background:** Mortality in the post-partum period may be impacted by antiretroviral treatment (ART) received in pregnancy, and whether ART is continued in the post-partum period.
**Methods:** HIV-infected and HIV-uninfected mothers were enrolled within 48 hours of delivery at 5 public hospital maternity wards throughout Botswana. Follow up visits were conducted by cellphone at 1 and 3 months, then every 3 months until 24 months post-partum. Maternal deaths were reported by one of the approved contacts given by the mother at enrollment. Risk factors for maternal survival were assessed using Cox proportional hazard models.
**Results:** Between February 2012 and March 2013, 3000 mothers (1499 HIV-infected and 1501 HIV-uninfected) were enrolled. There were 26 total maternal deaths in 24 months post-partum
(411 per 100,000 person-years), 22 among HIV-infected women (769 per 100,000 person-years) and 4 among HIV-uninfected women (134 per 100,000 person-years). Maternal age, availability of indoor toilet, formal housing, Rh factor, preterm delivery and higher parity were associated with mortality in univariate, but not adjusted analyses. Maternal HIV-infection (aHR 5.0, 95% CI 1.6, 15.2) and infant birth injury (aHR 3.8, 95% CI 1.3, 11.4) were independent risk factors for maternal death in the post partum period. Among HIV-infected women, when compared with the 924 women who received continuous 3-drug ART in pregnancy and post-partum, there was no significant increase in mortality among 281 women who discontinued ART after pregnancy (aHR 2.1, 95% CI 0.6, 7.5); among 241 women who initiated or re-started ART in the post-partum period (aHR 1.1, 95% CI 0.2, 5.1); or among 70 women who received no ART at any time (aHR 2.8, 0.3, 28.2). CD4 cell count in pregnancy was not associated with mortality (p=0.20) and longer ART duration prior to delivery (> 2 years) did not decrease mortality (aHR 0.6, 95% CI 0.1, 3.4).
**Conclusions:** Despite high uptake of 3-drug ART in pregnancy and post-partum, HIV infected women were 5 times more likely than HIV-uninfected women to die within 24 months after delivery, independent of CD4 cell count. Further research is needed to understand the increased risk of mortality among HIV-infected post-partum women.

## WEAB0105

### BIRTH WEIGHT AND PRETERM DELIVERY OUTCOMES OF PERINATALLY VS. NON-PERINATALLY HIV-INFECTED PREGNANT WOMEN IN THE U.S.: RESULTS FROM THE PHACS SMARTT STUDY AND IMPAACT P1025 PROTOCOL

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**Background:** The success of antiretroviral therapy (ART) has resulted in many perinatally HIV-infected (PHIV) youth reaching reproductive age. Pregnancy outcomes of PHIV women compared to women acquiring HIV non-perinatally (nPHIV) are poorly defined.
**Methods:** We compared birth weight (BW) and preterm delivery (PTD) outcomes of PHIV versus nPHIV pregnant women enrolled in the PHACS Surveillance Monitoring for ART Toxicities Study (SMARTT) or IMPAACT P1025 protocol. Women were 13-30 years old. Infants were HIV-uninfected singleton liveborns. Maternal PHIV status was identified by self-report, medical record review, or HIV infection documented within 5 years of birth. BW *z*-scores (BWZ) and small-for-gestational-age (SGA) were calculated using U.S. standards. Mixed effects models were applied to assess the association of maternal PHIV status with infant BWZ; log binomial models using generalized estimating equations were fit for PTD (delivery at < 37 weeks) and SGA outcomes.
**Results:** From 1998-2013, 2,270 HIV-infected pregnant women delivered 2,692 newborns (270 born to PHIV and 2,422 to nPHIV women). Compared to nPHIV women, PHIV women were younger (mean age 21 vs. 25 years, $p< 0.01$) and less often Black (55% vs. 67%, $p< 0.01$). PHIV women were more likely to have a CD4 count < 200 cells/mm³ during pregnancy (19% vs. 11%, $p=0.01$), delivery HIV RNA level ≥400 copies/mL (28% vs. 23%, $p< 0.01$), receipt of ≥3-class ART during pregnancy (23% vs. 2%,
$p< 0.01$), and pre-pregnancy body mass index (BMI) < 18.5 kg/m² (6% vs. 3%, $p< 0.01$). PHIV were less likely to report tobacco (14% vs. 20%, $p=0.01$) and substance use (1.7% vs. 3.3%, $p< 0.01$) during pregnancy. After adjustment, BWZ was 0.13 lower in infants of PHIV vs. nPHIV women (adjusted mean: -0.46 vs. -0.33, $p=0.03$). Black race, tobacco and substance use in pregnancy, and maternal pre-pregnancy BMI < 18.5 kg/m² were also significantly associated with lower infant BWZ. No associations between maternal PHIV status and PTD or SGA were observed.
**Conclusions:** Infants of PHIV versus nPHIV women may be at greater risk for lower BW, although the absolute difference was small. Future studies are warranted to understand mechanisms by which the intrauterine environment of PHIV women may affect fetal growth.

## WEAB02 TAKING TB FROM TESTING TO TREATMENT

### WEAB0201

#### DAILY IS BETTER THAN THRICE-WEEKLY ANTI-TUBERCULOSIS THERAPY IN HIV PATIENTS WITH CULTURE CONFIRMED PULMONARY TB: A RANDOMISED CONTROLLED CLINICAL TRIAL FROM SOUTH INDIA

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**Background:** Benefit of daily over thrice-weekly anti-tuberculosis therapy (ATT) in pulmonary TB (PTB) patients with HIV on anti-retroviral therapy (ART) is unclear.

**Methods:** Efficacy comparison (first head to head) of three ATT regimens of 6 months administered daily

(**A**: $2EHRZ_7/4HR_7$), part daily

(**B**: $2EHRZ_7/4HR_3$) or thrice weekly throughout

(**C**: $2EHRZ_3/HR_3$) in HIV-PTB.

An open label randomised clinical trial at the National Institute for Research in Tuberculosis, India, enrolled HIV infected treatment-naive confirmed PTB patients (sputum smear or Xpert-MTB Positive). Clinical evaluation, two sputa smear for Acid Fast Bacillus and culture including drug susceptibility testing (Lowenstein Jensen medium) was done at baseline and monthly for 18 months. CD4 cell count, HIV viral load, liver and renal function tests, and Chest X-ray were performed at 0, 2, 6, 12 and 18 months. Block randomisation, stratified by baseline sputum smear grading (0 & 1+) or (2+&3+) and CD4 cell count (< 150 or >150), was performed and patients allocated to fully supervised ATT regimens **A**, **B** and **C .** ART initiation was within 8 weeks of starting ATT. Pre-treatment rifampicin- sensitive cases were analysed. Primary outcomes were failures and acquired rifampicin resistance (ARR).Secondary outcomes were death, default, and toxicity. Intent to treat and efficacy analyses were performed. Outcomes compared using Chi-square test. [NCT00933790].

**Results:** Till date, 324 patients were allocated to regimens A (110), B (109) and C (105) respectively. Baseline characteristics were comparable.

| | Daily regimen A (n=110) | Part Daily regimen B (n=109) | intermittent regimen C (n=105) |
|---|---|---|---|
| Mean Age in years ±SD | 38±8 | 39±9 | 39±9 |
| Mean weight in kilograms ±SD | 42.6±8.1 | 42.0±7.5 | 44.4±7.5 |
| Mean HB gms% ±SD | 9.7±2.2 | 9.6±2.0 | 10.0±2 |
| Mean HCT% ±SD | 28.7±6.6 | 27.8±5.3 | 29.8±7.1 |
| Mean HIV viral load(log10){copies/ml}±SD | 4.8±1.2 | 4.9±1.0 | 4.9±1.2 |
| Median CD4 cell count (IQR)cells/mm3 | 130 (65-220) | 145 (79-262) | 135(65-252) |
| Median ATT-ART interval (IQR), in days | 17 (3-36) | 17 (5-45) | 15 (2-34) |
| Mycobacterium TB sensitive to all drugs % | 77 | 71 | 68 |

*[Baseline Characteristics of HIV patients with newly diagnosed PTB randomized to three ATT regimens]*

Favourable responses (ITT) in **A** and **C** were 90% (83/92) vs.77% (65/85) {p=0.013, crossing OB'rein Fleming boundaries at second interim analysis}.B had 79% (70/89) efficacy. Failures were three in B and eight ( four with ARR) in C. Adverse drug reactions were 24%, 19% and 10% in A, B, C regimens respectively.

**Conclusions:** Daily ATT resulted in higher cure, lower failure, no emergence of ARR but higher toxicity ( mostly manageable) compared to thrice-weekly ATT.

### WEAB0202

#### INTENSIFIED TUBERCULOSIS CASE-FINDING AMONG PEOPLE LIVING WITH HIV: DIAGNOSTIC YIELD OF XPERT MTB/RIF, URINE LIPOARABINOMANNAN AND LIQUID CULTURE

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**Background:** To reduce the burden of tuberculosis (**TB**) among **PLHIV**, the WHO recommends symptom-based screening at every clinic visit, followed by Xpert MTB/RIF (Xpert) testing for all individuals who screen-positive (*intensified* case finding [**ICF**]). However the utility of this ICF strategy is unknown. It is also not clear how other TB diagnostics can increase sensitivity and/or reduce the time to diagnosis.

**Methods:** We administered the WHO TB symptom screen to consecutive HIV-infected adults with CD4+ count ≤350 cells/uL initiating antiretroviral therapy (ART) in Uganda from July 2013-December 2015. We collected 2 spot sputum specimens from all patients and urine if CD4 was ≤200 cells/uL. We compared the proportion of culture-confirmed TB cases detected by individual tests (sputum Xpert, urine Determine TB LAM [Grade II cut-point], a single sputum mycobacterial growth indicator tube [MGIT] culture) and test combinations (Xpert+LAM, Xpert+MGIT, LAM+MGIT, Xpert+LAM+MGIT). We also calculated the time to TB detection as the time from enrollment to first positive result.

**Results:** Symptom screening was positive in 1,012 of 1128 (90%) patients (median CD4 156 cells/uL, IQR 69-265), including 152 of 159 patients with TB. TB prevalence among symptomatic PLHIV was 15%. Of the 152 symptomatic and culture-confirmed TB cases, 49% (95% CI: 41-57) were identified with Xpert, 33% (95% CI: 20-48) with LAM, and 77% (95% CI: 69-83) with a single MGIT culture. Compared to Xpert alone, the diagnostic yield increased to 68% (difference 19%, 95% CI: 2-35) with Xpert+LAM, 85% (difference 36%, 95% CI: 26-46) with Xpert+MGIT, 80% (difference 30%, 95% CI: 19-42) with LAM+MGIT, and 86% (difference 37%, 95% CI: 26-47) with Xpert+LAM+MGIT. The false-positive rate was < 3% for all strategies. Over 75% of patients were diagnosed on the same day for ICF strategies that used Xpert, LAM, or Xpert+LAM.

**Conclusions:** TB prevalence was high among symptomatic PLHIV initiating ART. The currently-recommended ICF strategy (Xpert alone) missed nearly half of all TB cases. The inclusion of urine LAM increased diagnostic yield and same-day diagnosis, but without culture, any ICF strategy is likely to miss at least one-third of all patients with active TB in this setting.

### WEAB0203

#### CYTOMEGALOVIRUS VIRAEMIA AND 12-WEEK MORTALITY AMONG HOSPITALISED ADULTS WITH HIV-ASSOCIATED TUBERCULOSIS IN KHAYELITSHA HOSPITAL, SOUTH AFRICA: A PROSPECTIVE COHORT STUDY

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**Background:** Mortality in hospitalised patients with HIV-associated tuberculosis remains high. Cytomegalovirus (CMV) organ disease is one of the co-infections found in autopsies of such patients. We investigated the association of CMV viraemia with mortality in this setting.

**Methods:** HIV-infected inpatients in Khayelitsha Hospital with CD4< 350cells/mL and new diagnosis of tuberculosis were enrolled from January 2014-June 2015. Plasma CMV qPCR was performed and categorized as detectable (CMV+) or undetectable (CMV-). Endpoint was 12-week mortality.

**Results:** We included 256 patients with median age 36 years (IQR 31-44 years), 49% male, 35% on ART, median CD4=64 cells/mL(IQR 24-117) and 79(30.9%) CMV+. By 12 weeks, 26/77(38.0%) of CMV+ and 31/174(17.8%) of CMV- patients died (p=0.008); 5 were lost to follow-up. In CMV+ patients with < 1000 copies/ml mortality was 12/36(33.3%) compared to 14/41(34.1%) in those with higher viral load (p=1.0).

Mortality was higher in older patients (≥36 years): 32.8% vs. 14.1%(p< 0.001). Older patients were more likely to be CMV+ (38.0% vs. 23.6%, p=0.015) and a larger proportion of older patients had CD4 count< 50 cells/mL (48.5% vs. 37.9%, p=0.106). In Kaplan-Meier analysis, CMV+ was associated with mortality in older, not younger patients.

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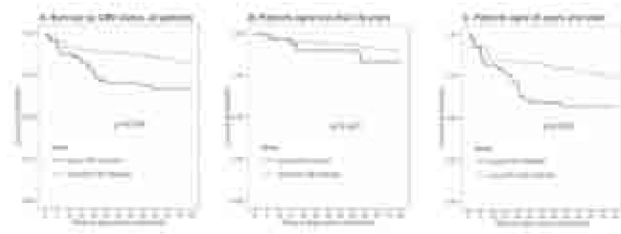
In multivariate Cox proportional-hazards regression, age (aHR=1.70, 95%CI=1.34-2.15 per 10years increase) was associated with mortality; CMV status was not.



*[Figure: Survival by CMV status: whole cohort and stratified by age]*

| | Univariate | | | | Multivariate: n=232 with complete observations | | | |
|---|---|---|---|---|---|---|---|---|
| | HR | lower 95%CI | upper 95%CI | p.value | aHR | lower 95%CI | upper 95%CI | p.value |
| Age, per 10 years | 1,75 | 1,41 | 2,19 | **<0.001** | 1,70 | 1,34 | 2,15 | **<0.001** |
| Male sex | 0,84 | 0,50 | 1,41 | 0,505 | 0,69 | 0,41 | 1,19 | 0,185 |
| CD4, per 50 cellsx10^6/L | 0,78 | 0,64 | 0,96 | **0,017** | 0,80 | 0,64 | 1,00 | 0,052 |
| HIV viral load, Log10 copies/mL | 0,90 | 0,80 | 1,03 | 0,117 | 0,94 | 0,82 | 1,07 | 0,316 |
| Mycobacteraemia | 1,48 | 0,88 | 2,49 | 0,138 | 1,00 | 0,56 | 1,76 | 0,990 |
| Albumin, per 5 g/L | 0,73 | 0,58 | 0,92 | **0,006** | 0,84 | 0,66 | 1,08 | 0,177 |
| CMV viraemia | 2,09 | 1,24 | 3,53 | 0,004 | 1,67 | 0,95 | 2,93 | 0,077 |
| Likelihood ratio test= 37.2 on 7 d.f., p<0.0001 | | | | | | | | |

*[Table: Cox proportional hazards regression analysis of factors associated with 12-week mortality]*

**Conclusions:** CMV viraemia was associated with higher mortality, but not after adjusting for potential confounders. Older patients had higher mortality and were more likely to have CMV viraemia. CMV viraemia is likely a marker of more severe immunodeficiency rather than a direct contributor to mortality.

## WEAB0204

### YIELD OF COMMUNITY HEALTH WORKER-DRIVEN INTENSIFIED CASE FINDING FOR TUBERCULOSIS AMONG HIV-POSITIVE PATIENTS IN RURAL MALAWI

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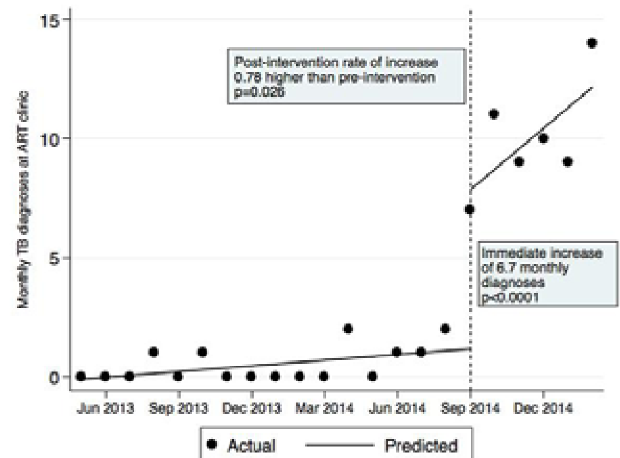
**Background:** Tuberculosis (TB) is the most common cause of death in HIV-positive patients. Early detection and anti-TB treatment initiation improves outcomes and minimizes ongoing transmission. Intensified case finding (TB-ICF) among HIV-positive patients is recommended by the WHO, however evidence from routine implementation at high-volume antiretroviral therapy (ART) clinics in resource-constrained settings is scarce. Here, we describe the yield of TB-ICF conducted by community health workers (CHWs) among HIV-positive patients accessing ART in rural Malawi.
**Methods:** Thirteen CHWs employed by the Baylor Tingathe outreach program were trained to conduct TB-ICF using a standardized symptom screening tool at a large rural district hospital. Patients were screened while awaiting routine services at ART clinic. Patients screening positive were triaged for assessment by a clinician and sputum analysis by smear microscopy and GeneXpert. Patients were followed up until final diagnosis and traced if necessary. Sixteen months of pre- and six months of post-intervention data was abstracted from registers and tools used by CHWs. Single-group interrupted time series analysis was used to assess impact of the intervention.
**Results:** The mean number of monthly TB diagnoses made at ART clinic increased by a factor of 20 post-intervention(0.5 vs 10.0 monthly diagnoses, p< 0.0001). In the first month of the intervention an immediate increase of 6.7 monthly diagnoses occurred (p< 0.0001, Figure 1). There was a statistically significant increase in the monthly trend of TB diagnoses relative to the pre-intervention trend of 0.78 per month(p=0.026). The yield of screening in the post-intervention period was 10.0%(46/459). Diagnoses were only made in children post-intervention(9/46, 19.6%).




*[Figure 1. Actual and model-fitted monthly TB diagnoses at ART clinic before and after CHW TB-ICF]*

**Conclusions:** Implementation of TB-ICF with CHWs was associated with significant increases in the number and trend of monthly TB diagnoses. Screening resulted in favorable yields, and helped link children to care. Future work is needed to ascertain the durability of this effect and the impact on treatment outcomes.

## WEAB0205LB

### HIGH-DOSE RIFAMPICIN TUBERCULOSIS TREATMENT REGIMEN TO REDUCE 12-MONTH MORTALITY OF TB/HIV CO-INFECTED PATIENTS: THE RAFA TRIAL RESULTS

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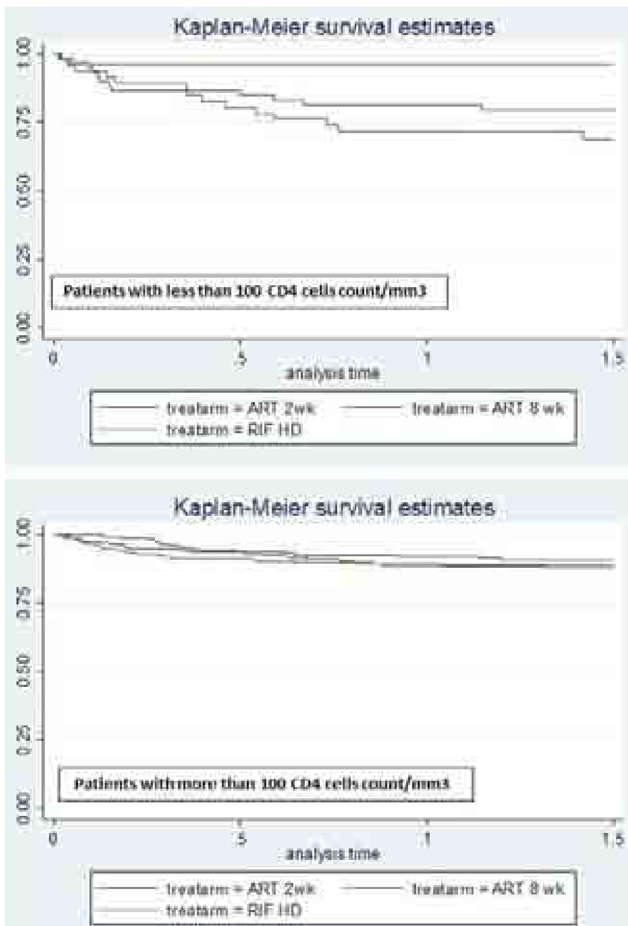
**Background:** Approximately 30% of TB/HIV patients die within 12 months of starting TB treatment. Current treatment strategies to reduce TB/HIV mortality rely largely on the optimal management of HIV disease. But, as supported by autopsy studies, the problem might also be seen from the TB perspective: more intensive TB treatment might also reduce mortality.
**Methods:** We conducted an open label, 3 parallel arms, randomised controlled trial, among TB/HIV co-infected patients who were ARV-naive and with a CD4 cell-count ≥50 cells/mm3 at enrolment, in Benin, Guinea and Senegal.
The trial arms were: Arm A - ARV initiation at 2 weeks combined with standard TB treatment; Arm B (control arm) - ARV initiation at 8 weeks combined with standard TB treatment; Arm C - ARV initiation at 8 weeks with high-dose rifampicin (15mg/kg) during the first 2 months of TB treatment. The primary outcome was 12-month mortality.
**Results:** In total, 778 TB/HIV patients were randomised (n=262, 258 and 258 for arms A, B and C respectively). All TB cases were bacteriologically confirmed. CD4 cell-counts ranged from 50-949 (median 183), balanced across arms.
By January 2016, all patients completed 12 months of follow-up post-randomisation. The overall 12-month mortality rates were: 11.8, 15.5 and 10.9 per 100 person-years in arms A, B and C respectively. Using Cox regression, there was no evidence that overall mortality rates differed by treatment arm (p=0.40).
Restricting the analysis to patients with a baseline CD4 cell-count < 100 cells/mm3, mortality was substantially reduced (p=0.006) in Arm C, with high-dose rifampicin, compared with Arm B, but not in Arm A (p=0.24) (Fig 1). There was no evidence of an increased risk of hepatotoxicity in Arm C.




*[Fig 1: Time to mortality, from randomisation date in patients with less 100 CD4 count and more than 100 CD4 count- Kaplan-Meier analyses]*

**Conclusions:** More aggressive TB treatment using high dose of rifampicin, in addition to ARV treatment, could reduce TB/HIV mortality among severely immunosuppressed co-infected TB/HIV patients.

## WEAB03 BAD BUGS, BETTER DRUGS: ADVANCES IN HEPATITIS AND HIV CO-INFECTION TREATMENT

### WEAB0301

### SOFOSBUVIR/VELPATASVIR FIXED DOSE COMBINATION FOR 12 WEEKS IN PATIENTS CO-INFECTED WITH HCV AND HIV-1: THE PHASE 3 ASTRAL-5 STUDY

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**Background:** The once-daily fixed-dose combination (FDC) tablet of sofosbuvir/velpatasvir (SOF/VEL) administered for 12 weeks, has demonstrated high efficacy in genotypes 1-6 HCV-infected patients. A prospective clinical trial was performed to evaluate the safety and efficacy of SOF/VEL in patients co-infected with HCV and HIV-1.

**Methods:** This single arm, open label study enrolled treatment naïve- and -experienced HCV/HIV co-infected patients of all HCV genotypes with or without cirrhosis. Patients on stable antiretroviral (ARV) regimens with fully suppressed HIV RNA received SOF/VEL (400 mg/100 mg daily) for 12 weeks. ARV regimens included emtricitabine/tenofovir disoproxil fumarate or abacavir/lamivudine with raltegravir, cobicistat/elvitegravir, rilpivirine, ritonavir-boosted atazanavir, darunavir or lopinavir. Safety evaluations included adverse event (AE) and standard laboratory parameter monitoring including renal function monitoring, CD4 count, and HIV-1 RNA levels. The primary endpoint was sustained virologic response 12 weeks after treatment (SVR12).

**Results:** 106 patients were enrolled and treated with SOF/VEL for 12 weeks. 86% were male, 45% were black, 77% had IL28B non CC genotypes, 29% had prior treatment failure (primarily PegIFN/RBV), and 16% had compensated cirrhosis. The genotype distribution was 62% GT1a, 11% GT1b, 10% GT2, 11% GT3, and 5% GT4. Median baseline CD4 count was 548 cells/uL (range: 183-1513 cells/uL) with a median estimated glomerular filtration rate of 97 mL/min (range 57- 198 mL/min). Boosted protease inhibitor (PI) regimens were the most commonly used regimen (Table 1). In this interim analysis with 95% of patients beyond treatment week 4 time point, the most common AEs were fatigue (19%), headache (14%), and nausea (7%). One patient experienced a serious adverse event (toe infection), considered unrelated to study drugs. No patient experienced confirmed HIV virologic rebound (HIV-1 RNA ≥400 copies/mL). No significant changes in lab abnormalities including renal function were observed. Efficacy and safety outcomes including complete SVR12, HIV parameters, and the impact of HCV resistance variants on outcomes will be presented.

**Conclusions:** The single tablet regimen of SOF/VEL administered for 12 weeks was well tolerated in HCV/HIV co-infected patients with GT 1-4, regardless of past treatment experience or presence of cirrhosis.

| ARV regimen at enrollment | PI + NRTI | Integrase + NRTI | NNRTI + NRTI | *Combination (at least 2 of the following classes: PI, NNRTI or integrase)* |
|---|---|---|---|---|
| Number n (%) | 50 (47%) | 36 (34%) | 13 (12%) | 7 (7%) |

*[PI: protease inhibitor, NRTI: nucleoside reverse transcriptase inhibitor, NNRTI: Non- nucleoside reverse transcriptase inhibitor]*

### WEAB0302

### DRUG-DRUG INTERACTIONS STUDIES BETWEEN HCV ANTIVIRALS SOFOSBUVIR AND VELPATASVIR AND HIV ANTIRETROVIRALS

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**Background:** A once-daily fixed-dose combination tablet composed of sofosbuvir (SOF; nucleotide analog NS5B inhibitor) and velpatasvir (VEL; pangenotypic NS5A inhibitor) is under regulatory review for the treatment of chronic HCV infection. Phase 1 studies were conducted in healthy volunteers to evaluate potential drug-drug interactions (DDIs) between SOF/VEL and HIV antiretroviral (ARV) regimens to support coadministration in HIV/HCV co-infected patients.

**Methods:** These were multiple-dose, randomized, cross-over DDI studies. Subjects received SOF/VEL and ARVs EFV/FTC/TDF, RPV/FTC/TDF, DTG, RAL+FTC/TDF, EVG/COBI/FTC/TDF, DRV/r + FTC/TDF, ATV/r + FTC/TDF, LPV/r + FTC/TDF, or EVG/COBI/FTC/TAF alone and in combination. Steady-state plasma concentrations of SOF, its predominant circulating nucleoside metabolite GS-331007, VEL, and ARVs were analyzed on the last day of dosing for each treatment. PK parameters were calculated and geometric least-squares means ratios and 90% confidence intervals (combination vs. alone) for SOF, GS-331007, VEL, and ARV $AUC_{tau}$, $C_{max}$ and $C_{tau}$ were estimated and compared against lack of PK alteration boundaries of 70-143% for all analytes. Safety assessments were conducted throughout the study.

**Results:** 230 of 237 enrolled subjects completed the studies; 5 subjects withdrew consent, 1 discontinued due to Grade 1 urticaria and 1 discontinued due to pregnancy. The majority of adverse events (AEs) were Grade 1 and there were no serious AEs. Table 1 reports the effect of coadministration on HIV ARVs and SOF/VEL. No clinically significant changes in the PK of HIV ARVs, except TDF, were observed when administered with SOF/VEL. Increased TFV exposure (~40%) was observed with SOF/VEL when administered as TDF.

**Conclusions:** Study treatments were generally well tolerated. Results from these studies demonstrate that SOF/VEL may be administered safely with RPV, RAL, DTG, EVG, COBI, DRV/r, ATV/r, and LPV/r (but not EFV) with a backbone of FTC/TDF or FTC/TAF. The safety and efficacy of SOF/VEL and ARVs are being evaluated in clinical studies of HIV/HCV coinfected subjects.

| ARV with SOF/VEL | Effect on SOF/VEL AUC | Effect on ARV AUC |
|---|---|---|
| EFV/FTC/TDF | SOF: ↔ GS-331007: ↔ VEL: ↓53% | EFV: ↔ FTC: ↔ TFV: ↑81% |
| FTC/RPV/TDF | SOF: ↔ GS-331007: ↔ VEL: ↔ | FTC: ↔ RPV: ↔ TFV: ↑40% |
| DTG | SOF: ↔ GS-331007: ↔ VEL: ↔ | DTG: « |
| RAL + FTC/TDF | SOF: ↔ GS-331007: ↔ VEL: ↔ | RAL: ↔ FTC: ↔ TFV: ↑40% |
| DRV/r + FTC/TDF | SOF: ↓28% GS-331007: ↔ VEL: « | DRV: ↔ RTV: ↔ FTC: ↔ TFV: ↑40% |
| ATV/r + FTC/TDF | SOF: ↔ GS-331007: ↔ VEL: ↑142% | ATV: ↔ RTV: ↔ FTC: ↔ TFV: « |
| LPV/r + FTC/TDF | SOF: ↓29% GS-331007: ↔ VEL: « | LPV: ↔ RTV: ↔ FTC: ↔ TFV: « |
| EVG/COBI/FTC/TDF | SOF: ↔ GS-331007: ↔ VEL: « | EVG: ↔ COBI: ↔ FTC: ↔ TFV: « |
| EVG/COBI/FTC/TAF | SOF: ↑37% GS-331007: ↑48% VEL: ↑50% | EVG: ↔ COBI: ↔ FTC: ↔ TAF: ↔ TFV: « |

*[Table 1. Effect of Coadministration on HIV ARVs and SOF/VEL]*

## WEAB0303

### HIGHER MORTALITY IN HIV-HBV CO-INFECTED PERSONS WITH ELEVATED HBV REPLICATION IN THE TEMPRANO TRIAL

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**Background:** In West Africa, 10% of HIV-infected adults are co-infected with hepatitis B virus (HBV). The impact of HBV co-infection on mortality is unknown. We analyzed the association between HBV replication and mortality during long-term follow-up in the Temprano trial.
**Methods:** Between March 2008 and July 2012, HIV-1 infected adults with CD4< 800/mm³ and no criteria for starting ART according to most recent WHO guidelines were randomized to deferred ART or early ART , and to receive or not Isoniazid Preventive Therapy. At inclusion, hepatitis B surface antigen (HBsAg) was tested for all those included and plasma HBV DNA was quantified for HBsAg-positive samples using an in-house PCR technique (detection limit=2 copies/ml). All first-line ART regimens contained Tenofovir/Emtricitabine. 30-month mortality and severe morbidity were previously described in the paper reporting the final results of the trial. After their 30-month visits, all participants continued to be followed up until the last participants reached 30 months. Here we present mortality during and after the trial in all participants in Temprano. We used Cox regression to assess the risk of mortality in patients with high levels of HBV DNA at baseline, compared to other patients, adjusting for early/deferred ART and IPT.
**Results:** Of the 2056 participants in Temprano (78% women, median age 35 years, median CD4 count 465/mm3), 193 (9%) were HBsAg-positive. Of the 173 co-infected participants with available plasma HBV DNA, 119 (69%) had detectable HBV DNA (median 3880 copies/ml, IQR 660-2120000), including 73 (42%) with HBV DNA >2000 copies/ml. Median follow-up time was 58 months (IQR 40-69), totaling 9322 person-years (PY). During follow-up, 1814 (89%) patients started ART, 85 (4%) died, and 187 (9%) were lost to follow-up. The incidence of mortality was 0.9 /100 PY overall, 2.1/100 PY in HBsAg-positive patients with baseline HBV DNA >2000 copies/ml and 0.9/100 PY in other patients ($p$=0.02). In multivariate analysis, the risk of mortality was independently higher in patients with HBV DNA >2000 copies/ml (adjusted Hazard Ratio 2.23, 95%CI 1.02-4.85, $p$=0.04).
**Conclusions:** In these West African HIV-infected adults with high baseline CD4 count, mortality was 2.2 times higher in patients with high levels of HBV replication.

## WEAB0304LB

### TURQUOISE-I PART 2: SAFETY AND EFFICACY OF OMBITASVIR + PARITAPREVIR/R ± DASABUVIR WITH OR WITHOUT RBV IN PATIENTS WITH HIV-1 AND HCV GT1 OR GT4 CO-INFECTION

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**Background:** Ombitasvir, paritaprevir co-administered with ritonavir, and dasabuvir (OBV/PTV/r+DSV) comprise the 3 direct-acting antiviral (DAA; 3D) regimen ± ribavirin (RBV) approved for HCV genotype (GT) 1 infection. Here we investigate the safety and efficacy of 3D±RBV for GT1, and the 2 DAA (2D) regimen of OBV+PTV/r approved for GT4, in HIV-1 co-infected patients with or without compensated cirrhosis.
**Methods:** TURQUOISE-I, Part 2 is a phase 3 multicenter study. Eligible patients were HCV treatment-naïve or RBV/interferon-experienced, on an HIV-1 antiretroviral regimen containing atazanavir, raltegravir, dolutegravir, or darunavir (for GT4 only), and had plasma HIV-1 RNA < 40 copies/mL at screening. Patients received OBV/PTV/r (25/150/100 mg) ± DSV (250mg) ± weight-based RBV for 12 or 24 weeks per label guidelines. Interim safety and efficacy data are presented.
**Results:** Table 1 presents baseline demographics on 227 treated patients as of 4/21/2016. Of the 194 GT1- and 26 GT4-infected patients with available data, 98% and 100% achieved sustained virologic response at post-treatment week (PTW) 4 (SVR4), respectively. Three patients experienced virologic failure: one GT1a patient relapsed at PTW4, a second relapsed at PTW12, and one GT1b patient experienced breakthrough at week 10. No patients discontinued treatment due to adverse events (AEs). Most AEs were mild to moderate in severity, and key lab abnormalities were rare (Table 2).
**Conclusions:** The 2D and 3D regimens were well-tolerated and yielded high SVR4 rates in patients with HCV GT1 or GT4/HIV-1 co-infection. OBV+PTV/r±DSV±RBV is a potent HCV treatment option for patients with HIV-1 co-infection, regardless of treatment-experience or presence of compensated cirrhosis.

| | GT1 N=199 | GT4 N=28 |
|---|---|---|
| Male, n (%) | 156 (78) | 26 (93) |
| White race, n (%) | 172 (86) | 25 (89) |
| Age, median (range), years | 50 (26-69) | 47 (30-63) |
| BMI, median (range), kg/m² | 25 (17-41)* | 24 (15-38) |
| HCV genotype 1a, n (%) | 147 (74) | - |
| Cirrhosis, n (%) | 22 (11) | 0 |
| Treatment-experienced, n (%) | 64 (33)† | 11 (39) |
| HCV RNA, median (range), $log_{10}$ IU/mL | 6.5 (1.8-7.6) | 6.0 (4.7-7.0) |
| CD4+ cell count, median (range), /µL‡ | 612 (133-2351) | 731 (262-1533) |
| BMI, Body Mass Index; *N=198; †N=193; ‡N=197 GT1, N=27 GT4 | | |

*[Table 1. Baseline Demographics and Disease Characteristics]*

| Event, n (%) | GT1 N=199 | GT4 N=28 |
|---|---|---|
| Any AE | 167 (84) | 24 (86) |
| Serious AEs | 9 (5) | 1 (4) |
| RBV dose modifications due to hemoglobin decline | 25 (13) | 3 (11) |
| ALT Grade ≥3 (>5 x ULN) | 1 (1) | 0 |
| Total Bilirubin Grade ≥3 (>3 x ULN) | 26 (13) | 2 (7) |
| Patients on ATV-containing ART, n/N (%) | 23/26 (88) | 2/2 (100) |
| Hemoglobin Grade 2 (<10 g/dL) | 15 (8) | 0 |
| Hemoglobin Grade 3 (<8 g/dL) | 0 | 0 |
| AE, adverse event; RBV, ribavirin; ALT, alanine aminotransferase; ULN, upper limit of normal; ATV, atazanavir, ART, antiretroviral therapy | | |

*[Table 2. Safety & Post-baseline Laboratory Abnormalities]*

## WEAB0305LB

### HEPATITIS B VIRAL LOAD RESPONSE TO TWO ANTIVIRAL REGIMENS (TENOFOVIR/LAMIVUDINE VS LAMIVUDINE) IN HIV AND HBV CO-INFECTED PREGNANT WOMEN IN GUANGXI, CHINA: THE TENOFOVIR IN PREGNANCY (TIP) STUDY

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**Background:** There is limited information on the value of HBV antiviral therapy during pregnancy to prevent transmission of HBV to the infant, including agent choice and duration needed to achieve HBV viral load (VL) suppression by delivery.

**Methods:** The Tenofovir in Pregnancy (TiP) study is a randomized controlled trial of the safety of a regimen containing tenofovir (TDF), lamivudine (3TC), and lopinariv/ritonavir, compared with zidovudine, lamivudine, and lopinavir/ritonavir, starting as early as 14 weeks gestation, in HIV/HBV co-infected pregnant women and their infants in Guangxi, China, recruited from 2012-2015. HBV VL response during pregnancy was compared in the two study arms, and associations of pretreatment characteristics with such response were performed using Fisher's exact test and Poisson regression.

**Results:** Thirty one of 35 women enrolled have delivered. The baseline median HBV VL was 4.01 $\log_{10}$ copies/ml in the TDF/3TC arm and 3.64 $\log_{10}$ copies/ml in the 3TC arm; proportions of HBeAg+ women were 38% and 20%, and median duration of antiviral therapy was 20 and 19 weeks, respectively. At delivery, 50.0% of mothers in the TDF/3TC arm and 73.3% in the 3TC-only arm achieved undetectable HBV VL (p=0.27). The median decline of HBV DNA between enrollment and delivery was 2.60 $\log_{10}$ copies/ml in the TDF-3TC arm and 2.24 $\log_{10}$ copies/ml in the 3TC arm (p=0.41). All women achieved delivery HBV DNA levels < 6 $\log_{10}$ copies/ml. In multivariable analysis, maternal baseline HBV VL >200,000 IU/ml was the only factor significantly associated with not reaching undetectable HBV VL at delivery (Relative Risk=0.12, 95% CI, 0.02-0.78).

**Conclusions:** Initiation of HBV antiviral drugs from 14-28 weeks of gestation achieved HBV DNA suppression in 61% of pregnant women co-infected with HIV/HBV, with no difference in the proportion of women achieving undetectable HBV DNA at delivery in the TDF/3TC or 3TC arms. Initiation of either regimen in the second trimester of pregnancy led to all women achieving HBV DNA level < 6 $\log_{10}$ copies/ml at delivery, the threshold thought to predict breakthrough HBV transmission to the infant.

# WEAC01 MAKING PREP REAL FOR THOSE WHO NEED IT MOST: OPTIMIZATION STRATEGIES

## WEAC0102

### EFFICACY OF ON DEMAND PREP WITH TDF-FTC IN THE ANRS IPERGAY OPEN-LABEL EXTENSION STUDY

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**Background:** In ANRS IPERGAY, on demand PrEP with TDF-FTC reduced by 86% the incidence of HIV-1 infection in high risk MSM (Table). However, the cumulative follow-up time on TDF-FTC was limited and the long term efficacy and safety of this strategy remains to be assessed.

**Methods:** From November 2014 to June 2016, participants who were followed or being screened in the ANRS IPERGAY trial were offered to continue follow-up every two months with open-label TDF-FTC. The primary study objectives of this open-label phase were to assess study retention, HIV incidence, safety and changes in sexual behaviour.

**Results:** Among the 400 pts initially enrolled in the study, 336 (84%) were eligible for the open-label phase, and all but 3 (99%) signed a new informed consent form. Twenty-nine additional pts were also enrolled. Overall, 362 pts were enrolled for a cumulative follow-up time of 334 person-years (py), until December 14, 2015 with a median follow-up of 11.7 months. Study retention was good with only 23 pts discontinuing follow-up (6.4%). Only a single individual who had discontinued PrEP acquired HIV-1 infection and the overall incidence of HIV-1 infection was 0.3 per 100 py (95% CI: 0.00-1.67) (Table). Pts used a mean of 18 pills/month and 39% acquired a new STI. There was no significant changes between the double-blinded phase and the open-label phase in the median number of sexual intercourses or sexual partners, but there was a significant decrease in condom use for receptive anal intercourse (p=0.0004). Safety was good with a low rate of serious adverse events (6% of pts) and a single participant discontinued TDF-FTC because of an increase in creatinine plasma level. Drug-related gastrointestinal adverse events (mainly nausea and diarrhea) were reported in 11% of pts.

| IPERGAY phase | Person-years of follow-up | Incidence of HIV Infection per 100 person-years [95% confidence interval] |
|---|---|---|
| IPERGAY double-blinded (Placebo Arm) | 212 | 6.60 [3.61-11.07] |
| IPERGAY double-blinded (TDF-FTC Arm) | 219 | 0.91 [0.11-3.30] |
| IPERGAY open-label extension (open-label TDF-FTC) | 334 | 0.30 [0.00-1.67] |

*[Incidence of HIV infection according to IPERGAY phase]*

**Conclusions:** Open-label on demand PrEP with oral TDF-FTC continued to be highly effective in high risk MSM to prevent HIV-infection and had a good safety profile.

## WEAC0103

### HPTN 073: SUCCESSFUL ENGAGEMENT OF BLACK MSM INTO A CULTURALLY RELEVANT CLINICAL TRIAL FOR PRE-EXPOSURE PROPHYLAXIS (PREP)

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**Background:** In the United States, Black men who have sex with men (BMSM) continue to be disproportionately impacted by high HIV incidence rates. Comprising less than 0.4% of the U.S. population, BMSM accounted for more than 20% of new HIV infections in 2013. Identifying innovative and effective methods to deliver culturally-tailored prevention methods to end this epidemic among BMSM is a public health priority. HPTN 073 is one of the first U.S. studies to evaluate pre-exposure prophylaxis (PrEP) in a BMSM cohort.

**Methods:** HIV-uninfected BMSM were enrolled in three U.S. cities (Washington, DC, Los Angeles, CA, and Chapel Hill, NC). Under the study motto "My Life, My Health, My Choice" all participants were offered once daily oral FTC/TDF combined with client-centered care coordination (C4). The C4 model provided counseling support to promote and support PrEP use, along with service referral, linkage, and follow-up strategies to assist participants in addressing unmet psychosocial needs. Each participant was followed for a total of 12 months.

**Results:** All of the staff at the three sites were asked to participate in cultural responsiveness training as a part of implementation activities, and then utilized a variety of culturally relevant recruitment and retention techniques such as webinars, street and online outreach, peer-to-peer engagement, and partnerships with community service organizations. 344 BMSM were screened and 226 were enrolled in HPTN 073. 209 (92%) participants completed 12 months of follow-up. 40% were age 25 or less, 27% unemployed/disabled, 31% did not have health insurance, 25% reported high school graduation or less. 178 men (79%) accepted PrEP over the course of the study.

**Conclusions:** HPTN 073 demonstrated that BMSM can be successfully recruited, engaged, enrolled and retained in PrEP biomedical clinical trials using theory-based culturally tailored techniques. HPTN 073 provides a model for how best to integrate culturally-specific recruitment approaches when targeting communities at risk for HIV acquisition. Utilizing theory-based culturally tailored programs for BMSM that are reflective of their reality is key to reaching this highly at risk population of MSM who can benefit from the new HIV prevention biomedical advances.

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## WEAC0104

### CORRELATES FOR LEVELS OF SELF-REPORTED PREP ADHERENCE AMONG BLACK MEN WHO HAVE SEX WITH MEN IN 3 U.S. CITIES

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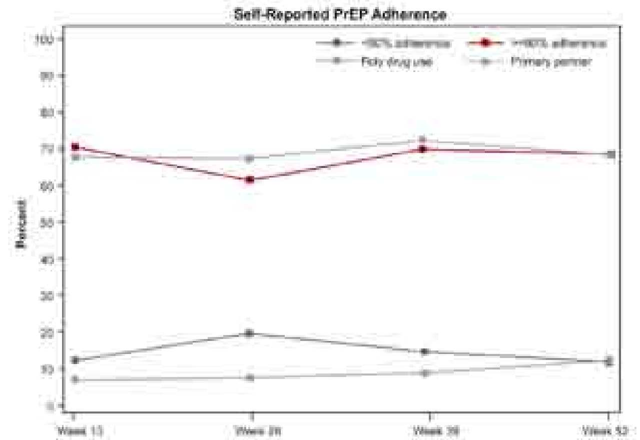
**Background:** HPTN 073 Study assessed the initiation, acceptability, safety, and feasibility PrEP for Black men who have sex with men (BMSM) in three US cities. Upon the PrEP initiation, levels of PrEP use were monitored using self-reported adherence.
**Methods:** HPTN 073 Study enrolled 226 HIV-uninfected BMSM in three US cities( Los Angeles, CA, Washington DC, and Chapel Hill, NC, August 2013 and September 2014). All study participants were offered once daily oral FTC/TDF and client centered care coordination, and were followed for 12 months, with scheduled clinical visits every 13 weeks.
**Results:** Among the total 226 enrolled participants, 178 (79%) participants initiated PrEP. Proportions of self-reported high PrEP adherence (≥90%) ranged between 62% and 71%, while self-reported low PrEP adherence (< 50%) ranged between 13% and 19% during weeks 13 through 52. High adherence is associated with age ≥25, higher education, full time employment, no poly drug use and having a primary partner. Conversely, low adherence is associated with younger age, less education, non-fulltime employment, poly drug use, and no primary partner. Adjusted analysis shows that having a primary partner and no poly drug are highly associated with high adherence, whereas converse is true for low adherence.

| | >= 90% Self-Reported Adherence | | | < 50% Self- Reported Adherence | | |
|---|---|---|---|---|---|---|
| | OR(95% CI) | AOR (95% CI) | AOR P Value | OR (95% CI) | AOR (95% CI) | AOR P Value |
| Age >=25 | 2.08 (1.25,3.45)* | 1.46 (0.84,2.54) | 0.1782 | 0.48 (0.26,0.86) | 1.49 (0.76,2.95) | 0.2482 |
| 2 year degree or higher vs. HS or less Some college or vocational vs. HS or less | 2.48 (1.28,4.80)*<br>1.11 (0.59,2.08) | 1.59 (0.77,3.28)<br>1.02 (0.52,1.99) | 0.2090<br>0.9513 | 0.34 (0.15,0.74)<br>1.10 (0.55,2.20) | 0.46 (0.18,1.18)<br>1.06 (0.46,2.45 | 0.1057<br>0.8922 |
| Employed FT vs. unemployed PT or self-employed vs. unemployed | 2.66 (1.39,5.11)*<br>1.04 (0.56,1.95) | 1.77 (0.85,3.70)<br>1.01 (0.52,1.99) | 0.1275<br>0.9663 | 0.34 (0.16,0.76)*<br>0.90 (0.45,1.81) | 0.76 (0.28,2.04)<br>1.09 (0.47,2.52) | 0.5801<br>0.8372 |
| Poly drug use | 0.46 (0.22,0.94)* | 0.49 (0.24,0.99) | 0.0460 | 3.22 (1.36,7.60)* | 3.30 (1.37,7.96) | 0.0079 |
| Primary partner | 1.71 (1.09,2.69)* | 1.75 (1.10,2.79) | 0.0179 | 0.44 (0.24,0.82)* | 0.42 (0.22,0.82) | 0.0104 |

* The factors included in the adjusted models are the factors that are <0.05 significance level in the unadjusted model. Analysis was done using generalized estimating equation with exchangeable covariance structure. The behavioral questions were asked for the past three months at each visit. Abbreviation: AOR, adjusted odds ratio.

*[Table 1. Correlates of self-reported adherence]*




*[Figure 1: Self-Reported PrEP Adherence]*

**Conclusions:** Understanding the contextual factors that support and impede adherence (Figure 1) and targeting these in comprehensive intervention packages may maximize PrEP adherence and minimize lower adherence for BMSM. Our data support consideration of the need for addressing these factors as core elements for BMSM.

## WEAC0105

### INTEGRATED DELIVERY OF PREP AND ART RESULTS IN SUSTAINED NEAR ELIMINATION OF HIV TRANSMISSION IN AFRICAN HIV SERODISCORDANT COUPLES: FINAL RESULTS FROM THE PARTNERS DEMONSTRATION PROJECT

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**Background:** Antiretroviral therapy (ART) used by HIV infected individuals and pre-exposure prophylaxis (PrEP) by HIV uninfected individuals are highly efficacious HIV prevention tools. Assessing the effectiveness of these interventions and integrated delivery strategies in implementation settings is a priority.
**Methods:** The Partners Demonstration Project, an open-label PrEP and ART delivery study, began in 2012, and enrolled antiretroviral-naïve, high-risk, heterosexual HIV serodiscordant couples from Kenya and Uganda. Couples were followed for 2 years. ART was recommended following national ART guidelines - initially CD4 < 350 cells/µL but soon thereafter all HIV serodiscordant couples regardless of CD4 count. PrEP was offered as a 'bridge' to ART in the partnership - i.e., until ART initiation by the HIV infected partner and for the first 6 months after ART initiation. We compared observed HIV incidence to a counterfactual simulation model, using bootstrapping methods and constructed with data from a prior prospective study of HIV serodiscordant couples (the Partners PrEP Study, placebo arm). In a previously reported interim analysis, with ~40% of total expected follow-up time accrued, we found that HIV incidence was substantially reduced (2 incident infections compared to 40 expected infections); updated findings are presented here.
**Results:** Of 1,013 couples enrolled, 67% had an HIV positive female partner and the median age was 29. Among a randomly-selected sample of HIV negative partners receiving PrEP, tenofovir was detected in 82% of plasma samples (483/587 visits). ART was initiated by 92% of HIV positive partners by 24 months and viral suppression (< 400 copies/mL) was achieved in 90%. As of January 2016, counterfactual simulations predicted that 63 incident HIV infections would be expected (incidence rate 5.1 per 100 person years, 95% CI 3.9-6.4). However, only 5 incident infections have been observed (incidence rate 0.3, 95% CI 0.1-0.7), for sustained HIV relative risk reduction of 94% (95% CI 85-98, p< 0.001).
**Conclusions:** An integrated PrEP and ART strategy is highly effective for preventing HIV transmission within HIV serodiscordant couples, showing near elimination in a high risk cohort. The Partners Demonstration Project will complete follow-up and analysis in June 2016 with final results available in July 2016.

## WEAC0106LB

### SEARCH TEST AND TREAT STUDY IN UGANDA AND KENYA EXCEEDS THE UNAIDS 90-90-90 CASCADE TARGET BY ACHIEVING 81% POPULATION-LEVEL VIRAL SUPPRESSION AFTER 2 YEARS

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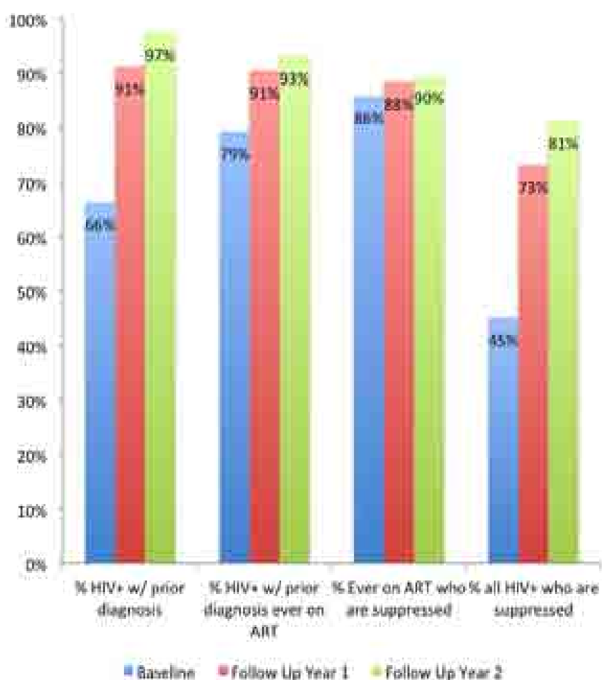
**Background:** The SEARCH Study (NCT01864683; first phase endpoint 2017) is a cluster randomized trial evaluating a "test and treat" HIV and multi-disease prevention strategy in rural Uganda and Kenya. We evaluated interim population-level HIV cascade coverage achieved over two years in the 16 SEARCH intervention communities.
**Methods:** We enumerated residents via baseline household census. HIV serostatus and plasma RNA were measured annually at multi-disease health campaigns followed by home-based testing for non-attendees. Streamlined ART (EFV/TDF/+FTC or 3TC), including patient-centered care and viral load counseling, was universally offered. At baseline, and after one and two years follow-up, we estimated (1) proportion of baseline HIV+ adult (≥15 years) stable (>6mo/past year) residents previously diagnosed; (2) of these, proportion ever on ART; (3) of these, proportion with viral suppression (RNA< 500 copies/ml). We estimated population viral suppression as a cascade product and via direct HIV RNA measurement, using inverse weights to adjust for missing measures.
**Results:** Of 77,773 baseline adult stable residents, 55% were women, 53% farmers, and 20% < 20 years. Baseline HIV prevalence was 9.9% (West Uganda: 6.3%; East Uganda: 3.3%; Kenya: 19.5%). We achieved high cascade coverage by follow up year 2 (Figure): (1) 97.4% (95%CI:97.3%,97.5%) were previously diagnosed; (2) 93.2% had received ART (95%CI:92.6%,93.9%); (3) 89.5% were suppressed (95%CI:88.6%,90.4%). Population viral suppression at year 2 was 81.3% (95%CI:80.3%,82.3%) based on the cascade product and 82.8% (95%CI:80.2%,85.3%) by adjusted direct measure. Coverage was high among men and mobile populations: 97.5% (95%CI:97.4%;97.7%;) of men and 97.1% (95%CI:96.8%,97.5%) of mobile populations tested at least once; among baseline HIV+, 80.3% (95%CI:78.4%,82.2%) of men and 81.7% (95%CI:78.3%,85.1%) of mobile populations had at least one suppressed RNA level.
**Conclusions:** Using a multi-disease community-based approach and patient-centered streamlined care**,** we increased population viral suppression from 45% to 81%, exceeding the UNAIDS 90-90-90 cascade target within 2 years in SEARCH intervention communities.




*[Cascade coverage and population-level viral suppression among baseline HIV+ adult stable residents of SEARCH Study intervention communities]*

## WEAC02 TRANS-FORMING HIV PREVENTION AND CARE TALK

## WEAC0202

### TRANSGENDER PATIENTS AT RISK: ENSURING ACCESS TO PREP IN A NYC COMMUNITY HEALTH CENTRE

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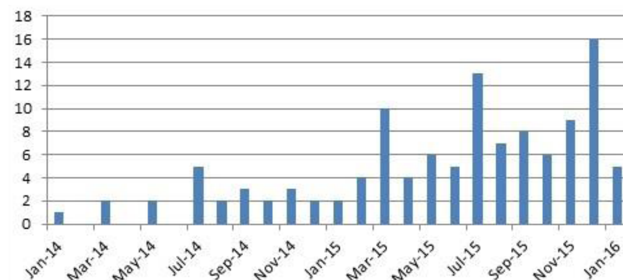
**Background:** Transgender women (TGW) are known to be disproportionately affected by HIV. Although less is known about transgender men (TGM) recent studies have highlighted elevated risk in this population, especially among those who identify as MSM. PrEP is an effective biomedical intervention to prevent incident HIV infections, but adherence is reported to be lower among TGW. In 1/2014 Callen-Lorde Community Health Center, an LGBT-focused clinic in NYC that predominantly cares for HIV-infected and at-risk clients, implemented PrEP services. One of the goals was to create a program that was trans-inclusive.
**Description:** Almost 1500 clients have accessed PrEP since implementation of the program. Careful tracking of PrEP uptake revealed low involvement by transgender clients, with only 5 receiving PrEP in the first 6 months. Challenges included community-level lack of knowledge, provider and client under-estimation of HIV risk, especially among TGM, and lower rates of HIV-testing, resulting in fewer opportunities to discuss PrEP. The clinic responded by offering HIV screening during all new transgender intake appointments, distributing trans-inclusive education materials, PrEP education videos that included transgender/genderqueer actors. The clinic has intentionally become a more diverse work place with transgender counselors, testers, patient navigators and nurses.
**Lessons learned:** The interventions were successful. 118 transgender clients have accessed PrEP over 3 years, 8.4% of total prescriptions written. The majority 71.2% (84) have been TGW, 10.2% (12) genderqueer, and 18.6% (22) TGM. The populations differed by insurance and race with public "safety net" coverage being predominantly used by genderqueer and TGW (67% & 60.7%) whereas TGM predominantly used commercial insurance (64%). TGW were mostly nonwhite (70%) whereas TGM and genderqueer people were predominantly white (81% , 78%).
**Conclusions/Next steps:** As scale-up of PrEP continues, clinics considering implementation of PrEP need to ensure that they track utilization to monitor disparities among users. Addressing PrEP uptake among transgender clients requires a multi-faceted approach.




*[Uptake of PrEP by Transgender Clients at The Callen-Lorde Community Health Center]*

## WEAC0203

### LIFESKILLS: RESULTS FROM A FULL-SCALE, RANDOMIZED CONTROLLED TRIAL EXAMINING THE EFFICACY OF A GROUP-BASED BEHAVIOURAL INTERVENTION FOR HIV PREVENTION AMONG YOUNG TRANSGENDER WOMEN

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**Background:** HIV prevalence is high among transgender women. A global meta-analysis of HIV burden among transgender women found a 19% HIV prevalence and 49-fold increased odds of HIV infection compared with all adults of reproductive age. A U.S.-based meta-analysis found an overall 28% laboratory-confirmed HIV prevalence. No evidence-based HIV prevention interventions (EBIs) for transgender women exist in the Centers for Disease Control and Prevention (CDC) compendium of EBIs. We addressed this gap by testing a culturally-specific, behavioral intervention for HIV prevention ("LifeSkills") among young transgender women (YTW) in a randomized controlled efficacy trial. LifeSkills is theoretically-driven and grounded in the social realities of YTW, with content developed using a community-based participatory approach with guidance from a multidisciplinary research team.
**Methods:** We recruited 300 YTW, ages 16-29, in two US cities (Boston and Chicago), who were randomly assigned 2:2:1 in a 3-arm (LifeSkills, standard-of-care, and time-matched attention control) trial examining the efficacy of a multi-session, group-based intervention for HIV prevention. Participants were followed for one year, with visits at 4, 8 and 12-months post-randomization. Enrollment was completed between 2012-2015, with follow-up visits through September 2016. Generalized linear models (GLM) examined differences in condomless sex (CS) acts between intervention and control arms.
**Results:** Participants were racially/ethnically diverse; 49% Black, 12% Latina, 25% White, and 14% other. At enrollment, 22% of participants were HIV-infected (3% previously undiagnosed). Interim analysis with >90% of visits completed indicates feasibility and efficacy of the intervention to reduce CS acts compared to the standard-of-care control arm. We found a >20% difference in reduction in CS acts (vaginal and anal) from baseline with a significant 12-month arm x time interaction ($F(3,447) = 12.29$, $p<0.0001$). Intervention participants reported high satisfaction with the curriculum: 98% indicated they would refer a friend and 99% said the intervention met their expectations.
**Conclusions:** Using the CDC "Guide to the Continuum of Evidence for Efficacy" as a framework, LifeSkills may be the first well-supported, evidence-based behavioral intervention (EBI) for HIV prevention among YTW. Additional research is needed to demonstrate independent replication of findings and guide implementation and dissemination of LifeSkills in other U.S communities and regions of the world.

## WEAC0204

### DIFFERENCES BETWEEN UNKNOWN HIV-POSITIVE AND HIV-NEGATIVE BLACK TRANSGENDER WOMEN IN THE UNITED STATES: RESULTS FROM PROMOTING OUR WORTH, EQUALITY, AND RESILIENCE (POWER)

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**Background:** HIV disproportionately burdens Black transgender women (BTW) in the United States. Improving HIV testing uptake to identify unknown HIV-positive individuals is critical to attenuating the HIV epidemic in this population. Understanding demographic and psychosocial differences between HIV-positive BTW who are unaware of their status and HIV-negative BTW may help elucidate means by which to increase HIV testing uptake in this population. Therefore, this analysis explores possible differences between unknown HIV-positive BTW and HIV-negative BTW.
**Methods:** Cross-sectional data for our analysis came from the first two years of the ongoing study, POWER. In 2014 and 2015, POWER employed time-location sampling (TLS) to recruit a community-based sample of Black men who have sex with men and BTW (n=3,426) who attended Black Pride events in six U.S. cities. Participants completed a behavioral health survey and were offered onsite HIV-testing. Unknown HIV-positive BTW were identified for analysis if they reported a *negative* HIV-status within the survey but provided a *positive* HIV antibody screening test result through on-site testing. Self-report HIV-negative status was confirmed with on-site testing. Differences in HIV-status (unknown versus negative) were evaluated using TLS weighted independent logistic regression models adjusted for age, education, and city.
**Results:** A total of 253 BTW provided complete data for our analysis. We observed an HIV prevalence of 37.9%. Of the 96 HIV-positive BTW, 50.0% were unaware of their HIV-status. Compared to HIV-negative BTW, unknown HIV-positive BTW reported significantly higher prevalence of past-year physical assault (40.4% vs. 58.3%, respectively) and past two-year incarceration (31.9% vs. 52.1%, respectively). In independent multivariable models, physical assault (AOR=2.1.0; 95% CI: 1.0, 4.2) and incarceration (AOR=2.3; 95% CI: 1.1, 4.7) were associated with greater likelihood of unknown positive status.
**Conclusions:** Developing and implementing interventions that address experiences of physical assault and a history of incarceration may assist in informing the HIV disparity among BTW in the U.S. More research is needed to identify and understand the structural, community, and individual-level barriers and facilitators that shape BTW's engagement with HIV-testing and HIV-care.

## WEAC0205

### FACTORS AFFECTING HIV TESTING AMONG TRANSGENDER PEOPLE IN ONTARIO, CANADA: RESULTS FROM A RESPONDENT-DRIVEN SAMPLING SURVEY

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**Background:** In Ontario, a high proportion of trans (transgender, transsexual or transitioned) people have never been tested for HIV. Whether this can be explained by actual level of HIV risk or by other factors requires exploration. To date, no prior study has identified predictors of HIV testing among trans people.
**Methods:** The Trans PULSE Project conducted a respondent-driven sampling survey to recruit trans Ontarians age ≥16 (n=433). Descriptive statistics were weighted by the probability of recruitment to estimate population frequencies. Regression models predicting both lifetime testing and past-year testing were weighted, and variances adjusted for clustering within recruitment networks.
**Results:** Of Ontario trans people, 55.7% (95% CI: 47.9, 63.6) had ever been self-reportedly tested for HIV, and 22.1% (95% CI: 15.9, 28.3) were tested within the past 12 months. Common reasons for not being tested for HIV were perceptions of low risk (36.2%) and not having sex recently (23.1%). However, being aware of their status (39.4%) and routine check-up (38.8%) were the most frequent reasons for being tested for HIV. Lifetime testing was highest in Aboriginal people (92.6%) and lowest among non-Aboriginal racialized people (39.9%). Lifetime testing was predicted by ethno-racial group. For both testing timeframes, a history of transphobic experiences and higher lifetime number of sex partners predicted increased odds of testing. Past-year sex partner number had no detectable effect on past-year testing.
**Conclusions:** While a lower testing prevalence was observed than in estimates from U.S. studies, this may in part reflect the lower overall risk of this province-wide sample. That higher lifetime number of sex partners was associated with testing indicates a logical decision-making component. Multiple possibilities exist - ranging from resiliency, to confounding by social participation, to health cynicism - for the observation that a history of transphobic experiences was strongly associated with increased odds of testing. A range of possibilities for each of our findings and directions for additional research will be presented.

# WEAC03 ADOLESCENT AFFAIRS

## WEAC0301

### THE EPIDEMIOLOGY OF PERINATALLY HIV-INFECTED ADOLESCENTS: A CIPHER COHORT COLLABORATION GLOBAL ANALYSIS

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**Background:** The population of perinatally HIV-infected adolescents (PHA) continues to expand globally. This study aims to describe the geographic and temporal characteristics and outcomes of PHA.
**Methods:** Through the Collaborative Initiative for Paediatric HIV Education and Research (CIPHER), individual retrospective data from 12 cohort networks were pooled. Included PHA entered care before age 10 years with no known non-vertical route of HIV infection, and were followed beyond age 10 years. This initial analysis describes characteristics at first visit, start of antiretroviral therapy (ART), start of adolescence (age 10 years) and surviving patients at last follow-up.
**Results:** Of 37,614 PHA included, 49.4% (18,591) were male and 79% were from sub-Saharan Africa (Table 1). Median (interquartile range [IQR]) follow-up during adolescence was 2.36 (1.00-4.35) years, ranging from 2.04 (0.87-3.77, sub-Saharan Africa) to 6.38 (3.51-8.01, Europe & Central Asia) years.

| Region | Countries included | N (%) | Observation period | Duration of follow-up during adolescence - median (IQR) years | Cumulative Mortality % (95% CI) |
|---|---|---|---|---|---|
| South & Southeast Asia | Cambodia, India, Indonesia, Malaysia, Myanmar, Thailand, Vietnam | 2,902 (7.7) | 1994-2014 | 2.53 (1.17; 4.37) | 2.98 (2.08; 4.25) |
| Europe & Central Asia | Belgium, France, Ireland, Italy, Netherlands, Poland, Portugal, Romania, Russian Federation, Spain, Sweden, Switzerland, Ukraine, United Kingdom | 3,058 (8.1) | 1982-2015 | 6.36 (3.51; 8.01) | 0.78 (0.50; 1.21) |
| South America & Caribbean | Argentina, Brazil, Haiti, Honduras | 903 (2.4) | 1990-2015 | 4.92 (2.68; 7.37) | 4.72 (3.33; 6.65) |
| North America | United States of America | 1,048 (2.8) | 1991-2014 | 3.73 (2.01; 5.43) | 1.09 (0.52; 2,24) |
| Sub-Saharan Africa | Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Democratic Republic of Congo, Côte d'Ivoire, Ethiopia, Ghana, Guinea, Kenya, Lesotho, Malawi, Mozambique, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe | 29,703 (79.0) | 1996-2015 | 2.04 (0.87; 3.77) | 3.59 (3.26; 3.96) |

*[Table 1: Countries, periods of observation, duration of follow-up and cumulative mortality between 10 and 15 years of age by region]*

90.7% (34,132) of PHA received ART; 9.9% (3,385) started after age 10 years. Age, CD4 count, CD4 percent and HIV viral load at first visit and ART start varied markedly across regions (Table 2). Although laboratory markers improved by age 10 years, median weight-for-age (WAZ), height-for-age (HAZ) and body mass index-for-age (BMIZ) WHO Z-scores changed little. Median HAZ at age 10 years and last visit remained well below zero in all regions, although BMIZ was less impaired.

| | First visit | | ART start | | Age 10 years (+/- 6 months) | | Last visit | |
|---|---|---|---|---|---|---|---|---|
| | Total Median (IQR) | Min & max region medians | Total Median (IQR) | Min & max region medians | Total Median (IQR) | Min & max region medians | Total Median (IQR) | Min & max region medians |
| N | 37,614 | | 34,132 | | 37,614 | | 36,872 | |
| Age in years | 6.7 (4.4;8.4) | 0.7; 7.1 | 7.4 (5.1;9.1) | 1.0; 7.8 | Not applicable | Not applicable | 12.4 (11.0;14.4) | 12.0; 16.4 |
| CD4 count in cells/µl | 430 (205;761) N=19388 | 255.5; 1282 | 330 (171;598) N=19368 | 221; 1134 | 686 (446;972) N=26282 | 639; 797 | 688 (465;948) N=31230 | 578; 744 |
| CD4 % | 16 (9;25) N=13422 | 10;30 | 14 (8;20) N=14564 | 10; 28 | 28 (20;34) N=18029 | 26; 33 | 29 (21;35) N=23249 | 27; 32 |
| Log10 HIV viral load | 5.00 (4.35;5.58) N=4137 | 4.96; 5.28 | 4.94 (4.16;5.51) N=6167 | 4.83; 5.10 | 2.42 (1.69;3.35) N=10155 | 1.69; 2.60 | 2.30 (1.60;3.18) N=14006 | 1.59; 2.60 |
| WAZ (<= age 10 years) | -1.79 (-2.81;-0.90) N=21,037 | -2.71; -0.51 | -1.70 (-2.70;-0.83) N=22,908 | -2.89; -0.41 | -1.42 (-2.18;-0.59) N=30,705 | -1.93; 0.09 | Not applicable | Not applicable |
| HAZ (all ages) | -1.92 (-2.91;-0.97) N=20,013 | -2.37; -0.77 | -1.98 (-2.94;-1.05) N=19,801 | -2.44; -0.78 | -1.54 (-2.36;-0.72) N=26,645 | -1.91; -0.32 | -1.60 (-2.46;-0.73) N=32,386 | -1.78; -0.34 |
| BMIZ (>= age 5 years) | -0.60 (-1.54;0.22) N=19892 | -1.44; 0.16 | -0.56 (-1.46;0.25) N=19,697 | -1.46; 0.20 | -0.54 (-1.26;0.13) N=26,530 | -1.00; 0.38 | -0.68 (-1.46;0.09) N=32,295 | -1.02; 0.50 |

*[Table 2: Age, laboratory and anthropometric characteristics of perinatally HIV-infected adolescents (N=37,614) and ranges of medians across regions]*

Reported mortality between age 10 and 15 years was 3.08% (95%CI 2.83-3.36) ranging from 0.78% in Europe & Central Asia to 4.72% in South America & Caribbean (Table 1).
**Conclusions:** Reported mortality during adolescence was < 5% in all regions represented in this global analysis of HIV-infected children surviving to age 10 years. Under-ascertainment of mortality and impaired growth are concerns.

## WEAC0302

### PREVALENCE AND PREDICTORS OF FORCED-SEX AMONG SOUTH AFRICAN HIGH SCHOOL STUDENTS

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**Background:** Gender violence in South Africa is a public health problem, including among adolescents.[1,2] Prevalence of sexual violence in adolescents ranges from 10% - 17%.[1,2] Forced sex, given the South African HIV epidemic, is a risk factor for HIV transmission. Understanding the predictors of forced sex among adolescents is important in developing preventative strategies.
**Methods:** This study aimed to identify the prevalence and predictors of forced sex in high school students in 16 randomly selected schools in Ugu and eThekwini districts of KwaZulu-Natal, South Africa. All students in a single randomly selected grade ten class at each school were invited to participate. Parents/guardians gave informed written consent and students consented to participate in the study. The study had ethical approval from the Biomedical Research ethics Committee of the University of KwaZulu-Natal and the Provincial Department of Basic Education. The I-Change Theoretical model was used as a conceptual framework for development of a self-administered questionnaire which included questions on socio-economic status. Survey weights were utilised given the study's complex multi-stage random sampling strategy. Point estimates and associated 95% confidence intervals were calculated. Factor analysis was employed to identify underlying factors associated with the construct variables related to forced sex. Survey weighted multivariable regression was performed to assess factors associated with forced sex status. Population attributable fractions for risk factors associated with forced sex were estimated.
**Results:** Overall 54 out of 434 subjects reported forced sex (survey weighted prevalence: 14.2%, 95%CI: 9.1 21.5%). The prevalence of reported forced sex was higher amongst females at 15.0% (95% CI: 10.8-20.4) compared to 13.6% (95%CI: 6.5-26.5) amongst males (p-value=0.781).There was a higher prevalence of forced sex amongst students in the low SES category (24.8%; 95%CI: 11.6-45.4) compared to the combined medium-high SES categories (12.9%; 95%CI: 8.8-18.5) (p-value=0.036). After multivariable adjustment, urban location (39%), low SES (15%)

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and discordant mother/father vital status (20%) (specifically mother alive and father deceased) remained high impact risk factors for forced sex.
**Conclusions:** Public health and socio-economic interventions addressing household economics and family structure in urban communities are required to reduce the risk of forced sex among adolescents in South Africa.

## WEAC0303

### THE IMPACT OF A CASH TRANSFER ON YOUNG SOUTH AFRICAN WOMEN'S ON MENTAL HEALTH: HPTN 068

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**Background:** Cash Transfers have been found to improve the mental health of recipients. Possible mechanisms for the improvement in mental health include a reduction in financial stress and a hope for a better future due to an improved financial situation.
**Methods:** HPTN 068 was a 3-year randomized controlled trial to assess the impact of a cash transfer, conditioned on school attendance, on HIV incidence among young rural South African women. 2328 young women were HIV negative at baseline and had at least one follow up visit. Young women completed a survey using Audio Computer Assisted Self-Interview at baseline and at 12, 24, and 36 months. We assessed depression and anxiety using: the Short Form Children's Depression Index (CDI), The Center for Epidemiologic Studies Depression Score (CES-D), and the Revised Children's Manifest Anxiety Scale. Hope was measured with the Abler Hope Scale. CDI (>=7) and CES-D (>=16) were analyzed using log-binomial regression and robust variance to account for repeated measures. CMAS (summed score) and Hope (summed score) were analyzed using generalized estimating equations (GEE) with identity link, normal distribution and robust variance to account for repeated measures.
**Results:** Overall we saw no association between receipt of the conditional cash transfer and reduced depression or anxiety among young women (Table 1). In addition, there was no association between receipt of the cash transfer and increased hope for the future (Table 1).

| Outcomes Range, cronbach's alpha | CCT n=1,214 | Control n=1,114 | RR | 95%CI | p-value |
|---|---|---|---|---|---|
| CDI Index (>=7)**, alpha=0.70 | 25.8% | 25.9% | 0.99 | 0.85-1.16 | 0.93 |
| CES-D (>=16)**, alpha=0.84 | 28.4% | 29.9% | 0.96 | 0.86-1.06 | 0.39 |
| CMAS Anxiety (0-14), alpha=0.89 | 2.51 | 2.72 | -0.21* | -0.53-0.11 | 0.19 |
| Abler Hope (0-39), alpha=0.97 | 31.9 | 32.0 | -0.14* | -0.75-0.48 | 0.66 |
| *: Risk Difference | ** >=7 for CDI and >=16 for CES-D indicates depressive symptoms | | | | |

*[Association between cash transfer program and mental health outcomes in young South African women, HPTN 068]*

**Conclusions:** In this randomized control trial of a cash transfer, conditional on school attendance, we saw no impact of receiving the cash on depression, anxiety or hope for the future. High levels of school attendance and social protection coverage were observed in the cohort and thus it is possible that the addition of the cash transfer did not meaningfully reduce anxiety about poverty or improve future outlook above the baseline levels.

## WEAC0304

### WHY THE DISPARITIES? THE FIRST NATIONAL LOOK AT HIV-RELATED RISK BEHAVIOURS AMONG GAY AND BISEXUAL MALE HIGH SCHOOL STUDENTS, UNITED STATES 2015

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**Background:** An estimated 22% of all new diagnoses of HIV in the United States in 2014 occurred among 13-24 year-olds and most of these diagnoses occurred among males who have sex with males. The 2015 national Youth Risk Behavior Survey (YRBS) is the first national survey in the United States to provide national estimates of the size of the sexual minority population in high schools and document the disparities in HIV-related risk behaviors between gay/bisexual and heterosexual male high school students.
**Methods:** The 2015 national YRBS employed a three-stage national probability sample of 15,624 students in grades 9-12 (ages 14-17). Black and Hispanic students were oversampled. T-tests were used to determine significant pairwise differences between gay/bisexual and heterosexual male high school students.
**Results:** Nationwide, 2.0% of male high school students identified as gay and 2.4% identified as bisexual. Gay/bisexual male students were at least twice as likely as heterosexual male students to report being electronically bullied; bullied on school property; not going to school because of safety concerns; being physically forced to have sexual intercourse; experiencing physical and sexual dating violence; ever using cocaine, heroin, and methamphetamines; and ever injecting drugs. However, no significant differences were identified between gay/bisexual male students and heterosexual male students in ever drinking alcohol, ever using marijuana, ever having sexual intercourse, having sexual intercourse with four or more persons, being currently sexually active, using a condom at last sexual intercourse, and drinking alcohol or using drugs before last sexual intercourse.
**Conclusions:** Though males who have sex with males are disproportionally affected by HIV, behaviors that directly contribute to HIV infection (ex. not using a condom) do not appear to be driving the disparities at least among male high school students nationwide. Nonetheless, the results clearly demonstrate significant disparities in many other health-risk behaviors that could present barriers and decrease access to HIV prevention and treatment technologies among gay/bisexual male students. The results also suggest the importance of addressing broader social determinants of health associated with increased risk for HIV infection including stigma, discrimination, lower educational attainment, unemployment, and incarceration.

## WEAC0305LB

### CHANGES IN BONE MASS AFTER DISCONTINUATION OF PREP WITH TENOFOVIR DISOPROXIL FUMARATE/EMTRICITABINE (TDF/FTC) IN YOUNG MEN WHO HAVE SEX WITH MEN (YMSM): EXTENSION PHASE RESULTS OF ADOLESCENT TRIALS NETWORK (ATN)110

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**Background:** PrEP with TDF/FTC is associated with modest bone loss in HIV-seronegative adults and adolescents. There is particular concern about bone loss during adolescence/early adulthood, a period of continuing bone growth. The aim of this study was to determine whether bone loss reversed with discontinuation of PrEP in HIV-seronegative YMSM ages 18-22.
**Methods:** ATN110 is a 48-week open-label demonstration and safety study of TDF/FTC PrEP in 200 YMSM. As part of safety monitoring, bone mineral density (BMD) was measured by dual-energy X-ray absorptiometry (DXA). Participants who lost or failed to accrue bone after 48 weeks on TDF/FTC PrEP immediately entered an extension phase (EPH) in which DXA scanning was performed 24 and 48 weeks after discontinuation of PrEP. Results are mean±SD.
**Results:** Of 135 participants who had DXA scans at the end of the 48-week TDF/FTC treatment phase, 105 (78%) were eligible for EPH. After exclusion of seroconverters (N=6) and those who received PrEP through their regular providers (N=16), EPH data are available for 74 participants. Among this group, average BMD changes from baseline to week 48 of the treatment phase were: spine -0.2±2.7% (P=0.53); hip -1.4±3.6% (P=0.002); whole body (WB) -0.6±2.5% (P=0.03). Forty-eight weeks after discontinuation of TDF/FTC, BMD increased (spine +1.1±3.0% [P=0.003]; hip

+1.0±3.8% [P=0.04]; WB +0.6±2.0% [P=0.01]). Net BMD changes from baseline to the end of EPH (48 weeks on TDF/FTC followed by 48 weeks off TDF/FTC) were not statistically significant (spine +0.6±4.1% [P=0.24]; hip -0.5±4.2% [P=0.34]; WB -0.2±2.6% [P=0.52]). Despite gains in BMD during EPH, there were small but statistically significant net decreases from baseline in Z-scores (SDs based on population norms for BMD) in the spine (-0.18±0.38 [P< 0.001]) and WB (-0.08±0.31 [P=0.03]), with no significant change in the hip (-0.05±0.30 [P=0.22]).
**Conclusions:** On average, HIV-seronegative YMSM who lost BMD during TDF/FTC PrEP experienced partial or full recovery of BMD during the 48 weeks following discontinuation of PrEP, but some Z-scores declined slightly from baseline. While the risk of slight BMD loss is counterbalanced by protection from HIV acquisition, these results highlight the continuing need for strategies to mitigate bone loss in at-risk YMSM.

## WEAC04 Alcohol, substance use and HIV

### WEAC0401

### Long-term alcohol use patterns and HIV disease severity typologies in U.S. veterans: a joint trajectory analysis

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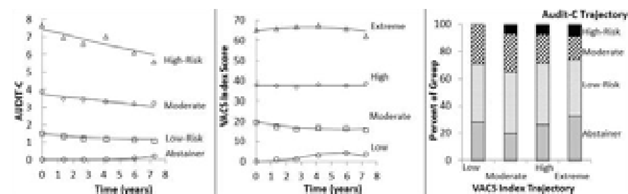
**Background:** Although unhealthy alcohol use is common in HIV-infected populations, the effect of alcohol consumption on HIV disease progression is unclear. We examined the relationship between long-term alcohol use patterns and HIV disease severity among participants enrolled in the Veterans Aging Cohort Study (VACS).
**Methods:** HIV-infected participants in care at eight US Veterans Health Administration sites were eligible. Between 2002 and 2010, we assessed alcohol consumption annually using the 3-item Alcohol Use Disorders Identification Test-Consumption (AUDIT-C). Overall disease severity was ascertained using the VACS index, a validated measure of morbidity and mortality. We identified trajectories of alcohol use and disease severity with group-based finite mixture modelling. We examined associations between membership in distinct alcohol use and VACS index trajectories using multinomial regression.
**Results:** Of 3,539 eligible participants, median age was 49 (IQR: 44-55), 98% were male, and 70% were African American. Group-based modelling identified four alcohol consumption patterns: abstainers (24%), low-risk drinkers (44%), moderate-risk drinkers (24%), and high-risk drinkers (8%) [left panel]. We also found four VACS index trajectories: low (2% of sample), moderate (46%), high (36%) and extreme (16%) [center panel]. Membership in higher VACS index trajectories was associated with older age, African American race, HCV co-infection, history of injection drug use, and lack of viral suppression (all *p*< 0.001). Membership in VACS index and alcohol consumption trajectories was strongly correlated [right panel]. No high-risk drinkers were in the low VACS Index group, whereas high-risk drinkers were most common in the extreme group. Abstainers were most common in the low and extreme VACS Index groups.



*[Joint alcohol use and VACS index trajectories among study participants]*

**Conclusions:** Alcohol use patterns implying long-term hazardous drinking were associated with greater disease severity among HIV-infected veterans receiving care. Joint trajectory analyses revealed two distinct groups of abstainers ("sick quitters" and "healthy abstainers"). Further research is needed to identify mediators of long-term alcohol consumption patterns and HIV disease severity.

### WEAC0402

### Extended-release naltrexone lengthens time to heavy drinking among HIV+ released prisoners with alcohol use disorders

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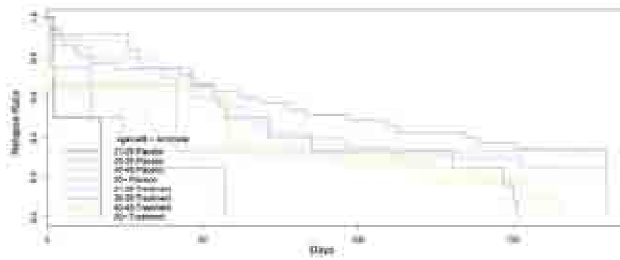
**Background:** Alcohol use disorders (AUDs) negatively impact every step in the HIV continuum of care. For HIV+ prisoners in particular, relapse to heavy alcohol use upon release is associated with poor retention in care and loss of HIV viral suppression. Extended-release naltrexone (XR-NTX) is an approved and effective monthly injectable medication to prevent relapse to alcohol use but has not been studied among HIV+ persons or among prisoners.
**Methods:** We conducted a NIAAA-funded double blinded placebo-controlled trial of XR-NTX (randomized 2:1, XR-NTX: placebo) among HIV+ prisoners with AUDs who were released to the community in Connecticut, U.S.A. Primary outcome of interest was time to first heavy drinking day (TFHDD). Due to elevated data missingness, a Little's MCAR test was first performed and confirmed the data were missing at random. This missingness structure allowed multiple imputation and subsequent multivariate analysis via Bayesian modeling. A heavy drinking day was defined as ≥5 drinks for males, ≥4 drinks for females. Intervention time was 6 months and total follow-up period was 12 months.
**Results:** 107 HIV+ prisoners were enrolled during the study period from 2010-2015. The first study drug injection occurred one week prior to release during incarceration, and five subsequent injections occurred monthly after release to the community. TFHDD was significantly longer in those that received XR-NTX vs placebo (80.4 vs 73.5 days; p< 0.001). In addition to the overall treatment effect of XR-NTX; age < 30 years, lower Alcohol Use Disorder Identification Test (AUDIT) scores, and abstinence from opioids and/or cocaine during the intervention period were significantly associated with longer TFHDD (p< 0.001).


*[Figure 1. Kaplan Meier Plot of Time to First Heavy Drinking Day by Age & Study Arm]*

**Conclusions:** XR-NTX significantly lengthened the time to heavy drinking after release for HIV+ released prisoners, particularly among younger persons. Interventions aimed at preventing relapse to alcohol among HIV+ prisoners transitioning to the community should include XR-NTX.

### WEAC0403

### Preliminary experience with medically assisted therapy for people who inject drugs in Mombasa County, Kenya

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**Background:** Kenya modes of transmission study attributed 4% of all new HIV infections to injecting drug use. AFYA-PWID, a 4-year program, funded through PEPFAR grant aims to reduce HIV morbidity and mortality among people who use drugs in Kenya.
**Methods:** This program is implemented via a four pronged approach: improving policies, strategies, guidelines and coordination; increasing access to comprehensive HIV prevention, care and support package for PWID; strengthening policy makers & community support; and enhancing M&E Capacity. This program's key focus is introduction and scale up of high impact, evidence-based interventions, specifically Medically Assisted Therapy (MAT) - alias opioid substitution therapy.

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Program achievements in Mombasa County since project start in mid-2014 include: functioning multi-sectorial technical working group, county-specific standard operating procedures for MAT in place, two MAT clinics established at public health facilities; and over 60 health workers and over 30 CSO staff trained, 20 policy makers, 80 law enforcement, 10 judiciary, 50 religious leaders and 10 media personnel sensitized.
**Results:** From September to December 2015, a total 167 individuals had initiated MAT. All males who inject heroin, all heroin-dependent females regardless of injecting status and sexual partners of enrolled clients were eligible. 26% MAT clients were females, 11% aged ≤ 25 years, 24% were HIV-infected (18% males versus 42% of females), 28% HCV infected (33% males versus 16% females). Overall HBV prevalence 2%. 100% tested opiates positive at baseline urine toxicology: 30% dependent on heroin alone, two-thirds concurrently used cannabis and heroin, while 5% dependent on heroin, cannabis and benzodiazepine.
Daily methadone maintenance doses ranged 36 to 140 mgs. After 3 months, random urine screening reported 50% opiates positivity. By end of 2015, 6% clients were lost to follow up and 2.3% died.
**Conclusions:** This program represents a major milestone for Mombasa County! Within less than 4 months of initiation, 167 highly marginalized and stigmatized clients were accessing long overdue MAT services. Despite limited psychosocial support and other intervention there is high treatment retention rate - possibly due to optimal methadone dosing. However, there is urgent need for integrated service delivery and livelihood assistance for recovering MAT clients.

## WEAC0404

### Incarceration and people who inject drugs in Ukraine: modelling its role in HIV transmission and the impact of introducing OST in prisons

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**Background:** People who inject drugs (PWID) experience high incarceration rates, and current or previous history of incarceration is associated with increased HIV and Hepatitis C transmission and heightened injecting risks. We assess the contribution of incarceration to HIV transmission amongst PWID in Ukraine, and the impact of introducing opiate substitution therapy (OST) in prison.
**Methods:** We developed a dynamic model of incarceration and HIV transmission amongst PWID, which was fit using a Bayesian framework to data from Ukraine. The model was calibrated to data on HIV prevalence amongst never and previously incarcerated PWID in 2013 (12.8 and 28.2%, respectively), and currently incarcerated PWID in 2011 (28.5%). Based on data on the frequency of syringe sharing, baseline projections assumed increased injecting risk amongst previously incarcerated PWID compared to never incarcerated community PWID (1.9-3.3 times greater in first 12 months after release and 1.4-2.0 times greater thereafter), but made no assumption about the level of risk amongst incarcerated PWID because of insufficient data. Sensitivity analyses considered less informative priors. We projected the 15-year: contribution of incarceration to cumulative HIV incidence among PWID and impact of introducing prison OST from 2015.
**Results:** Despite uncertainty in the HIV transmission risk among currently incarcerated PWID, the model projected that 55% (95% credibility interval: 40-68%) of new HIV infections could be averted amongst PWID in Ukraine over the next 15 years if incarceration had no effect on HIV transmission from 2015. This result was robust to less informative priors on the level of risk in previously and currently incarcerated PWID. Conversely, if prison OST was initiated in Ukraine, with 50% coverage of incarcerated PWID and OST maintained for one year after incarceration, the model suggests 20% (95% credibility interval: 15-25%) of HIV infections could be averted from 2015 to 2030.
**Conclusions:** Incarceration and the increased transmission risk associated with previous incarceration are likely to be important contributors to HIV transmission amongst PWID in Ukraine. Interventions need to focus on reducing these risks, with OST in prison possibly being an important strategy to reach this aim.

## WEAC0405

### Modelling the potential impact of the incarceration on HIV incidence among people who inject drugs in Tijuana, Mexico

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**Background:** Incarceration rates are high among people who inject drugs (PWID) in Tijuana, Mexico with a higher HIV prevalence among those ever compared to never incarcerated. Using dynamic mathematical modeling we estimate the contribution of incarceration to the HIV epidemic among PWID in Tijuana and the potential impact of reducing incarceration rates.
**Methods:** Data on HIV prevalence and incidence by incarceration exposure were obtained from an ongoing cohort of PWID in Tijuana (“El Cuete IV” 2006-2015). HIV prevalence was 3.4% and 6.7% among male and female PWID respectively. 85% and 53% of male and female PWID, respectively reported previous incarceration. Relative risk of HIV infection among ever versus never incarcerated male and female PWID was 1.10 (95%CI: 0.26-4.73) and 3.24 (95%CI: 0.70-15.00) respectively. A deterministic mathematical model of HIV transmission among PWID was developed reproducing the differential HIV risk and incarceration patterns among PWID by sex. The model was embedded in a Bayesian statistical framework using a Markov Chain Monte Carlo (MCMC) algorithm to estimate uncertainty in the outputs. Epidemic fits were resampled from the posterior distribution and the proportion of new infections attributable to incarceration was calculated over different time periods (1980-2016, 2016-2021 and 2016-2026).
**Results:** The model estimated that from the start of the epidemic to date, 43.5% [95%CrI: 25.9%-60.3%] of new infections were attributable to incarceration and without incarceration HIV prevalence could have been a relative 2.1 folds [95%CrI: 1.4-3.1] lower in 2016 (1.7% instead of 3.4%). In the absence of incarceration between 2016-2021 and 2016-2026, 7.7% [95%CrI: -8.8%-22.8%] and 10.6% [95%CrI: -6.4%-26.6%] of new infections would be averted.
**Conclusions:** Preliminary modeling suggests incarceration has contributed substantially to HIV incidence among PWID in Tijuana, and a reduction in incarceration could avert up to 10% of new infections in the next 10 years. In 2009, Mexico decriminalized the possession of certain drugs for personal consumption in an effort to reduce incarceration rates among users, however the reform has not been enforced in Tijuana. Further delaying its enforcement undermines the efforts to control the epidemic among this population.

# WEAD01 It’s all in the family

## WEAD0101

### Sustained effect of couples’ HIV counselling and testing on reducing unprotected sex among HIV serodiscordant couples

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**Background:** Couples’ voluntary HIV counseling and testing (CVCT) has been shown to significantly reduce HIV/STI incidence in HIV discordant couples by increasing condom use. The long-term impact of CVCT on sustained behavior change has not been published.
**Methods:** From 1994-2012, heterosexual HIV discordant couples (M+F- and M-F+) were recruited in Lusaka, Zambia into long-term follow-up. Baseline and time-varying covariates were measured every three months. The outcome was a time-varying composite measure of: self-reported unprotected sex, sperm presence on a vaginal swab wet prep, incident pregnancy, and incident HIV seroconversion. Multivariable repeated outcomes survival analysis (Anderson-Gill) explored factors predictive of unprotected sex.
**Results:** Among 3,049 couples followed an average of two years/couple, incidence of unprotected sex indicators decreased significantly after the first CVCT visit ($p < 0.001$), and this decrease was sustained over follow-up (p-trend $< 0.05$). Predictors of unprotected sex are shown in Table 1. Model findings were similar when also controlling for fertility intentions.

| | M+F- couples (N = 1393) | | | | M-F+ couples (N = 1656) | | | |
|---|---|---|---|---|---|---|---|---|
| **Contraceptive method (versus condoms alone)*** | HR^ | 95%CI | | p-value | HR+ | 95%CI | | p-value |
| OCPs | 1.34 | 1.19 | 1.50 | <0.0001 | | | | |
| Injectables | 1.41 | 1.23 | 1.61 | <0.0001 | | | | |
| **Pregnancy status (versus not pregnant)*** | | | | | | | | |
| Pregnant (not incident) | 1.88 | 1.74 | 2.03 | <0.0001 | 1.60 | 1.50 | 1.71 | <0.0001 |
| Post-partum (≤6 months) | 0.90 | 0.76 | 1.08 | 0.260 | 0.86 | 0.73 | 1.02 | 0.081 |
| **Woman alcohol use last yr (yes versus no)** | 1.15 | 1.01 | 1.30 | 0.041 | | | | |
| **Circumcised male partner (yes versus no)** | 1.23 | 1.04 | 1.47 | 0.019 | | | | |

OCP: oral contraceptive pill; IUD: copper intrauterine device; HR: adjusted hazard ratio; CI: confidence interval; yr: year; *time-varying variables; p-values are two-tailed; ^controlling for controlling for age, self-reported protected sex with the study partner, self-reported outside sex, and follow-up time since enrollment; +controlling for age, self-reported protected sex with the study partner, and follow-up time since enrollment

*[Table 1. Multivariable models of predictors of unprotected sex among HIV discordant couples]*

**Conclusions:** In HIV discordant couples, reductions in unprotected sex after CVCT are significant and sustained over long-term follow-up. We recommend broad CVCT scale-up per WHO guidelines. Reinforced condom counseling may be needed in M+F- couples (especially oral and injectable users, female alcohol users, and during pregnancy) and M-F+ couples (especially during pregnancy). The finding that oral and injectable method use was predictive of unprotected sex in M+F- couples potentially explains published associations between hormonal contraception and HIV seroconversion (uncontrolled confounding by unprotected sex). The finding that male circumcision in M+F- couples was associated unprotected sex warrants further investigation.

## WEAD0102

### POSITIVE IMPACT OF A RANDOMIZED CONTROLLED TRIAL OF THE UTHANDO LWETHU ("OUR LOVE") INTERVENTION ON RATES OF COUPLES HIV TESTING IN RURAL SOUTH AFRICA

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**Background:** Couples-based HIV testing and counseling (CHTC) is an effective strategy for reducing sexual transmission between partners. However, uptake of the service has been low. We tested the efficacy of a couples-based intervention to increase participation in CHTC in a high HIV-prevalence setting.
**Methods:** We randomized 332 couples (664 individuals) from a rural community in KwaZulu-Natal South Africa for an RCT of a couples-based behavioral intervention comprising six sessions (two group sessions/four couple counseling sessions) (n= 168 couples) or one group session (n = 164 couples). The intervention explored barriers to HIV testing and promoted improved communication skills and positive relationship dynamics. The primary outcomes were participation in CHTC and number of reported unprotected sex acts in the last 90 days with primary partner. Couples were ineligible if they had mutually disclosed their HIV status or previously participated in CHTC.
**Results:** 22 couples (6%) were lost-to-follow-up before 9 months, with no difference by group, p=0.36. Using intent-to-treat analysis, at final 9-month follow-up, a higher proportion of intervention couples had participated in CHTC than control couples (42% and 12% respectively; p ≤ 0.001), with a shorter time to CHTC than control group couples who participated in CHTC (Logrank p ≤ 0.0001). For sexual behavior, there was a significant reduction in proportion of unprotected sex acts for intervention couples at 3-month follow-up (IRR = 0.74, p ≤ 0.022), but a negative binomial regression model accounting for couple clustering found no significant group-by-time interaction (p=0.08).
**Conclusions:** To our knowledge, this is the first intervention that targeted increasing participation in CHTC. Results suggest that addressing relationship factors among African heterosexual couples can significantely improve rates of CHTC. The intervention had an impact on proportion of unprotected sex acts at first follow-up but this was not sustained over time. Our intervention reached a high number of couples that were unaware of their joint HIV status at baseline. Further, results show that it is possible to promote engagement in CHTC-- which is an effective strategy that accomplishes HIV testing, mutual disclosure and can facilitate entrée into treatment for HIV-positive individuals in high prevalence settings.

## WEAD0103

### ASSESSMENT OF COUPLE RELATIONSHIP QUALITY AND LINKS TO HIV PREVENTION, TREATMENT AND CARE IN RURAL MALAWI

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**Background:** Couple relationship quality may impact partner-level behaviors related to HIV risk, including couples' HIV testing, serostatus disclosure and care outcomes. The Couple Functionality Assessment Tool (CFAT) was developed to allow programs to assess couple relationship quality in low-resource settings.
**Methods:** The CFAT was pilot tested among 203 women and 198 men (married and cohabiting) in rural Malawi in August 2015. Factor analysis reduced the CFAT to thirty-one questions addressing five domains of relationship quality (intimacy, partner support, sexual satisfaction, decision-making, communication and conflict management), plus questions on intimate partner violence and partner support for seeking HIV care. Regression analysis examined the relationship of the refined CFAT to key HIV-related behaviors.
**Results:** Most participants reported that they and their partners had been tested for HIV and mutually disclosed their status (90% of women, 85% of men). Women with the highest relationship quality scores were significantly more likely than women with the lowest scores to report that they and their partners had been tested for HIV and mutually disclosed results (94% vs. 72%, p < .01) and also to report other behaviors critical to HIV care and treatment adherence, such as deciding with partner how to manage household budget (p< .001) and having a joint financial plan (p< .001). Women with low relationship quality were also significantly more likely to report intimate partner violence and abuse. Men reported that they would be more supportive of women seeking PMTCT and of children's HIV testing than women perceived them to be (differences between men's and women's perceptions significant at p < .001 and p = .002, respectively).
**Conclusions:** The CFAT showed validity in this population, and findings suggest that strengthening couple relationship quality and giving couples tools to build good communication may support behaviors critical to HIV outcomes. Women may be underestimating men's support for PMTCT services and pediatric testing, which could create barriers to care. The greater violence and abuse experienced by women in low-quality relationships may also create HIV risk and impede care. The CFAT will enable projects aiming to improve HIV outcomes by enhancing couple functionality to measure relationship quality validly and reliably.

## WEAD0104

### PARTNER COMMUNICATION AND SUPPORT AROUND HIV AND HOW THIS RELATES TO HEALTH-SEEKING BEHAVIOUR: A QUALITATIVE STUDY AMONGST HIV-POSITIVE INDIVIDUALS AND COUPLES IN KARONGA, MALAWI

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**Background:** HIV policies and practices in Malawi and elsewhere in sub-Saharan Africa have strongly focused on couple testing, counselling and partner disclosure to improve treatment adherence and outcomes. Little is known about how HIV-positive concordant couples respond to these initiatives, and the consequences for their relationships and HIV care-seeking behaviours. In the context of a larger qualitative study on the experiences of care-seeking among HIV-infected adults, communication around HIV and its influence on care-seeking behaviours was explored.
**Methods:** In-depth interviews were carried out with 24 women and 17 men diagnosed with HIV, including 8 mutually disclosed couples, purposefully sampled from ART clinics or households using the Karonga health and demographic surveillance system database. Participants were encouraged to explain their journey with HIV;

topic guides explored communication with partners and other support networks, and experiences with HIV services. A framework analysis approach was used. Individual narratives from eight couples were compared to map communication within relationships and understand potential implications on health-seeking behaviours.
**Results:** Communication about HIV testing, care and treatment in a relationship was primarily driven by a perceived need for support: some people disclosed their status in anticipation of specific support mechanisms, while others did not disclose for fear of being abandoned and losing any kind of support. Communication about HIV testing and treatment was often initiated by women, and was often influenced by child-bearing and care.
Despite knowing each others' HIV status, most partners were unable to accurately articulate their partner's HIV-related experiences suggesting communication was restricted to particular areas and implying an individual focus. Those that reported support generally defined it in practical rather than psychological terms (e.g. reminders to take drugs).
**Conclusions:** Most participants reported that disclosing to their spouse was important, but following disclosure communications did not consistently extend to a meaningful understanding of the other's experience of living with HIV. Despite purportedly couple-friendly services, partners rarely attended the health facility together, suggesting HIV remains a solo journey. As policy moves towards universal ART, further consideration is required around how to engage partners in culturally appropriate ways to support improved communication and health-seeking behaviours.

## WEAD0105

### INTERVENTION OUTCOMES ON MENTAL HEALTH OF PLH, FAMILY MEMBERS AND CHILDREN: A RANDOMIZED CONTROLLED TRIAL IN RURAL CHINA

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**Background:** HIV impacts families. This study examines the efficacy of an intervention that targets people living with HIV (PLH), their family members and children in rural China. The intervention outcomes on mental health were evaluated for all the three populations.
**Methods:** The intervention trial utilized a two-arm design with 475 families impacted by HIV in rural Anhui, China, including 522 PLH, 475 sero-negative family members, and 536 children aged 6-18. Previously piloted TEA (Together for Empowerment Activities) intervention was delivered at three levels: 1) TEA Gathering (small group for PLH and family members); 2) TEA Time (home-based family activities with children); and 3) TEA Garden (community events). Intervention effect was evaluated at baseline, 6-, 12-, 18-, and 24-month follow-ups. Mixed-effects regression models were used to assess the improvement on the mental health measures -- for PLH on depressive symptoms and coping with illness, for family members on depressive symptoms and caregiver burden, and for children on self-esteem and daily stress. Estimated difference and standard error (SE) in changes from baseline between intervention and control from the regressions are shown.
**Results:** For PLH, we found significant intervention effects on improved levels of coping with illness at the 6-month (4.45±0.84; P< 0.0001), 12-month (3.19±0.85; P=0.0002), 18-month (3.09±0.85; P=0.0003), and 24-month follow-up (2.55±0.87; P=0.0034). Similarly, significant effect on reduction of depressive symptoms was observed at each of the follow-ups for PLH. For family members, significant intervention effects at the follow-ups were found on improved depressive symptoms, but not on caregiver burden. For children, although intervention effects on the improved self-esteem were not significant between intervention and control, significant intervention effects on levels of daily stress were found at the 6-month (1.49±0.72; P=0.0386) and 12-month (1.68±0.74; P=0.0241) follow-ups.
**Conclusions:** This is our first longitudinal outcome report based on the large-scale, randomized trial. Study findings support the feasibility in implementation and efficacy of the multilevel TEA intervention not only for PLH also for family members and children. Intervention activities that connect various members in a family could be the key to link to the intervention outcomes.

# WEAD02 SEX THROUGH THE AGES

## WEAD0201

### MEETING THE REPRODUCTIVE INTENTIONS OF PLHIV IN MALAWI

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**Background:** Malawi's HIV clinical management guidelines recommend provider-initiated family planning (PIFP) counselling and provision of condoms and injectables within ART settings. The USAID- and PEPFAR-funded Health Policy Project's 2015 study assessed how the reproductive rights of PLHIV are being addressed through the integration of FP into ART services.
**Methods:** Data were collected from a purposive sample of 41 public and private facilities across nine districts of Malawi. Facilities ranged from large high-volume hospitals to small health posts. Data collectors conducted 41 facility audits, 41 interviews with facility in-charges, 122 interviews with providers, 425 client exit interviews, 58 mystery client interviews, and three focus group discussions with PLHIV (n=33).
**Results:** Over half (52%) of female clients (n=315) reported not wanting another child. The majority of female clients (60%) were using contraception; half relied on condoms, one-third were using injectables. Almost one-half (47%) reported not being told about side effects with their current method; 26% reported they were not told about other FP methods. Only 14% of clients reported receiving PIFP at that day's visit. Few clients (18%) reported receiving multiple services that day; however 97% said they would prefer to receive fully integrated services. Clients identified fewer trips to the facility (78%) and reduced transportation costs (43%) as clear benefits of integrated services. Mystery client visits revealed extremely low levels of PIFP implementation (2), and also documented cases of harsh treatment (11), and instances where clients were denied services (ART=5, FP =11) because they were not registered at that facility. Fewer than half of mystery clients reported a satisfactory experience. Some FGD participants recounted experiences of mistreatment from service providers.
**Conclusions:** ART clients in Malawi have a high demand and need for effective FP services, and express a preference for integrated services. Yet despite national guidelines on PIFP, few providers are initiating discussions on reproductive intentions with ART clients. Many HIV clients are relying on condoms to meet their reproductive intentions, and a large number are not receiving quality counseling on a range of methods. An unanticipated finding was the degree to which providers may be mistreating clients, which warrants further study.

## WEAD0202

### SEXUAL AND REPRODUCTIVE HEALTH (SRH) NEEDS AND EXPERIENCES OF YOUTH LIVING WITH HIV

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**Background:** The 1994 International Conference on Population and Development marked the start of the rights-based approach to SRH, with focus towards individuals and their needs, aspirations and rights. SRH needs of youth living with HIV (YLHIV) are often overlooked, meeting them is fundamental to SRH rights of YLHIV and to addressing the global HIV pandemic. Despite its significance, SRH of YLHIV is an often neglected area of research and programming and represents a priority on 2015 post-MDG agenda. Straight Talk Foundation aimed to investigate the dynamics underpinning sexual and reproductive health for YLHIV in Uganda.
**Methods:** A cross sectional and qualitative study design was adopted. The study was carried out among YLHIV who lived in either an urban setting (Kampala) or a rural or post war (Gulu) district. A sequential exploratory approach was used in data collection. Participants were systematically picked from a sample frame determined within their peer network. 39 Semi-Structured interviews with YLHIV and 7 key informants with counselors and medical staffs were carried out. Voice recorders were used to capture data thus data was transcribed and exported to Nvivo version 10 for data analysis. Consent was sought from the young people.
**Results:** YLHIV were sexually active, or in relationships with intentions of sexual activity, and with sero-discordant partners. Health facilities where YLHIV accessed ARVs from had no SRH services integrated. The sexual encounters of YLHIV were typically unplanned making negotiation of safe sex, such as disclosure and use of contraceptives challenging and inconsistent. YLHIV reported experiencing a lot of public HIV-related stigma and discrimination leading to social isolation, which re-

duces social support networks and led to poor self-esteem consequently poorer motivation for self-protection during sex. Many of the YLHIV lacked SRH information for decision making thus fuelling myths and misconceptions which YLHIV commonly act upon; faced cultural taboos and the association of sexuality with immorality inhibiting discussion of sex, relationships and contraception between YLHIV and their parents.

**Conclusions:** Social vulnerability of YLHIV to SRH threats is complex and multifaceted. In order to improve SRH for YLHIV, a holistic approach which addresses the broader social environment is required.

## WEAD0203

### "I ALWAYS WANTED A BIG FAMILY BECAUSE I LOST MINE": A QUALITATIVE ANALYSIS OF PARENTING PERSPECTIVES AMONG YOUNG PARENTS WITH PERINATALLY-ACQUIRED HIV

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**Background:** Globally, children with perinatally-acquired HIV (PHIV) are now living into young adulthood and having children of their own. Little is known about the parenting perspectives of youth who may have experienced family disruption due to loss/illness of biological parents. This research explores the perceptions of adolescents and young adults (AYA) living with PHIV as they transition into parenthood.

**Methods:** We conducted hour-long, semi-structured, audio recorded interviews with a purposive sample of 16 AYA parents with PHIV who were current or former patients at two U.S. pediatric/adolescent infectious diseases clinics. Participants were asked about their childhood family structure, rewards/challenges of parenting, and anticipated future fertility desires/intentions. Analysis of the transcribed interviews was guided by grounded theory identifying key common themes across the interviews.

**Results:** Mean age of participants was 22 years. The majority were black (7) or Hispanic (4) and female (14). Four AYA were raised by biological mothers, five by foster/adoptive parents and the others by relatives. Participants had a range of 1-3 children (mean=1.4), one of whom was HIV-positive. Participants expressed many normative parenting rewards and challenges such as the joy of their child's smile and financial concerns. Unique themes associated with HIV infection included a concern about not "being there" for their child due to sickness and worries that their child may experience HIV-related discrimination. Among those parents who intended to have another child, many were motivated by a strong desire to create a family of their own as a way to deal with HIV-related losses experienced in childhood. Finally, participants also noted the positive role played by pediatric and adolescent medical providers, even if they had transitioned to adult care. Participants reported the importance of emotional support offered by providers as well as concrete social services available in that care setting.

**Conclusions:** AYA with PHIV who have children experience many of the same issues as other young parents. However, they also have HIV-specific experiences that influence their parenting such as illness, discrimination, and childhood parental loss that may intensify their fertility desires. The positive impact providers have throughout a youth's childhood must be recognized and capitalized upon.

## WEAD0204

### BIOGRAPHIES OF HIV AND CERVICAL CANCER: UNDERSTANDING TREATMENT-SEEKING FOR CERVICAL CANCER AMONGST HIV-POSITIVE WOMEN IN INNER CITY JOHANNESBURG

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**Background:** Cervical cancer is preventable, yet in South Africa it is the leading cause of cancer mortality, particularly amongst women living with HIV/AIDS (WLHA). Low screening rates and poor uptake of treatment for CIN2 are contributing factors. We explored the challenges facing WLHA diagnosed with CIN2 in the 'HPV for Africa Research Partnership' (HARP) study that screened, counselled and referred WLHA. We investigate why over a quarter of women in the study who needed surgical treatment did not access it.

**Methods:** A purposive sub-sample (n=30) was selected for in depth interviews (IDI), of which 15 had received surgical treatment for CIN2 and 15 had not. Of these, five of each were invited to a second interview. The McGill Illness Narrative Interview tool (www.mcgill.ca) was used to elicit:

(1) a chronology of symptoms and illness experiences;
(2) popular representations of illness; and
(3) explanatory models of illness and treatment.

Recorded IDI at the study clinic, conducted in local languages, were transcribed and translated and coded in Nvivo 10 according to emergent themes.

**Results:** Twenty study participants (16 treated and 4 untreated, including 12 taking ART) attended one IDI and nine participated in a second IDI. Participant's illness narratives reflected shared experiences of intimate partner violence (IPV), domestic instability, and material deprivation. These experiences shaped a collective perception of cancer as untreatable and hopeless that threatens productive and reproductive futures. In contrast, HIV was well understood and manageable. Cash availability and supportive household relationships facilitated women's treatment seeking for HIV and CIN2. However, all women in the study experienced challenges in accessing treatment.

**Conclusions:** The biographies of WLHA diagnosed with CIN2 reveal structural and interpersonal violence that shaped individual experiences and perceptions of illness, helping us to understand their fatalistic outlooks and the delays and failures in seeking treatment. Health services need to address women's perceptions of cancer, but also remove barriers to immediate treatment. Screen and treat options may be an important intervention for this population and a HPV vaccine for WLHA is a promising option to prevent cervical cancer.

## WEAD0205

### FINDINGS FROM THE SEXUAL HEALTH AND AGING PROGRAM (SHAPE) FOR OLDER WOMEN WITH HIV PILOT STUDY AND FUTURE DIRECTIONS

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**Background:** There are few sexual risk reduction interventions that prioritize the unique needs of older women living with HIV (OWLH). The lack of proven interventions is particularly problematic in light of documented risk behaviors in this population, including condomless sex (CS), often with serodiscordant partners. To address the dearth of work on HIV prevention for OWLH, we conducted research to develop the Sexual Health and Aging Program (SHAPE).

**Description:** SHAPE is a theoretically derived, gender- and generationally-tailored, peer-delivered, small-group, skills-based intervention designed to reduce participants' stress related to HIV disclosure and maintaining safer sexual behaviors and promote successful aging with HIV which incorporates HIV transmission prevention methods for OWLH (Treatment as Prevention) and their partners (PrEP). We pilot tested SHAPE with 58 OWLH, aged 45 years and older who reported CS in the prior 3 months to assess the feasibility, safety, and acceptability of study procedures and evaluation process. We conducted 58 baseline ACASI surveys, 49 (84%) and 48 (83%) 3- and 6-month follow-up assessments respectively, and we conducted 7, 2-day SHAPE programs with 33 women and 7 booster sessions; 25 women also received a standard of care program.

**Lessons learned:** Participants found SHAPE to be highly acceptable and comfortable. Due to ceiling effects and the small size, the intervention had no effect on reducing CS, or improving coping, HIV disclosure and safer sex self-efficacy compared to standard of care. Almost 80% of the participants were virally suppressed and had extremely high baseline coping self-efficacy (mean scores: 199-203).

**Conclusions/Next steps:** We believe that SHAPE's impact would be greatest if it was targeted to the most vulnerable OWLH - those with inconsistent viral suppression, concomitant psychosocial factors and partner-related barriers. We propose to further refine and develop SHAPE as an adaptive intervention strategy to improve its ability to impact viral suppression and self-care management needed to foster *Healthy HIV Aging* and strengthen its's impact on transmission risk by developing new adaptive partner disclosure and couples-support intervention components for those OWLH who report condomless sex with serodiscordant partners.

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## WEAD03 Pulling the levers: Policy, advocacy approaches to influence

### WEAD0301

### Measuring the impact of advocacy: civil society's influence over Global Fund concept notes in eight African countries

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**Background:** One fifth of Global Fund grants are implemented by civil society organizations. However, the degree to which non-state actors are able to shape the content of those grants through the initial concept note is uncertain and hard to measure. As a result, it is not always clear if the Global Fund is investing appropriately in communities.
**Methods:** Global Fund concept notes from Kenya, Malawi, Swaziland, Tanzania, Uganda, Zanzibar, Zambia and Zimbabwe were systematically measured to assess the inclusion of civil society priorities. National Civil Society Priorities Charters were used as indicators for civil society priorities. Each priority in the country's Charter was assessed for its inclusion in the Global Fund concept using a three-point scale (2=included, 1=partially included and 0=not included).
**Results:** The percentage of civil society priorities that were included in Global Fund concept notes were as follows: Malawi (87%), Kenya (76%), Tanzania (67%), Zanzibar (67%), Uganda (64%), Swaziland (50%), Zimbabwe (40%) and Zambia (38%). Across the eight countries, civil society priorities on key populations were the most likely to get included in the concept notes (68%), while priorities on voluntary medical male circumcision were the least likely to get included (15%). Several contextual factors help explain these results. Using Afrobarometer survey data, civil society had greater influence over Global Fund concept notes in countries where people often attend community meetings (CI 95%, P=0.041), often join others to raise an issue (CI 95%, P=0.017) and feel completely free to say what they think (CI 95%, P=0.030). Using World Bank Governance Indicators, civil society had greater influence over Global Fund concept notes in countries where there is a greater degree of freedom of association and freedom of expression (CI 90%, P=0.083). In countries where civil society was more effective at influencing Global Fund concept notes, HIV prevalence was lower (CI 95%, P=0.021).
**Conclusions:** This is some of the only statistical evidence to demonstrate that open and inclusive dialogue spaces are linked to a more effective civil society in the HIV response. An empowered civil society is vital, as the inclusion of their priorities is related to lower HIV prevalence.

### WEAD0302

### Global solidarity to win increased accountability and impact from PEPFAR country programs: an analysis of North-South collaborative advocacy strategies

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**Background:** The U.S.-funded President's Emergency Plan for AIDS Relief (PEPFAR) is the largest funder of the HIV response in the hardest hit countries in the world. Holding PEPFAR accountable through civil society advocacy is a pre requisite to ensure that PEPFAR resources deliver effective, high impact prevention and treatment services for communities. After civil society criticism, in 2013 PEPFAR announced a commitment to support civil society engagement in the annual development of PEPFAR's Country Operational Plans or COPs—the documents describing PEPFAR's budgets, targets and strategies for each country. However in most countries in 2014, civil society (and particularly key populations) engagement in shaping the PEPFAR COPs remained limited. The PEPFAR Watch Network emerged to increase community engagement in the COPs process, and comprises US-based organizations and civil society in PEPFAR-funded countries, advocating to shape PEPFAR funding and priorities based on the priority unmet need of people living with HIV and their communities.
**Description:** We examine the impact of a global advocacy network of allies in high burden countries and in the US in challenging PEPFAR to increase meaningful engagement of CSOs, transparency and accountability to communities from 2014 - 2016.
**Lessons learned:** Health GAP and other partners in the PEPFAR Watch Network learned that applying concerted and coordinated pressure both in Washington DC and in key recipient countries to amplify demands regarding PEPFAR service delivery is an effective strategy. The unique North-South partnership allowed advocates to successfully challenge decision makers in both Washington D.C, and within PEPFAR-funded countries.
**Conclusions/Next steps:** PEPFAR's stated commitment could have a substantial impact on the drive to end the AIDS epidemic, using civil society advocacy to bring PEFPAR's priorities into alignment with the demands and priorities of people with HIV. PEPFAR investments are an area of untapped potential, which can be made more effective in the global AIDS response through the involvement of community advocates and key populations groups. High-impact watchdogging, monitoring and accountability by a North-South coalition of civil society partners can leverage new opportunities to engage with the PEPAR COPs process to ensure that critical HIV prevention and treatment services are in line with community needs.

### WEAD0303

### Demanding a high impact HIV response: civil society advocacy and the President's Emergency Plan for AIDS Relief (PEPFAR) in Uganda

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**Background:** The PEPFAR programme provides treatment, prevention and care for people living with or affected by HIV/AIDS in high burden countries including Uganda where it is the largest donor. Engagement of civil society in the development and implementation of PEPFAR's plans is therefore critical to ensuring that PEPFAR's priorities reflect real lived experience and that the plans emphasize the priorities of communities most affected. Uganda's faltering response to HIV makes it crucial to ensure funding is invested in high impact interventions..
**Description:** In Uganda, the International Community of Women Living with HIV Eastern Africa (ICWEA) coordinates and convenes CSOs in a coalition focused on analysis and advocacy on PEPFAR and other major actors the AIDS response. This coalition has engaged in a series of high impact advocacy efforts, including development of civil society monitoring tools, training and empowerment of women living with HIV so that they are able to engage the implementing partners (IPs) and PEPFAR teams directly and demand programs that address the needs of the communities. Results of field assessments and other data are shared with the PEPFAR country teams to inform planning and programming and correct mistakes in real time. The coalition also links with advocates in the US regarding priority advocacy and policy matters.
**Lessons learned:** CSOs and the PEPFAR country team have an engagement roadmap in line with the COP planning cycle and written information and feedback is shared regularly. CSOs provide formal recommendations to the in-country COP development and implementation process and to PEPFAR headquarters and understand better PEPFAR COP programming. Quarterly field assessments have enabled CSOs to provide feedback informed by evidence to the PEPFAR country teams and push for relevant corrective measures. The process is empowering and creates a sense of ownership to people with HIV and their communities, especially women and young women living with HIV who gather this data.
**Conclusions/Next steps:** ICWEA with national and global partners has developed a PEPFAR COP engagement strategy, complementing Global Fund, to generate strong and effective advocacy in order to improve accountability of donors and address bottlenecks obstructing efforts to end AIDS in Uganda.

### WEAD0304

### PLHIV in the Caribbean: many islands, same issues. Lack of resources, fragmented health/care systems: an under-resourced community response

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**Background:** 2014 figures: 280 000 [210 000-340 000] PLHIV in the Caribbean, However treatment coverage is only 44% [33%-54%] of people 15 years or older, 36% [32%-42%] among children. Caribbean countries continue to face **economic and fiscal challenges**. Global economic crises and decline or withdrawal of donor resources impact adversely on the response; nowhere is this more acutely played out

than in funding available to community based PLHIV and allied organisations - who are the first point of call for people facing HIV **related stigma and discrimination** . This is still a major barrier for accessing HIV and other health services - especially considering the very small population of many islands and Caribbean territories. This is compounded by, punitive laws (e.g. the criminalisation of key populations), policies and practices that foster significant human rights violations, promote fear, and discourages many PLHIV from disclosing their status.

**Description:** In 2015 The Caribbean Regional Network of People Living with HIV and AIDS (CRN+) as part of the Positive Networks Consortium (led by GNP+) with the support of RCNF (Robert Carr Network Fund) conducted an advocacy strategy assessment amongst 10 countries (and one caribbean municipality of the Netherlands Seba). 225 people across the 11 sites (with over half PLHIV, and others community members from key populations , and community workers) ) were interviewed about the work they did in relation to HIV, how funded, and priorities for advocacy and the response.

**Lessons learned:** Whether from (St Lucia pop., 185K) to Haiti (pop.10.5 m) common themes ran through the results; included were the need for universal access to medications (ARV's) without stockouts, sub optimal regimes in place ,services not being delivered free from stigma and discrimination. The evidence illustrated that the input of community organisations to the response was not properly valued, and feelings they lacked the advocacy tools and strategies to change this.

**Conclusions/Next steps:** The results fed into strategic plan for CRN+ and partners In progress the PNC is building a advocacy plan for an enhanced community role in CCM's, other fora . Support for key populations to challenge punitive laws and practices being put in place.

## WEAD0305

### RAPID RESPONSE RESEARCH TO INFORM HIV POLICY DECISION-MAKING: LESSONS LEARNED FROM CALIFORNIA'S COLLABORATIVE HIV/AIDS POLICY RESEARCH CENTERS

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**Background:** Responding to the HIV epidemic requires policy decisions that are well researched and informed by empirical evidence. The policy environment, however, is dynamic and fast-paced, and the opportunity to effect change may be limited to brief periods of time. To ensure research findings are ready within these "policy windows," researchers must be able to launch and complete projects quickly. Responding to these realities, the California HIV/AIDS Research Program (CHRP) has, since 2009, funded two collaborative HIV/AIDS Policy Research Centers. Each consists of university and community-based agency partners that work statewide with consumers, advocates, and policymakers to conduct "rapid response" short-term projects designed to address questions that emerge in the dynamic health policy environment.

**Description:** Policy research advisory committees meet annually in northern and southern California to prioritize HIV policy-related questions and concerns that would benefit from research. Following each meeting, policy center investigators formulate specific research questions and study designs based on policy research advisory committee priorities. Data for each rapid response project are then collected, analyzed, and disseminated back to policy stakeholders, ideally in six months or less.

**Lessons learned:** The HIV/AIDS Policy Research Centers have successfully addressed critical policy issues that emerged in California over the past seven years. These include analyses of: state budget cuts to HIV prevention; enhanced surveillance efforts on federal funding for California; mandating condom distribution in correctional facilities; the impact of the state's Affordable Care Act implementation on HIV providers and patients; the effects of healthcare reform efforts on the care of HIV-positive individuals who also have mental health diagnoses; the impact of limiting physician visits, capping prescriptions, and charging co-pays for HIV medications; and examining various HIV workforce issues, such as the aging and specialty mix of physicians who provide HIV treatment in California.

**Conclusions/Next steps:** The collaboration between academic and community partners through standing policy research centers has brought together synergistic skill-sets, knowledge bases, and professional relationships to successfully inform robust and timely analyses of HIV-relevant policy issues. Expansion of this funding model would help to ensure that research is able to respond to the rapid changes in policy environments.

## WEAD0306LB

### THE UPTAKE OF POPULATION SIZE ESTIMATION STUDIES FOR KEY POPULATIONS IN GUIDING HIV RESPONSES ACROSS SUB-SAHARAN AFRICA: A SYSTEMATIC REVIEW

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**Background:** There has been an increase in the focus on data to better inform the HIV response. This has included data focused on both defining the content of HIV programs as well as the scale of these programs in response to evidence-based need. To this end, population size estimation(PSE) studies for key populations have become increasingly common to define the necessary scale of specific programs for these populations. This study aims to systematically assess the uptake of PSE in HIV policy and program documents across the continent of Africa including Sub Saharan and North Africa to assess the ultimate utility of these studies.

**Methods:** This study included two phases; Phase 1 included a systematic review of all PSE for key population, including men who have sex with men(MSM), female sex workers(FSW), and people who inject drugs(PWID) across SSA from Jan,2009-Feb,2016 using the Preferred Reporting Items for Systematic-Reviews and Meta-Analyses(PRISMA) guidelines. Phase 2 represented a review of 23 different types of documents used to inform HIV programming in countries with a focus on PEPFAR and the Global Fund(GF) investments.

| Year of estimation (if mentioned) | Population | Location | Stakeholders developed an Interpretation and Use Plan for PSE | PSE used to identify a problem | PSE used to develop a plan of action/ recommendation to address that problem | PSE used to change a Global Fund policy as documented in concept notes | PSE used to change a PEPFAR policy as documented in country operational plans | PSE used to change a national MOH policy as documented in NSPs | Study results published in a peer-reviewed academic journal | Results/data translated into non-academic resources (briefs/ pamphlets/ advocacy tools) |
|---|---|---|---|---|---|---|---|---|---|---|
| N/A | PWID | East Africa | | ■ | ■ | | | | | |
| N/A | PWID | South Africa | | ■ | ■ | | ■ | | | |
| N/A | PWID | Nigeria | | ■ | | | | | | |
| 2009 | MSM-SW | Lagos, Nigeria | | ■ | | | ■ | | | |
| 2009 | MSM-SW | Kano, Nigeria | | ■ | | | ■ | | | |
| 2009 | MSM-SW | Port Harcourt, Nigeria | | ■ | | | ■ | | | |
| 2008, 2009 | FSW | Mauritius | | | | | | | | ■ |
| 2009, 2010 | PWID | Mauritius | | | | | | | | |
| 2010 | MSM | Morocco | ■ | ■ | ■ | | | | ■ | |
| 2010 | PWID | Morocco | ■ | ■ | ■ | | | ■ | ■ | |
| 2010 | FSW | Morocco | ■ | ■ | | | | | ■ | |
| 2010 | PWID | Nairobi, Kenya | | ■ | ■ | | | | ■ | ■ |
| 2009-2010 | FSW | Nairobi, Kenya | | ■ | ■ | | | | ■ | ■ |
| 2010 | MSM | Nairobi, Kenya | | ■ | | | | | ■ | ■ |
| 2012 | PWID | Kenya | | ■ | | | | | | |
| 2012 | FSW | Kenya | | ■ | | | | | | |
| 2012 | MSM | Kenya | | ■ | | | | | | |
| 2012 | FSW | Lagos, Nigeria | | ■ | ■ | | ■ | | | |
| 2012 | FSW | Anambra, Nigeria | | | | | ■ | | | |
| 2012 | FSW | Nigeria | | | | | ■ | | ■ | |
| 2011 | MSM | Luanda, Angola | | ■ | ■ | | ■ | | | ■ |
| 2011-2012 | FSW | Nyanza, Kenya | ■ | ■ | ■ | | | | | ■ |
| 2011-2012 | FSW | Coastal Kenya | | ■ | | | | | | ■ |
| 2011-2012 | FSW | Eastern Kenya | | ■ | | | | | | |
| 2011-2012 | FSW | Central Kenya | | ■ | | | | | | |
| 2011-2012 | FSW | Nairobi, Kenya | | ■ | | | | | | |
| 2011-2012 | FSW | Kenya | | ■ | | | | | | |
| N/A | FSW | Niger | ■ | ■ | ■ | | | | ■ | |
| 2013 | MSM | Yaoundé, Cameroon | | ■ | | | | | ■ | |
| 2013 | MSM | Douala, Cameroon | | ■ | | | | | ■ | |
| 2013 | MSM | Bamenda, Cameroon | | ■ | | | | | ■ | |
| 2013 | MSM | Bertoua, Cameroon | | ■ | | | | | ■ | |
| 2013 | MSM | Bafoussam, Cameroon | | ■ | | | | | ■ | |
| 2013 | MSM | Ngaoundere, Cameroon | | ■ | | | | | ■ | |
| 2013 | MSM | Kribi, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Douala, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Bamenda, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Bertoua, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Bafoussam, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Ngaoundere, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Kribi, Cameroon | | ■ | | | | | ■ | |
| 2013 | FSW | Yaoundé, Cameroon | | ■ | | | | | ■ | |
| | MSM | Luanda Province, Angola | | ■ | | | ■ | | | ■ |
| 2010-2013 | PWID | Nador, Morocco | | | | | | | ■ | |
| 2010-2013 | PWID | Tanger, Morocco | | | | | | | ■ | |
| 2010-2013 | FSW | Rabat, Morocco | | | | | | | ■ | |
| 2010-2013 | FSW | Tanger, Morocco | | | | | | | ■ | |
| 2010-2013 | FSW | Fez, Morocco | | | | | | | ■ | |
| 2010-2013 | FSW | Agadir, Morocco | | | | | | | ■ | |
| 2010-2013 | MSM | Marrakesh, Morocco | | | | | | | ■ | |
| 2010-2013 | MSM | Agadir, Morocco | | | | | | | ■ | |
| 2011 | PWID | Dakar, Senegal | | | ■ | ■ | | ■ | ■ | ■ |
| 2010 | FSW | Rwanda | | | | | | | ■ | |
| 2010 | FSW | Kigali, Rwanda | | | | | | | ■ | |
| 2011 | FSW | Greater Accra, Ghana | | | | | | | | |
| 2011 | FSW | Ghana | | | | | ■ | | ■ | ■ |
| | FSW | North Eastern Province, Kenya | | | | | | ■ | | ■ |
| | FSW | Nairobi province, Kenya | | | | | | ■ | | ■ |
| | FSW | Urban Kenya | | ■ | ■ | | ■ | ■ | ■ | ■ |
| | MSM | Kenya | | | | | | | ■ | |
| | PWID | Kenya | | ■ | ■ | ■ | ■ | | ■ | |
| 2010-2011 | PWID | Coastal Kenya | | ■ | ■ | | | ■ | | ■ |
| | PWID | Mainland Tanzania | | ■ | | | | | ■ | ■ |
| | PWID | Kenya | | ■ | | | | | ■ | ■ |
| | PWID | Zanzibar | | ■ | | | | | ■ | ■ |
| | PWID | Africa | | ■ | | | | | ■ | |
| | PWID | Eastern Africa | | ■ | | | | | ■ | ■ |
| 2013 | FSW | Mekelle, Ethiopia | | ■ | | | | | ■ | ■ |
| | FSW | Durban, South Africa | | ■ | ■ | | | ■ | ■ | ■ |
| | FSW | Mettema Yohannis, Ethiopia | | ■ | | | | | ■ | |

*[Table 1: Research Utilization Indicators]*

**Results:** 71 PSE were identified; two of which were mentioned in GF Concept Notes,12 in PEPFAR Country Operational Plans, and seven in national Ministry of Health documents; and 15 included plans of action for the data (Table 1).

**Conclusions:** While there is an increasing trend in the completion of PSE studies for key populations in more generalized HIV epidemic settings involving significant investments of finances and human resources, there is limited evidence of effective uptake of these data to guide the HIV responses in these countries. While PSE are important to guide data-driven HIV responses, the data presented here suggest an opportunity to build capacity to ensure that available data appropriately guides responses and optimal decisions are made about data needs moving forward.

## WEAE01 Innovations in HIV testing: The first 90

### WEAE0101

### Acceptability and preferences for HIV self-testing in Zambia: A population-based formative study using a discrete choice experiment

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**Background:** Uptake of HIV testing in Zambia remains low and Zambia is considering the use of HIV self-testing (HIVST) to increase awareness. We assessed acceptability and preferences for HIVST among adults in Lusaka province, Zambia.
**Methods:** Households in Lusaka Province were randomly selected to participate in a household survey and one member aged ≥16 years randomly selected as a respondent. Respondents were asked about perceptions and preferences around HIVST after receiving information about the Oraquick oral fluid-based test. Preferences were assessed through a Discrete Choice Experiment (DCE). The DCE contained a full factorial design with cost (free, 10 Kwacha or 25 Kwacha), location to obtain the test (from voluntary counseling and testing departments in clinics, VCT; outpatients departments within clinics, and private chemists) and pre-counseling (provided or not) as attributes. Participants were asked to choose between two different HIVST models but also had an opt-out option to choose conventional modes of HIV testing or no testing. We used mixed logit regressions to analyze the DCE results.
**Results:** Among 1,617 participants, 47% had not tested in the past year. 74% reported feeling comfortable with HIVST and 76% of those who have not tested in the past year reported they would definitely test if given a self-test. Only 2% reported having concerns serious enough to not recommend HIVST in Zambia. In the DCE, 73% of those who had tested in the past year chose HIVST over conventional modes of testing, and 88% of those who had tested in the past year chose HIVST over not testing. The most predictive attribute for a choice was presence of counseling, followed by lower cost especially for regular testers. The lowest relative preference was for location. When considering only two types of HIVST and excluding the opt-out option, participants had a negative preference for obtaining the test at VCT, a location found to be highly stigmatized.
**Conclusions:** HIVST is highly acceptable among adults in Lusaka province, Zambia. There is a strong positive preference for the provision of some counseling accompanied with HIVST and for lower-cost self-tests, especially for those who were already regular testers.

### WEAE0102

### Benefits and adverse outcomes of HIV self-testing among high-risk MSM in China: an implementation perspective

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**Background:** HIV self-testing (HIVST) holds great promise for reaching high-risk key populations who do not access facility-based services, but it has not been examined in the 'real-world' implementation context. HIVST is a process by which a person performs and interprets a test in private. We sought to describe unsupervised HIVST use among men who have sex with men (MSM) in China.
**Methods:** We conducted a nationwide online survey of MSM in China recruited from MSM websites and social media. Eligible men reported being at least 16 years of age, having anal sex with a man at least once, and having condomless anal/vaginal sex in the past three months. We analyzed benefits (e.g., first-time testing, increased testing frequency, post-testing counseling) and adverse outcomes (e.g., coercion, violence, suicidality) among MSM using HIVST. We compared MSM whose first-time HIV test was a self-test (first-time HIVST) to those whose first-time was at a facility and assessed correlates using multivariable logistic regression.
**Results:** Among 1685 eligible men who clicked the banner, 1189 men completed the survey. 28.7% (341/1189) of men reported ever using HIVST. The most common place to obtain an HIVST kit was online (171/341, 50.1%). Among those who had used HIVST, 58.7% (200/341) reported their first-time HIV test using HIVST. Multivariable analysis found that first-time HIV testing using HIVST was correlated with younger age (adjusted OR = 1.05, 95% CI 1.02, 1.08) and men who had not disclosed MSM behaviors to anyone (adjusted OR=2.24, 95% CI 1.57, 3.22). The most common adverse outcome was coercion (31/341, 9.1%). 40/341 (11.7%) of those who underwent HIVST reported a positive HIV self-test. Among men with a positive self-test, 30/40 (75.0%) received post-test counseling and 31/40 (77.5%) received subsequent confirmatory HIV testing. Among men with a negative self test, 134/301 (44.5%) received post-test counseling and 118/301 (39.2%) confirmed their results.
**Conclusions:** HIVST is common among Chinese MSM. A substantial portion of them have never previously tested, particularly younger MSM that are not open about their orientation. However, coercion and lack of subsequent test confirmation have been reported. Further implementation research is needed to better understand HIVST outside of research programs.

### WEAE0103

### "Not without us...": views on the introduction of HIV self-testing among health care workers providing integrated HIV and sexual and reproductive health services

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**Background:** HIV self-testing (HIVST) has potential to increase uptake of HIV testing. Its success depends on various stakeholders' support, including health care workers (HCW). In preparation for adoption and scale-up of HIVST in Zimbabwe we explored HCW views on HIVST.
**Methods:** Between December 2015 and January 2016, focus group discussions (FGDs) were held with HCWs providing integrated HIV and sexual & reproductive health services at two Population Services International (PSI) Clinics in Harare and Chitungwiza. Discussions were audio-recorded, transcribed, translated and analysed thematically.
**Results:** Four FGDs were held with 10-13 HCWs each, including 18 nurses, 15 Counsellors, 4 lab technicians, and 6 administrative staff (total=43). HCW had mixed feelings about HIVST. While they generally believed that HIVST can increase testing uptake among men, well-to-do clients and those living in hard-to-reach areas, a recurrent theme was that HIVST poses a threat to HCW jobs. All cadres believed that jobs of HCW who primarily provided counselling were most threatened. HCWs providing other clinical duties (family planning, cervical cancer screening and ART) were perceived to be safer. HCWs had mixed views on whether self-testing would lead to optimised linkage to post-test services. Additionally, it was perceived that while HIVST might be cheaper, this was likely further justification for job losses. The potential for social harms (domestic violence, suicide, and forced-testing) was widely discussed. HCW described fear that devices showing negative results could be 'traded' and used to deceive partners of HIV-positive individuals.A good HIVST program was viewed as one which worked with existing health delivery structures and centred on continued HCWs involvement, including counselling before and after testing, and storage of kits by HCWs - thought important due to fears that kits could find their way into uncontrolled informal markets. Educating the community about HIVST was highly recommended.
**Conclusions:** The potential for HIVST to increase testing uptake, and to be cost-effective, is appreciated by HCWs. There is need to educate HCWs on how HIVST can enhance rather than compete with their roles, with less testing of HIV-negatives HCWs can focus on care, support and retention of HIV-positives, leading to better targeting of resources.

## WEAE0104

### INDEX CLIENT TRAILING: A HOME-BASED HIV COUNSELLING AND TESTING STRATEGY TO IDENTIFY AND LINK PEOPLE LIVING WITH HIV TO TREATMENT

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**Background:** UNAIDS has set targets that 90% of people living with HIV should know their HIV status and that 90% of these should receive antiretroviral treatment by 2020. Implementing innovative programs to help achieve these ambitious targets in sub-Saharan Africa, the epicentre of the global AIDS epidemic, are essential. We report on results of an innovative program in which home-based HIV counselling and testing is offered to household members of known HIV positive clients in South Africa.
**Methods:** Consenting HIV positive clients (index clients) identified at primary health-care centres in three high HIV prevalence districts were visited at their homes by lay community-based healthcare workers. Consenting household members of index clients received HIV-related education and HIV counselling and testing. Household members testing HIV positive also received symptom screening for tuberculosis and were referred to HIV care and treatment facilities. The proportions of household members testing HIV positive and proportions linked to treatment facilities over a 14 month period during 2014-2015 were calculated.
**Results:** 14,779 index clients were visited in their homes. 66,766 household members received HIV-related education and counselling (4.5 household members per index client). Amongst these, 59,457 (89.1%) consented to HIV testing (91% and 81% of counselled females and males consented to HIV testing, respectively). Amongst those tested, 9219 (15.5%) were found to be HIV positive. Amongst people testing HIV positive, 8642 (93.7%) were successfully linked to HIV care and treatment facilities. 97.0% of those testing HIV positive received tuberculosis symptom screening, of whom 21.3% were symptom positive. Amongst 2837 children who received HIV testing, 70 (2.5%) were HIV positive and 100% were successfully linked to care and treatment.
**Conclusions:** Index client trailing utilizing home-based HIV testing by lay healthcare workers in a high HIV prevalence setting resulted in a high uptake of HIV testing, a high yield of people newly diagnosed with HIV, a high proportion with potential concomitant tuberculosis, and a high proportion of adults and children were successfully linked to treatment facilities. This is a strategy which can help sub-Saharan Africa achieve the UNAIDS targets for HIV testing and antiretroviral treatment initiation.

## WEAE0105

### RESULTS OF A CLUSTER-RANDOMISED TRIAL OF NON-FINANCIAL INCENTIVES TO INCREASE UPTAKE OF COUPLES COUNSELLING AND TESTING AMONG CLIENTS ATTENDING PSI MOBILE HIV SERVICES IN RURAL ZIMBABWE

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**Background:** Couples HIV testing (CHTS) is associated with greater uptake of HIV prevention/care and is more cost-effective than individual testing, but its uptake remains sub-optimal. Broaching CHTS often results in accusations of infidelity/distrust. Formative research suggests that incentives may mitigate this by changing focus of the pre-test discussion. We investigated the effectiveness of non-financial incentives to increase CHTS uptake among clients accessing PSI's outreach HTS in rural Zimbabwe.
**Methods:** Sixty-eight rural communities in four districts were randomized 1:1 to incentives or no incentives following formative research on nature of incentives that might stimulate CHTS. In intervention communities, information was promoted that anyone testing with a partner could select a grocery item worth US$1.50. Standard mobilization was done in control communities. Three months after CHTS, willing couple-testers from four communities per arm individually completed a telephone survey to determine whether there were social harms resulting from incentives or CHTS. The effect of incentives on CHTS was estimated using logistic regression with random effects for communities. Testing in the trial is now complete; we report interim data from May-August 2015 in 57 communities, but will present final data at the conference.
**Results:** Of 9,721 participants tested; 5652(58.1%) were in incentives communities. 49.5% and 10.6% in incentive and non-incentive arms respectively tested with partners, odds ratio 6.88(95%CI:4.86-9.72). HIV prevalence was 9.9%(95%CI 8.2-11.8%) and 6.9%(95%CI 6.1-7.8%) among couple-testers and individual-testers respectively; 8.5% of couple-testers had discordant results. 413/697 (59%) eligible participants (176 couples) completed the telephone survey. Motivators for CHTS included desire to know each's other's status, (93%), incentives (37%) and planning a pregnancy (30%); 22% in incentive arm said they would not have tested without the offer of incentives. Relationship unrest was reported by 8 individuals (1.9%) in the telephone survey, 6 in incentive arm although none attributed this to incentives. Nine individuals (2.2%) regretted testing with partner, of whom 4 tested because of incentives. 65.9% said testing programs should offer incentives.
**Conclusions:** Small incentives are a potentially scalable way to increase CHTS uptake. Although incentives were not reported to cause relationship disharmony, there is need to find better ways of supporting couples with positive/discordant HIV diagnosis.

## WEAE0106LB

### REACHING THE FIRST 90: IMPROVING COVERAGE OF INPATIENT PEDIATRIC PROVIDER-INITIATED HIV TESTING AND COUNSELING (PITC) USING A QUALITY IMPROVEMENT COLLABORATIVE STRATEGY AT 24 HEALTH FACILITIES IN TANZANIA

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**Background:** Tanzania's pediatric HIV testing and treatment rates are suboptimal. Provider-initiated HIV testing and counseling (PITC) is necessary to identify and treat HIV-infected children, and expanding pediatric PITC services is a national priority. Despite rollout of guidelines and training, PITC has not been consistently implemented.
**Description:** ICAP at Columbia University designed a Quality Improvement Collaborative (QIC) to improve pediatric PITC coverage. Working with CDC, NACP, AGPAHI and CSSC, ICAP launched the QIC at 24 health facilities. Each aimed to improve inpatient PITC coverage to $\geq$ 80%, while reducing HIV test kit stock outs and maintaining high linkage rates to care for HIV-infected children. ICAP provided training on QI methods, while AGPAHI and CSSC provided facility-level supportive supervision. Each facility identified contextually appropriate interventions; conducted rapid tests of change using PDSA cycles; and analyzed progress using run charts. ICAP convened quarterly meetings where facility teams compared progress, and a final "harvest" meeting enabled synthesis of lessons learned.
**Lessons learned:** Change ideas included improvements in staff and client education, staffing, workflow, commodity management, documentation, and referrals. 16,569 of 25,282 children (66%) admitted during the intervention period received PITC services; 263 (1.6%) tested positive, and 255 (97%) were enrolled into care. All 24 facilities achieved the QIC target, and the overall inpatient PITC coverage rose from 25% to 70%. Despite increased testing volume, the average number of days with HIV test kit stock outs fell from 8.8 to 1.5/month.

*[% of children and adolescents admitted to inpatient wards who received HIV PITC and received results and % of rapid test kit (RTK) stock outs]*

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**Conclusions/Next steps:** Bridging the "know-do gap" is one of the greatest challenges facing HIV programs. QIC methodology improved coverage of PITC (*what we know works*) by helping facilities to generate local innovations to ensure PITC is consistently implemented (*what we do*). In addition to building QI capacity and improving targeted outcomes, the PITC QIC resulted in a "change package" of successful initiatives that will be disseminated within Tanzania.

# WEAE02 TARGET 90-90-90: THE UPS AND THE DOWNS

## WEAE0201

### CURRENT STATE OF THE GLOBAL HIV CARE CONTINUUM

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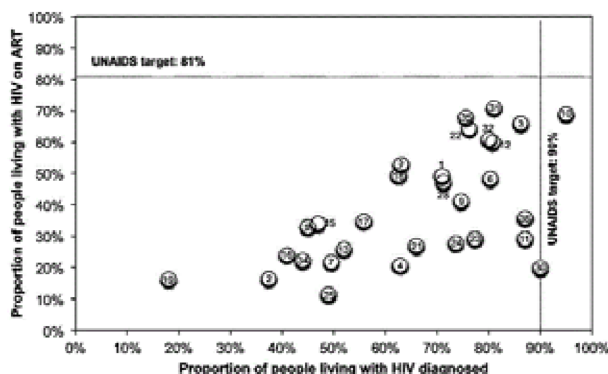
**Background:** In 2014, UNAIDS issued the 90-90-90 HIV response targets: by 2020, 90% of individuals living with HIV will know their HIV status, 90% of people with diagnosed HIV infection will receive ART, and 90% of those taking ART will be virally suppressed. Consistent methodology and routine reporting in the public domain is necessary for tracking progress towards the 90-90-90 targets.
**Methods:** For 2011-2015, we searched PubMed, UNAIDS country progress reports, WHO/UNAIDS reports, national surveillance and program reports, and conference presentations and/or abstracts for the latest available national HIV care continuum and estimation methods. We ranked continuum with described estimation methods for indicators to derive high, medium and low quality continuum.
**Results:** We identified 48 national care continuum in the public domain representing 58% of the 2013 global estimate of people living with HIV available. Eleven continuum were excluded from further analysis for either not providing estimates of viral load or substantial problems with representativeness. Of the remaining 37, four (with < 1% of global burden) were high quality, using standard surveillance methods to derive an overall denominator and program data from national cohorts for estimating steps in the continuum. Of the 37 countries with adequate data, the average proportion of the aggregate of people living with HIV from all countries receiving ART was 37%, and virally suppressed was 29%. Care continuum from only six countries in sub-Saharan Africa were available.
**Conclusions:** Relatively few complete national continuum are available in the public domain and there is a wide variation in methodologies for describing progress towards treatment and viral suppression targets. Standardized continuum of care monitoring and evaluation based on a national program cohort of everyone living with diagnosed HIV would be a major step towards improving the use of scarce resources to achieve 90-90-90 through improved efficiency, transparency, accountability and impact.




*[Proportion of people living with HIV with diagnosed infection versus those on antiretroviral treatment (ART)]*

## WEAE0202

### SAME-DAY HIV TESTING AND ANTIRETROVIRAL THERAPY INITIATION RESULTS IN HIGHER RATES OF TREATMENT INITIATION AND RETENTION IN CARE

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**Background:** High rates of pre-ART attrition are widely reported. Retention may be improved if pre-ART services could be effectively provided in one day.
**Methods:** We conducted a randomized study comparing standard and same-day ART initiation for adult patients (age >17 years) who presented for HIV testing with WHO stage 1 or 2 disease and CD4 count ≤500 cells/mm³ at GHESKIO in Port-au-Prince, Haiti. All participants received same-day HIV and CD4 count testing, TB screening, and physician evaluation. The standard group initiated ART at the third follow-up visit (day 21); the same-day group initiated ART on the day of presentation. The only difference in services provided was the timing of ART initiation. Participants were followed for 12 months.
**Results:** Between August 2013 and October 2015, 762 participants were randomized to standard (n=384) or same-day ART (n=378) (see Table 1). Twenty-four participants in the standard and 18 in the same-day ART group transferred during the study period, and were removed from all analyses; this left 360 participants in each group. ART was initiated within 90 days in 329 (91%) of participants in the standard and 100% in the same-day ART group (p< 0.001). 577 participants (80%) have completed 12 months of potential follow-up time (290 in standard; 287 in same-day ART groups). In the standard group, 212 participants (73%) were retained, 17 (6%) died, 56 (19%) were lost to follow-up (LTFU), and 5 (2%) were late returners. In the same-day ART group, 230 participants (80%) were retained, 8 (3%) died, 46 (16%) were LTFU, and 3 (1%) were late returners. Twelve-month retention was higher in the same-day ART group (p=0.046).
**Conclusions:** Same-day ART is associated with higher rates of ART initiation and retention, compared with standard ART initiation. These findings suggest that immediate ART is feasible in PEPFAR "Test and Start" recommendations.

| | | Standard Group (n=360) | Same-Day Group (n=360) | p-value |
|---|---|---|---|---|
| Baseline Characteristics | Female sex - no. (%) | 183 (51%) | 169 (47%) | 0.296 |
| | Age - mean (SD) | 38 (10) | 38 (10) | 0.296 |
| | CD4 count - mean (SD) | 244 (129) | 241 (124) | 0.781 |
| Pre-ART Outcomes | Completed CD4 count - no. (%) | 360 (100%) | 360 (100%) | --- |
| | Initiated ART within 90 days after HIV testing - no. (%) | 329 (91%) | 360 (100%) | **<0.001** |
| Outcomes 12-Months Post-ART (among participants with 12 months of potential follow-up time) | Retained in care - no. (%) | 212 (73%) | 230 (80%) | **0.046** |
| | Late returners - no. (%) | 5 (2%) | 3 (1%) | 0.486 |
| | Lost to follow-up - no. (%) | 56 (19%) | 46 (16%) | 0.302 |
| | Died - no. (%) | 17 (6%) | 8 (3%) | 0.062 |

*[Table 1: Outcomes for Participants in the Standard and Same-day ART Groups]*

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## WEAE0203

### TOWARDS THE LAST 90% OF THE 90-90-90 STRATEGY: A REVIEW OF VIRAL SUPPRESSION RATES IN A HIV PROGRAMME IN CENTRAL AND EASTERN KENYA

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**Background:** 1.6 million Kenyans live with HIV with 101,560 infected annually. Kenya has adapted UNAIDS' 90-90-90 initiative under the Kenya AIDS Strategic Framework and the Acceleration plan for HIV Care and Treatment. To monitor the last 90%, Kenya introduced viral load (VL) monitoring, with VLs done for clients after 6 months and 12 months on ART then annually thereafter. Health facilities submit samples to two national laboratories, one doing the Dry Blood Spot (DBS) and the other frozen plasma. Viral suppression is defined as VL less than 1000 copies/ml.
**Description:** APHIAPLUS KAMILI, a PEPFAR/USAID funded project, is led by Jhpiego and supports care and treatment in 142 facilities in Eastern and Central Kenya. As of December 2015, the project supported 35,132 clients on ART, 9.5% (3,332) of whom were children under 15 years. To launch VL monitoring, APHIAPLUS KAMILI sensitized providers on specimen collection, patient follow-up and financed specimen transport to laboratories. Results are posted online and hard copies sent to facilities. This review analyzed VL results from January to December 2015 obtained from the National VL Laboratories database
**Lessons learned:** A total of 24,030 samples were sent to laboratories. In this review, we excluded results with any incomplete entry (age, sex, results) and all rejected samples. 15,253 samples had complete data for review. The crude viral suppression rate was 84% (12,750) with 16% (2,503) above 1000 copies/ml. 84% (8,864) of women and 82% (3,886) of men were suppressed (P-value 0.003). Viral suppression classified by age was 77% (2,656) for children age below 15 years and 85% (10,094) for clients aged above 15 years (P-value< 0.001). Viral suppression for client type ranged from 68% among pregnant women, 77% suspected clinical failure, 82% immunological failure and 84% for routine VL monitoring (P-value=0.006)
**Conclusions/Next steps:** The sites reviewed achieved fairly high levels of viral suppression among those clients who received VL testing, but are still below 90% for all populations. Viral suppression is higher among non-pregnant adults than among children, adolescents and pregnant women; these populations may need additional adherence support. The high suppression rates among clients with suspected treatment failure warrant additional investigation

## WEAE0204

### ELIMINATING CD4 THRESHOLDS IN SOUTH AFRICA WILL NOT LEAD TO LARGE INCREASES IN PERSONS RECEIVING ART WITHOUT FURTHER INVESTMENT IN TESTING, LINKAGE AND INITIATION

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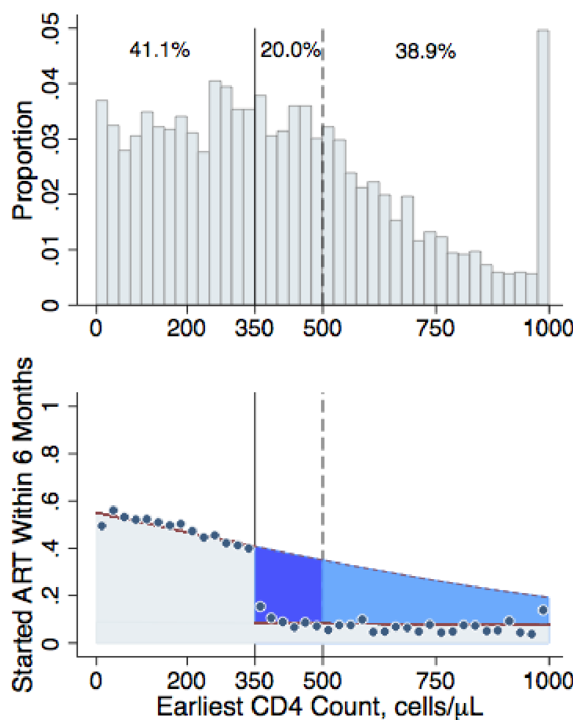
**Background:** It is hoped that eliminating CD4 count thresholds for ART eligibility will increase the number of HIV-infected persons receiving therapy and reduce transmission of HIV. However, little is known about the impact of relaxing eligibility thresholds on uptake of ART.
**Methods:** Clinical records were analyzed for all patients presenting for HIV care in the Hlabisa sub-district public sector ART program. We estimated the distribution of first CD4 counts for patients presenting in 2013 (Figure, left). We then estimated the conditional probability of ART initiation within six months for each CD4 count under two counterfactual states of the world (Figure, right): *if CD4-eligible* and *if not CD4-eligible*. Multiplying the conditional probabilities by the distribution of CD4 counts, we estimated the probability that a person would initiate ART under expanded guidelines (CD4< 500, or elimination of CD4 criteria) and under older guidelines (CD4< 350). We forecast the number of new initiators expected if South Africa adopts new WHO recommendations.
**Results:** In 2013, 20.0% of patients presented at 350-500 cells and 38.9% >500 cells. 8.4% of patients 350-500 cells and 8.0% of patients >500 cells would have initiated ART under the old guidelines. 29.7% of patients 350-500 cells and 19.2% of patients >500 cells would initiate ART if CD4 criteria were eliminated. 62.1% of patients at 350-500 cells and 72.8% > 500 cells are not expected to initiate under expanded guidelines despite being eligible. If these numbers hold nationally, then South Africa can expect 130,000 additional initiators per year from raising the threshold to 500 and a further 164,000 initiators per year from eliminating CD4 criteria, representing a 5% increase in persons on ART.
**Conclusions:** Removing CD4 criteria alone, without improving HIV testing, linkage, and ART initiation procedures, will not achieve the country's 90-90-90 targets.




*[Figure. Distribution of first CD4 counts and probability of starting ART at different CD4 counts]*

## WEAE0205

### FIRST-YEAR INTERVENTION OUTCOMES OF THE BUKOBA TANZANIA COMBINATION PREVENTION EVALUATION: PROMISING HIV TESTING & LINKAGE-TO-CARE METHODS TO ACHIEVE 90-90-90

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**Background:** In an urban lake-zone district of 129,000 people, the Bukoba Tanzania Combination Prevention Evaluation (BCPE) aims to increase antiretroviral therapy (ART) coverage among eligible HIV-infected adult residents from an estimated 34% in 2013 to 80% after a two-year intervention. First-year objectives to achieve this aim include conducting 45,000 HIV tests among adults (18,000 among men), registering 1,360 persons for HIV care, and initiating ART on 90% of eligible patients (CD4 < 350). This abstract summarizes BCPE first-year intervention outcomes, October 2014-September 2015.
**Description:** BCPE interventions include provider-initiated (PITC) and community-based (CBHTC) HIV testing and counseling (HTC) and integrated linkage case management (LCM). Conducted in 11 outpatient-department clinics, PITC includes routine eligibility screening and referral for on-site HTC. CBHTC is offered at homes and at male-frequented venues throughout the district. Provided to consenting HIV-infected out-of-care clients for up to 90 days, LCM includes escort and expedited

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first-visit care at 9 HIV clinics, and counseling on HIV care and disclosure. Outcomes of HTC and of LCM clients whose cases were closed through September 2015 were compiled and analyzed.

**Lessons learned:** Of 56,907 HIV tests conducted, 48,752 (86%) were among adults ≥15 years of age (18,648 tests among adult males). PITC accounted for 64% of tests and 79% of 2,292 HIV-infected out-of-care persons identified (86% newly HIV diagnosed). Of 1,519 (75%) clients of closed LCM cases (516 clients were still under management at compilation), 1,369 (90%) had registered for HIV care, of whom 50% were initiated on ART. Similar percentages of HIV-infected out-of-care women and men consented to LCM, registered for care, and were initiated on ART (Table).

| | HTC Outcomes | | | Linkage Case Management (LCM) Outcomes | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BCPE Clients | Total Tests | PITC Tests | HIV+ Out-of-care | LCM Consent | Closed Cases | HIV-Care Registered | CD4 Recorded | CD4 Count <350 | ART (of registered) |
| | n | (%) | n (%) | (%) | n | n (%) | (%) | n (%) | n (%) |
| All | 56,907 | (64) | 2292 (4) | (86) | 1519 | 1369 (90) | (83) | 594 (47) | 689 (50) |
| Female | 34,207 | (71) | 1427 (4) | (85) | 932 | 830 (89) | (81) | 303 (40) | 408 (49) |
| Male | 22,700 | (53) | 865 (4) | (88) | 587 | 539 (92) | (86) | 291 (57) | 281 (52) |

*[Table]*

**Conclusions/Next steps:** BCPE HTC and linkage-to-care interventions met first-year objectives and are promising methods that might help similar programs achieve 90-90-90 targets. Next steps for BCPE include initiating ART at CD4 < 500 (approved December 2015), increasing LCM participation rates, and in 2017, conducting the endline evaluation to assess achievement of 80% ART coverage among eligible adult residents.

## WEAE0206LB

### LINK4HEALTH: A CLUSTER-RANDOMIZED CONTROLLED TRIAL EVALUATING THE EFFECTIVENESS OF A COMBINATION STRATEGY FOR LINKAGE TO AND RETENTION IN HIV CARE IN SWAZILAND

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**Background:** Gaps in the HIV care continuum contribute to suboptimal individual health outcomes and increased HIV transmission. Practical interventions targeting known barriers to care are needed.

**Methods:** Link4Health, a cluster-randomized controlled trial, evaluated the effectiveness of a combination intervention strategy (CIS) versus standard of care (SOC) on the combined outcome of linkage to care within 1 month and retention in care at 12 months after HIV diagnosis. CIS included: point-of-care CD4 at the time of HIV+ test, accelerated antiretroviral treatment for adults with CD4< 350 cells/uL, mobile phone appointment reminders, health educational packages, and non-cash financial incentives. Ten study clusters in Swaziland, each consisting of a network of affiliated HIV clinics, were randomized to CIS versus SOC. Adults ≥18 years newly tested HIV+ and willing to receive HIV care at the study unit were enrolled from August 2013-November 2014 and followed for 12 months.

**Results:** A total of 2201 individuals were enrolled (1100 CIS arm; 1101 SOC arm). The majority were female (59%); median age was 32 years (IQR 26-40). In intention-to-treat analysis, 64% (705/1100) adults at CIS sites achieved the primary outcome versus 43% (477/1101) at SOC sites [relative risk (RR) 1.48, 95% CI 1.36-1.60, p< 0.0001], with similar result when adjusted for clustering. Participants in the CIS versus the SOC study arm had higher linkage to care within 1 month (92% versus 83%, RR 1.10, 95% CI 1.07-1.14, p< 0.0001); higher 12-month retention (65% versus 45%, RR 1.45, 95% CI 1.34-1.56, p< 0.0001); and lower death before ART initiation (1% versus 2%, RR 0.44, 95% CI 0.21-0.91, p=0.02). A higher proportion of those lost to follow-up at 12 months were pre-ART compared to ART patients. The effectiveness of the CIS intervention did not differ by age, sex, distance to clinic or clinic type.

**Conclusions:** A combination strategy of pragmatic evidenced-based interventions, aimed at gaps in the HIV care continuum, was associated with a 50% increase in prompt linkage to care and 12-month retention. This strategy offers promise for enhanced outcomes among HIV-infected patients and for decreased transmission to others.

# WEAE03 GOING VIRAL FOR VIRAL LOAD IMPLEMENTATION

## WEAE0301

### IMPLEMENTATION OF ROUTINE VIRAL LOAD MONITORING IN LESOTHO, MALAWI, MOZAMBIQUE AND ZIMBABWE: A CASCADE ANALYSIS

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**Background:** Routine viral load (VL) to monitor the response to ART has been recommended by WHO since 2013. From 2012 routine VL testing to monitor ART was introduced in MSF projects in Lesotho, Malawi, Mozambique and Zimbabwe. All districts except Changara were rural settings where ART had been extensively decentralised. VL is performed annually in all sites except Malawi ( 2 yearly). To assess programmatic implementation of routine VL an analysis was carried to assess performance at each step of the VL algorithm.

**Methods:** Analyses were performed between January and November 2015 across six districts in four countries. Reviews of clinical and laboratory records of representative samples of patients were used to determine how each step of the routine VL algorithm (coverage of VL, uptake of enhanced adherence counselling, repeat VL testing (within 2-9 months), re-suppression, and appropriate switch to second-line ART) was implemented within a defined period according to local guidelines (18 months preceding date of analysis in Lesotho, Mozambique and Zimbabwe and 30 months in Malawi). Results were presented to programme staff and barriers for implementation identified.

**Results:**

| Site | Buhera, Zimbabwe | Gutu, Zimbabwe | Thyolo, Malawi | Nsanje, Malawi | Roma, Lesotho | Moz Changara (3000 copies/ml is threshold for action throughout algorithm) |
|---|---|---|---|---|---|---|
| Year routine VL testing started | 2012 | 2013 | 2012 | 2013 | 2014 | 2013 |
| Number of patients in the analysis | 4760 | 2978 | 7576 | 2785 | 3069 | 3095 |
| Coverage of routine VL testing (VL1) | 91% | 74% | 56% | 32% | 70% | 62% |
| VL > 1000 copies/ml | 14% | 15% | 9% | 20% | 10% | 40% |
| EAC documented for patients with VL >1000 copies/ml | 57% | 76% | 62% | 56% | 70% | 70% |
| Repeat VL test performed (VL2) | 68% | 67% | 55% | 40% | 42% | 23% |
| Resuppressed to <1000copies/ml | 43% | 39% | 46% | 32% | 8% | 22% |
| VL threshold for switch to second-line ART (copies/ml) | 1000 | 1000 | 5000 | 5000 | 1000 | 3000 |
| Eligible patients switched to second-line ART | 37% | 35% | 15% | 38% | 37% | 10% |

*[Outcomes of VL cascade analysis]*

In those sites with low coverage of VL1 and VL2 challenges included lack of human resources to draw blood, dedicated staff to perform enhanced adherence counselling and lack of effective appointment and tracing mechanisms. Across all sites reluctance to task shift and decentralise second line ART care was cited as a barrier to switching.

**Conclusions:** This analysis demonstrated limited compliance with a routine VL algorithm based on WHO recommendations. Scale up plans for VL monitoring must address human resource issues and make implementation plans for provision of second-line in sites where ART care has been decentralised.

## WEAE0302

### VIRAL LOAD CASCADE AND PROGRAMMATIC CHALLENGES AFTER 2 YEARS OF ROUTINE HIV VIRAL LOAD TESTING IN MAPUTO, MOZAMBIQUE

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**Background:** Médecins Sans Frontières (MSF) together with the Ministry of Health (MoH) introduced routine viral load (VL) monitoring in December 2013 for ART-enrolled patients in Maputo city, Mozambique. This analysis aims to describe, the VL cascade outcomes and the programmatic challenges of routine VL monitoring and counseling intervention after 2 years of implementation.
**Methods:** A retrospective cohort study design with routine program data was used. The study was conducted between July 2013 and March 2015 in six MSF supported health centres in Maputo city where routine VL monitoring with enhance adherence counselling (EAC) for patients with detectable VL (≥3000 cp/ml as per national guidelines) was implemented. All HIV patients more than 6 months on ART were included in the study. Data was analysed using Stata software version 14. Percentages (%) were calculated to report coverage detectability at first VL, coverage of EAC, VL re-suppression and switch to second line treatment.
**Results:** Among 45591 ART eligible patients, 14026 (30.8%) had at least one VL. Median age was 37.5 years (24-51), 91.4% were above 15 years and 76.3% were female . Detectability rate was 19.8% (2617) at VL≥3000 and 27.% (3569) at VL≥1000 cp/ml. 34.5% of patients < 15 years had a VL ≥3000 compared to 17.5% of adults ≥15 years. 702 (26.8%) high VL patients did at least one EAC session. 669 (36%) patients with high VL had a follow up VL at least 3 months after. 249 (37.3%) re-suppressed. Out of 420 patients with the second high VL, 197(47%) were referred and approved by the ART Committee to regime change and 59 (30%) have switched to second line so far.
**Conclusions:** Viral load coverage remains low after 2 years. The implementation of routine VL requires a multi-sectorial approach and a well-established VL flow. Outcomes reveal high failure rate and the importance of implementing early adherence interventions to prevent developing of treatment failure, specifically for children and adolescents. Access to 2nd line ART for patients in failure is still limited. Ensuring access to 2nd line should be a priority alongside ensuring patients with low VL are fast tracked into a differentiated model of care.

## WEAE0303

### ROLL OUT OF TARGETED VIRAL LOAD TESTING IN TWO RURAL DISTRICTS WITHIN MASVINGO PROVINCE, ZIMBABWE

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**Background:** Following the World Health Organization's recommendation of viral load (VL) testing as the preferred approach for monitoring anti-retroviral therapy treatment outcomes, the Zimbabwe Ministry of Health and Child Care (MoHCC), with support of the medical relief organization SolidarMed, committed to improve access to targeted VL (TVL) testing, thus offering VL testing to patients with suspected treatment failure.
**Description:** After training of Healthcare Workers (HCWs), TVL testing, as defined in the national guidelines, was newly introduced to all 48 health facilities (HF) in two districts in Masvingo Province in 2013. With limited access to VL measurements nationally, specimens were collected as Dried Blood Spots and processed at an accredited laboratory in South Africa (SA) using bioMerieux-Platform. Samples were collected at four hospitals within the districts, transported via existing sample transportation networks, and sent to SA by courier. Results were communicated back within two weeks via secured web-link to the central hub in Masvingo, and distributed to the sites. Bi-monthly clinical mentoring visits to HF took place.
**Lessons learned:** High sample success rate (99%), short turnaround time (TAT) of test-results, and moderate costs (USD25/sample, all-inclusive) were major advantages of this approach. Low proportion of patients identified for TVL based on routine clinical and immunological screening by HCWs, and low percentage of repeat VLs done, remain concerning.

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Number of patients on ART by year end | 16'506 | 17'892 | 21'788 |
| Patients on ART with 1st VL (N/%) | 150 / 0.9% | 315 / 1.8% | 368 / 1.7% |
| VL test results available (N/%) | 149 / 99.3% | 313 / 99.4% | 360 / 97.8% |
| VL undetectable (<20 copies/ml) (N/%) | 44 / 29.5% | 88 / 28.1% | 119 / 33.1% |
| VL detectable at >3000 copies/ml (N/%) | 76 / 51.0% | 172 / 55.0% | 167 / 46.4% |
| Patients with detectable VL who had a repeat VL done (N/%) | 38 / 50.0% | 71 / 41.3% | 52 / 31.1% |
| Patients with confirmed virological failure on repeat VL (N/%) | 37 / 97.4% | 55 / 77.5% | 43 / 82.7% |

*[TVL in two districts in Masvingo Province, Zimbabwe, during 2013-2015]*

**Conclusions/Next steps:** Zimbabwe MoHCC's VL scale-up strategy 2015-2018, plans to role out VL testing to district and Rural Health Center level in 2016. With current insufficient national laboratory capacity, outsourcing of sample processing to SA can allow for testing targets to be reached. However, the low number of TVL done so far in the two districts suggest that the overall success of roll-out heavily depends on the skills and awareness of HCWs to identify eligible patients, as well as on system strengthening to improve patient follow-up and timely switch to 2nd line treatment in case of confirmed treatment failure.

## WEAE0304

### DRIED BLOOD SPOTS PROVIDE ACCURATE ENUMERATION OF HIV-1 VIRAL LOAD IN EAST AFRICA

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**Background:** HIV-1 viral load monitoring of antiretroviral therapy (ART) confirms treatment efficacy and facilitates timely switching to second line regimens. However, collection of plasma for ART monitoring requires phlebotomy, controlled transport conditions and is costly, thereby limiting its use in community-based settings. The use of dried blood spot (DBS) cards to collect finger-prick blood, and transport specimens at ambient temperature to a central laboratory for viral load testing would simplify monitoring but requires validation against the gold standard method of plasma testing.
**Methods:** In a randomized study of pre-exposure prophylaxis (PrEP) among HIV serodiscordant couples in Kenya and Uganda (the Partners PrEP Study), HIV-infected participants provided EDTA plasma and DBS specimens at the same visit. The Abbott RealTime HIV-1 assay was used to measure viral load in plasma (limit of quantification (LOQ): 80 copies/mL) and a modified assay was used for DBS whole blood specimens (LOQ: 520 copies/mL); all testing was done on samples transported to the University of Washington. We selected 165 HIV-positive participants including 34 men and women on ART, and 131 not on ART across a range of CD4 count categories. The plasma and DBS viral load results were compared using Bland-Altman plots and two by two tables.
**Results:** The median viral load was 3.49 and 3.10-$\log_{10}$ copies/mL for plasma and DBS, respectively. The mean difference between plasma and DBS specimens was 0.17-$\log_{10}$ copies/mL (CI: 0.08 to 0.26-$\log_{10}$ copies/mL). The correlation between plasma and DBS results was 0.85 (p< 0.0001). At the WHO viral suppression threshold of < 1000 copies/mL in plasma and < 624 copies/mL with DBS, the sensitivity and specificity of DBS was 87% and 86%, respectively, with positive and negative predictive values of 46% and 98%, respectively, for detecting treatment failures in a population with 13% virological failures. There were no significant differences by gender, CD4 count, or ART use.
**Conclusions:** DBS specimens provide a highly comparable result to plasma viral load and thus might be used for population-based ART monitoring. DBS and plasma specimens should be compared in the field to determine the appropriate threshold and optimal predictive values for identifying treatment failures in decentralized settings.

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## WEAE0305

### MONITORING OF HIV-1 RNA WITH POINT-OF-CARE CEPHEID XPERT HIV-1 VIRAL LOAD IN RURAL AFRICAN COMMUNITIES IS FEASIBLE AND RELIABLE IN THE ERA OF BROAD SCALE UP OF ART

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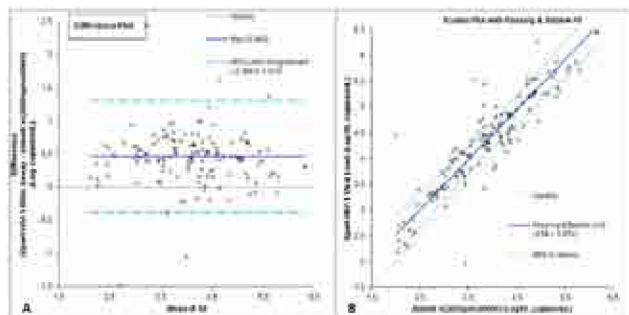
**Background:** Increasing scale-up of ART necessitates routine HIV-1 viral load (VL) testing for monitoring treatment failure and adherence. In rural settings, laboratory-based VL testing remains challenging (insufficient access to laboratory facilities, cold chain, sample transportation), and delays in result reporting may negatively impact the HIV treatment cascade. Point-of-care (POC) VL testing has the potential to alleviate these challenges, particularly in rural communities.
**Methods:** We compared the performance of the Cepheid Xpert® HIV-1 VL (POC assay) against the Abbott m2000sp/m2000rt (Abbott assay). ART-naïve individuals (n=168) in 12 rural communities participating in the Botswana Combination Prevention Project provided EDTA blood specimens during household surveys. POC assay testing was completed in mobile community-based facilities, while the Abbott assay was performed in the reference laboratory. Bland-Altman and Passing-Bablok regression were used to test for systematic and proportional differences. Correlation analysis was performed using the Spearman rank test.
**Results:** We found very high correlation between the POC and Abbott assay results ($r_s$=0.89). The POC assay results were 0.46 $log_{10}$ (95%CI: -0.38-1.31; Figure 1A) higher than the Abbott on average, but this difference was not significant. In contrast, Passing-Bablok regression, no proportional bias was observed (slope=0.97; 95%CI: 0.91-1.03; Figure 1B), but a test for systematic bias was significant (intercept=0.58; 95%CI: 0.34-0.82). Agreement of 96%, 93% and 88% was found at the 40, 400 and 1000 copies/mL thresholds, respectively. Seven samples with VL between 50-115 copies/mL on the POC assay were below the limit of detection with the Abbott assay. One sample with undetectable VL on the POC assay had VL of 66 copies/mL with the Abbott assay.
**Conclusions:** The Xpert HIV-1 VL assay showed high agreement and high accuracy compared to the standard laboratory-based method of VL testing. This POC assay is a promising tool for monitoring ART scale-up in rural communities.



*[Figure 1: Comparison of Xpert HIV-1 RNA Assay using difference plot and passing-bablok regression]*

## WEAE0306LB

### USING EPIDEMIOLOGY AND COLLABORATIVE FUNDING TO ENABLE INNOVATION IN OPPORTUNISTIC SCREENING TO REDUCE THE LATE DIAGNOSIS OF HIV: INTERIM RESULTS FROM A TARGETED PRIMARY CARE PROJECT IN ENGLAND (UK)

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**Background:** The estimated percentage of diagnosed HIV in England remains below the UNAIDS target and rates of late HIV diagnosis remain high. In 2015 Public Health England (PHE) and the Elton John AIDS Foundation (EJAF) collaborated to co-fund a project aimed at increasing HIV testing in geographical areas with high incidence of HIV and high rates of late HIV diagnosis. PHE undertook an epidemiological analysis of large urban areas in England to select potential areas to run the intervention. This approach ensured investment was targeted to achieve the greatest impact.
**Methods:** The selected intervention targets new patients registering with primary care services in high HIV prevalence districts of a large city in the north of England, offering them routine Blood Borne Virus (BBV) testing. The project has developed innovative promotional resources in languages targeting those most at risk (Czech, Tigrigna and Arabic) and targeted training to enable staff to deliver the intervention. Local primary care teams have also developed a new digital prompt protocol aimed at increasing HIV testing in patients presenting with associated clinical indicator illnesses.
**Results:** During the first five months of implementation 31 primary care practices were enrolled in which 8,401 eligible new patients between the ages of 16-65 were registered. So far 19% (1,616) of patients have been offered tests for HIV, HBV and HCV, of those, 87% (1,405) were tested. Of those tested there were five, nine and four positive results for HIV, HBV and HCV respectively representing positivity rates of 0.36%, 0.64% and 0.28%.
**Conclusions:** Using collaborative funding approaches targeted at the areas of high burden of infection/late diagnosis shows high impact. Interim findings demonstrate positivity rates higher than the background diagnosed prevalence's for those areas and high test uptake rates demonstrate good patient acceptability. Feedback so far has indicated that the scheme and associated training has increased healthcare workers' awareness and confidence in offering BBV screening. Development of an effective digital prompt tool will allow clinical staff to identify individuals at risk more easily. Resources developed are of national and international relevance and show that specific targeting of limited funding in high prevalence areas is effective.

Wednesday 20 July

# POSTER DISCUSSIONS

## WEPDA01 INTRINSIC AND ADAPTIVE IMMUNITY

### WEPDA0101

### NOVEL MODE OF RECOGNITION OF THE GLYCAN-V1V2 REGION OF HIV-1 ENVELOPE BY A NEW LINEAGE OF BROADLY NEUTRALIZING ANTIBODIES

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**Background:** Studies of naturally occurring broadly neutralizing antibodies (bnAbs) have yielded valuable clues for HIV-1 vaccine design. To date, bnAbs targeting the glycan-V1V2 region of HIV-1 Env have been cloned from only 4 individuals. These bnAbs have an unusually long heavy chain complementarity-determining region 3 (CDRH3) that penetrates the glycan shield to access the underlying epitope. We isolated of a new lineage of glycan-V1V2 bnAbs, N90-VRC38, that has more conventional immunogenetic qualities, and we determined how this lineage is able to target the glycan-V1V2 epitope with a shorter CDRH3 loop.
**Methods:** HIV-specific B cells from the clade B virus-infected NIAID Donor N90 were sorted by flow cytometry using Env-bearing virus-like particles or soluble trimers as HIV-specific probes. Antibody heavy and light chains were recovered by RT-PCR, expressed and purified, and evaluated for multiclade neutralization activity using the TZM-bl neutralization assay. Two structures of mAb N90-VRC38.01, one complexed with BG505 SOSIP trimer and another complexed with a WITO.33 V1V2 scaffold, were solved by negative-stain electron microscopy (EM) and by X-ray crystallography, respectively. Binding stoichiometry of the antibody was determined by native PAGE and by biolayer interferometry (BLI) under saturating conditions.
**Results:** The broadest of the 11-member N90-VRC38 clonal lineage, N90-VRC38.01, neutralized 29% of 208 Env-pseudotyped viruses. This antibody has a neutral, short 18 amino acid (AA) CDRH3; in contrast, other glycan-V1V2 bnAbs exhibit long (>26 AA), negatively charged CDRH3s. N90-VRC38.01 uses both its CDRH3 and CDRL1 to make hydrogen bonds with side chains of strands A, B, and C of the V1V2 region. This is unlike other glycan-V1V2 bnAbs, which make main-chain protein-protein contacts with strand C of the epitope.
**Conclusions:** The N90-VRC38 lineage represents a new type of glycan-V1V2-binding bnAb that that binds via a CDRH3 loop that is far shorter than those of other V1V2-directed bnAbs. This raises the possibility that eliciting V1V2-specific bnAbs by vaccination may be more readily achievable than previously thought, as antibodies with such shorter CDRH3 loops are common in the human IgG repertoire.

### WEPDA0102

### NON-CLASSICAL CD8+ T CELLS RESTRICTED BY HLA CLASS II EMERGE IN HIV INFECTION AND SHOW ANTIVIRAL EFFICACY

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**Background:** CD8+ T cells typically recognize infected cells through viral peptides presented on HLA class I. However, CD8+ T cell responses restricted by HLA class II have also been reported in CD4 knockout mice and in a macaque AIDS vaccine model where Gag-specific CD8+ T cells restricted by class II were elicited by CMV vector immunization. This raises a critical question: do class II-restricted CD8+ T cell responses exist in natural HIV-infection?
**Methods:** We detected class II-restricted CD8+ T cell populations in 3 of 101 treatment-naive HIV-infected individuals screened using a novel 'CD8 HLA-DR' IFNy ELISpot assay. CD8+ T cells targeted HIV Gag37 or Gag41 peptides presented by LCL stably expressing recombinant DR01 and DR11. Antibody blocking of class I and II, and flow cytometric staining with class II tetramers confirmed the restriction. TCR sequencing was conducted from class II tetramer-sorted cells.
**Results:** Our detailed analysis demonstrates the existence of Gag-specific CD8+ T cell responses restricted by HLA-DR, which exhibit potent cytolytic functions that are comparable to class I-restricted cytotoxic T lymphocytes. The HLA-DR-restricted CD8+ T cells were Perforin+GranzymeB+ and efficiently lysed HIV-infected autologous CD4+ T cells and macrophages (p< 0.01). Although these responses are rare, detected in only 3% of HIV controllers screened, in one individual it was the most immunodominant CD8+ response encompassing 12% of total CD8+ T cells directly *ex vivo* (in the absence of T cell expansion). Moreover, these HLA-DR-restricted CD8+ T cells showed atypical patterns of TCR usage that were characterized by two different co-expressed TCR alpha chains, and intriguingly, a single TCR beta clonotype that was shared with CD4+ T cells targeting the same peptide-HLA class II complex. Indeed, TCR beta clonotype TRBV2 was shared between 100% of CD8+ and 73.9% of CD4+ targeting the DR11-Gag41 complex, with 2/27 sequences identical in VDJ and CDR3 motifs.
**Conclusions:** These data not only reveal the presence of atypical CD8+ T cells governed by unusual TCR cross-reactivity in HIV infection, but may also have relevance for future CMV vector-based HIV vaccines as they move into Phase 1 trials in humans, where their ability to induce unconventional CD8 T cells remains unknown.

### WEPDA0103

### PRESENCE OF HIV-1C BROADLY NEUTRALIZING ANTIBODIES IN PREGNANCY AND AT DELIVERY

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**Background:** HIV neutralizing antibody assays are now being widely employed in different laboratories in search for correlates of protective immunity. There are strong arguments in favor of a beneficial role of some broadly neutralizing antibodies in prevention of HIV infection if these antibodies exist prior to exposure. The neutralizing antibodies could be useful in immunotherapy.
**Methods:** Archived plasma samples collected from 54 mothers at recruitment, before and after delivery from a PMTCT study were assayed for presence of neutralizing antibodies using TZM-bl cells. The participating mothers were divided into HIV transmitters and non-transmitter, indicated at delivery. The virus panel comprised of reference strains (92TH021 and MBA2'- clade AE; 92BR020- clade B; and 93IN905, ZA012, ZM651- clade C, and results were expressed as the plasma inhibition dilution causing 50% or 90% reduction in viral replication.
**Results:** Plasma samples were from 21 non-transmitters and 33 transmitters. Non-transmitters compared to the transmitting mothers had 332 CD4+ cells/µl and 103 024 HIV RNA copies/ml compared to 321 CD4+ cells/µl and 158 164 HIV RNA copies/ml, respectively. Broadly neutralizing antibodies were present in baseline plasma from both HIV-1 transmitters and non-transmitters. When a more stringent cut off value for the neutralizing activity was applied, a decline in the potency and breadth of neutralization was observed in only 2 plasmas showing high 90% infection inhibition of 3 out of 7 strains. Potent neutralizing antibodies to the South African strain (ZA012) were more frequently detected among the non-transmitting mothers. Neutralization titers were significantly higher in non-transmitters for 50% inhibition of the subtype C strains, 93IN905 (p< 0.001) and ZM651 (p=0.014), and for 90% inhibition of 92TH021, MBA2', 92BR020 and 93IN905 (p< 0.001), ZM651 (p=0.006).
**Conclusions:** Despite an overall reduced potency at 90% infection inhibition, non-transmitting mothers had significantly higher potency and breadth (cross-clade neutralization) for 90% viral inhibition at delivery compared to the transmitting mothers. These results provide evidence of the presence of HIV-1 broadly cross-neutralizing antibodies during pregnancy and at delivery that directly could be utilized in the management of HIV infection hence contribute to reduced mother to child transmission.

## WEPDA0104

### PML/TRIM19-DEPENDENT INHIBITION OF RETROVIRAL REVERSE-TRANSCRIPTION BY DAXX

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**Background:** PML (Promyelocytic Leukemia protein), also known as TRIM19, belongs to the family of tripartite motif (TRIM) proteins. PML is mainly expressed in the nucleus, where it forms dynamic structures known as PML nuclear bodies that recruit many other proteins, such as Sp100 and Daxx. While the role of PML/TRIM19 in antiviral defense is well documented, its effect on HIV-1 infection remains unclear.
**Methods:** HeLa or MEF cells derived from wt or PML KO mice were transduced with GFP-encoding vectors derived from HIV-1, SIV, EIAV and MLV. Human T lymphocytes were infected with HIV-1. PML knockdown was performed using siRNA, shRNA or by inducing its degradation by arsenic. Retroviral transductions were quantified by flow cytometry and qPCR whereas HIV-1 propagation in T-cells was followed by ELISA. Localization of PML, Daxx and HIV-1 capsid protein was determined by immunofluorescence and *in situ* proximity ligation assay. Retro-transposition events were estimated by the number of G418R foci after transfection of HeLa cells (over-expressing Daxx or not) with neo-marked retrotransposons.
**Results:** Infection by HIV-1 and other retroviruses triggers the formation of PML cytoplasmic bodies, as early as 30 minutes post-infection. Quantification of PML cytoplasmic bodies revealed that they last approximately 8h, with a peak at 2h post-infection. PML re-localization is blocked by reverse-transcription inhibitors and is not observed following infection with unrelated viruses, suggesting it is specifically triggered by retroviral reverse-transcription. Furthermore, PML knockdown dramatically increases reverse-transcription efficiency. However, although it is required for retroviral restriction, PML does not inhibit directly retroviral infection but acts through the stabilization of one of its well-characterized partners, Daxx. In the presence of PML, cytoplasmic Daxx is found in the vicinity of incoming HIV-1 capsids and inhibits reverse-transcription whereas in the absence of PML, Daxx is degraded. Interestingly, Daxx not only interferes with exogenous retroviral infections but can also inhibit retro-transposition of endogenous retroviruses.
**Conclusions:** We show for the first time that PML and Daxx cooperatively interfere with an early step of retroviral infection by targeting the reverse-transcription step. Our findings unravel a novel antiviral function for PML and its nuclear body-associated protein Daxx as a broad cellular inhibitor of reverse-transcription.

## WEPDA0105

### HUMAN SPD1-BASED HIV-1 GAG-FUSION DNA VACCINE INDUCES HIGH FREQUENCY OF BROADLY REACTIVE T CELL RESPONSES IN MICE AND RHESUS MACAQUES

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**Background:** Ongoing AIDS epidemic commonly involves diverse HIV-1 subtypes even in a single geographical location (e.g. Hong Kong). Therefore, vaccine-induced host immunity should be broadly reactive for protection. We have previously reported a vaccine strategy that can induce potent cellular immunity by fusing murine soluble programmed death-1 (sPD1) with HIV-1 Gag-p24. Using this strategy, we further investigated a novel human sPD1-based HIV-1 Gag-fusion DNA vaccine in mice and rhesus macaques.
**Methods:** The mosaic-like immunogen design was based on hundreds of Gag sequences covering three major circulating HIV-1 subtypes B/B', C/CB' and 01_AE in China. The novel DNA vaccine contained human sPD1 fused together with two Gag, thus achieving the epitope coverage about 97% of all three subtypes according to the HIV database analysis. This vaccine was evaluated through *in vivo* electroporation in mice and rhesus macaques. The immunogenicity profiles were determined using ELISA, ELISpot, ICS and Tetramer assays. The vaccine-induced protection was also investigated in immunized mice challenged with a replicating-competent Eco-HIV.
**Results:** *In vitro* analysis confirmed the design and expression of the fusion immunogen, which was also able to interact with both human and murine PD-L1/L2. *In vivo* experiments indicated that the novel vaccine not only induced potent T cell immune responses similar to murine sPD1-p24$_{fc}$ as we previously published but also had an enhanced breadth across three subtypes. Moreover, vaccine-induced Gag-specific CD8$^+$ T cells conferred significant protection against EcoHIV infection in mice. Notably, in rhesus macaques vaccine-induced T cell responses were broadly reactive and comparable to that elicited by a heterologous vaccinia prime and ad5 boost regimen.
**Conclusions:** We found that the human sPD1-based HIV-1 Gag-fusion DNA vaccines are highly immunogenic in two animal species, and confers substantial protection against EcoHIV-1 infection in mice. The immunogenicity of our vaccine in rhesus macaques is promising and may warrant future development for human use.

# WEPDB01 LIVING WITH HIV: LONG-TERM EFFECTS

## WEPDB0101

### DEFERRED ANTIRETROVIRAL THERAPY IS ASSOCIATED WITH LOWER ESTIMATED GLOMERULAR FILTRATION RATE IN HIV-POSITIVE INDIVIDUALS WITH HIGH CD4 COUNTS

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**Background:** The impact of antiretroviral therapy (ART) on renal function in HIV-positive persons with high CD4 is largely unknown. We evaluated changes in estimated glomerular filtration rate (eGFR) among participants randomised to immediate or deferred ART within the INSIGHT START trial.
**Methods:** eGFR was calculated from locally measured creatinine using MDRD and CKD-EPI at months 4, 8, 12 and annually. Participants with baseline and $\geq$1 follow-up eGFR were included. We analysed change in eGFR at each visit from baseline using random effects models.
**Results:** 4629 of 4685 START participants (99%) were included; characteristics were balanced between the immediate (n=2294) and deferred ART arms (n=2335). In both arms, median baseline CD4 was 651/mm$^3$ and eGFR (CKD-EPI) 111 ml/min/1.73m$^2$ . Mean follow-up was 2.6 years. ART was initiated in 2271 participants (99.0%) in the immediate and 1126 (48.2%) in the deferred arm, accounting for 94% and 28% of follow-up time, respectively. 89% of initial regimens in both arms included TDF. In the primary randomized comparison those in the deferred arm had a lower eGFR over follow-up (Table) with no evidence that the eGFR slope was different comparing the immediate and deferred arms (p>0.2). The lower mean eGFR in the deferred arm remained significant in secondary analyses (Table). In a model adjusted for time and baseline eGFR, the mean change in eGFR (CKD-EPI) in the deferred versus immediate arm in those of non-black and black race was 0.23 (95%CI: -0.42, 0.87) and -2.43 (95% CI: -3.42, -1.43; p< 0.0001 test for interaction) respectively.

| Outcome | Model 1* Deferred arm (vs. immediate arm) (95% CI), P | Adjusted Model 2** Deferred arm (vs. immediate arm) (95% CI), P | Adjusted Model 3*** Deferred arm (vs. immediate arm) (95% CI), P |
|---|---|---|---|
| eGFR-CKD-EPI | -0.56 (-1.11 to -0.003), 0.049 | -1.85 (-2.50 to -1.21) <0.001 | -1.72 (-2.34 to -1.11) <0.001 |
| eGFR-MDRD | -1.26 (-2.14 to -0.38), 0.005 | -3.43 (-4.51 to -2.35), <0.001 | -3.21 (-4.25 to -2.17), <0.001 |

*Model 1: adjusted for baseline eGFR and years since randomization
**Model 2: additionally adjusted for current receipt of TDF and boosted PI
***Model 3: Model 2 + additionally adjusted for age, gender, race, region of enrolment, time since HIV diagnosis, use of injecting drugs, CD4, viral load, proteinuria, body mass index, hepatitis B/C, diabetes, hypertension, dyslipidemia, cardiovascular disease, smoking status, ACE inhibitors or NSAIDS, all measured at randomisation.

*[Table. Mean change in eGFR by randomisation arm in INSIGHT START trial]*

**Conclusions:** Deferring ART initiation in patients with high CD4 led to a small but significantly lower eGFR compared to those starting immediately, and was most pronounced in those of black race. These results suggest asymptomatic HIV infection may promote kidney disease despite preserved immune function.

## WEPDB0102

### THE EFFECT OF HIV INFECTION ON THE AGE AT PRESENTATION OF HBV-DRIVEN HEPATOCELLULAR CARCINOMA IN SOUTH AFRICA

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**Background:** Hepatocellular carcinoma (HCC) is the third most common cause of cancer mortality worldwide. Over 60% of HCC cases arise from chronic infection with HBV and/or HCV. Although HIV is known to impact on the natural progression of HBV infection, its impact on the epidemiology of HCC is not completely understood. This study investigated the occurrence of HIV among a cohort of patients incidentally diagnosed with HCC at four hospitals in South Africa.
**Methods:** A total of 107 patients diagnosed with HCC were recruited at Tygerberg and Groote Schuur hospitals in the Western Cape and at Chris Hani Baragwanath and Charlotte Maxeke hospitals in Gauteng, South Africa following informed consent. Study subjects were recruited between December 2012 and October 2015. Demographic, laboratory and clinical data together with blood specimens were collected. When unknown at the time of diagnosis, patients were tested for HBsAg, HBeAg and HIV on the Abbott Architect.
**Results:** Of 107 recruited HCC cases, 68/106 (64.1%) were positive for HBsAg. HIV seropositivity was seen in 22/100 (22%) of all HCC cases. HBeAg was seen in 10/17 (59%) of HIV-infected compared to 9/46 (20%) among HBV-monoinfected cases, p=0.005. Among HBsAg-positive HCC cases, 19/66 (29%) were HIV-infected compared to only 3/34 (9%) among those that were HBsAg-negative, p=0.04. The proportion of females among the HBV/HIV co-infected HCC cases of 6/18 (33%) was significantly higher it was among those that were HBV-monoinfected 6/47 (13%), p=0.005. HIV/HBV co-infected females presented younger, at median age 37.0 years (range: 30-44) compared to 50 years (range: 24-83) in HBV-monoinfected women, p=0.08.
**Conclusions:** There is a high prevalence of HIV and HBV co-infection among HCC patients in South Africa. There is a trend towards younger age at diagnosis of HCC among HIV-positive women compared to those who are HIV-negative. Larger multi-centred studies are needed to more accurately evaluate the impact of HIV infection on the epidemiology of HCC among sub-Saharan populations where HIV is highly prevalent and HBV-driven HCC is common.

## WEPDB0103

### ANTIRETROVIRAL TREATMENT ADHERENCE, VIREMIA, AND PSYCHIATRIC DIAGNOSIS THROUGHOUT ADOLESCENCE AMONG PERINATALLY HIV-INFECTED YOUTH

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**Background:** Adolescence is associated with suboptimal medication adherence and is a time of increased risk for mental health and substance use disorders (SUD) that strongly predict antiretroviral treatment (ART) non-adherence in adults. Few studies of perinatally HIV-infected (PHIV+) youth have examined the relationships of psychiatric disorders to adherence and viral load (VL), longitudinally. This study utilized a diagnostic measure of psychiatric disorders including SUD to investigate the association of disorder with ART adherence and viremia as PHIV+ youth age.
**Methods:** We analyzed data from three follow-up interviews (FU2-4, N=179) spanning 2.7 years of a longitudinal study of PHIV+ youth (13-24 years at FU2; 51% female; 67% African-American/Black) in New York City. At FU2 and FU4, six categories of psychiatric disorder (anxiety, behavior, mood, SUD, any disorder, any disorder excluding SUD) were assessed with the Diagnostic Interview Schedule for Children. At each interview, participants reported on missed doses within the past week and 3 VL results +/-90 days from the interview were abstracted from medical charts.
Multiple logistic regression analyzed cross-sectional associations, at FU2 and FU4, between psychiatric disorders and two outcomes: 1)missed doses and 2)most recent VL>1000. Multiple linear regression analyzed the relationship between FU2 psychiatric disorder and proportion of VL tests >1000 across FU2-4. Analyses adjusted for age and sex.
**Results:** At FU2, 53% of youth had *any disorder*, 35% missed doses in the past week, and 47% had a VL>1000.
Cross-sectionally, at FU2, *behavioral disorder* was associated with missed dose (p=.009) and VL>1000 (p=.019) and *mood disorder* was associated with missed dose (p=.041). At FU4, *behavioral disorder* was associated with missed dose (p=.009). *Behavioral disorder* (p=.041), *SUD* (p=.016), and *any disorder* (p=.008) at FU2 were significantly associated with higher proportion of VLs >1000 across FU2-4. Other associations were not significant (p>.05).
**Conclusions:** This is the first study to identify that adolescent psychiatric diagnoses were concurrently associated with poor adherence and prospectively associated with viremia over time. Psychiatric disorders in adolescence may predict viremia over the next 2-3 years. Assessment and treatment of psychiatric and substance abuse problems may be critical to improving adherence and preventing poor health outcomes during this vulnerable stage.

## WEPDB0104

### HIV ASSOCIATED NEUROCOGNITIVE DISORDER IN A PERI-URBAN HIV CLINIC IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** The prevalence of HIV associated neurocognitive disorder (HAND) in KwaZulu-Natal has not been established. This prospective, cross-sectional study determined the prevalence of HAND in ART naïve patients attending a peri-urban HIV clinic. The impact of HAND on functional capacity and factors associated with HAND were examined. Alternate neurocognitive tools were tested against the international HIV dementia scale (IHDS) score. An association between HAND and non-adherence to ART was explored.
**Methods:** Between May 2014 and May 2015, 146 ART naïve outpatients were assessed prior to commencing ART electively. HAND was diagnosed using an IHDS score ≤ 10. Functional capacity was assessed using the eastern cooperative oncology group (ECOG) score. The get-up-and-go test and center for epidemiological studies depression scale - revised (CESD-R) were performed at the same consultation and correlation between these two tests and IHDS was determined. A HIV viral load done 6 months after initiating ART was used as a surrogate marker for adherence to ART.
**Results:** The prevalence of HAND determined by the IHDS was 78/146 (53%). ECOG score was 0 in 99.9% of patients with HAND. CD4 count ≤ 200 cells/mm³ (p=0.17) and alcohol consumption (p=0.17) were not associated with HAND. There was no correlation between the get-up-and-go test, CESD-R and the IHDS score. Of the 129/146 patients with 6 month viral loads assays a detectable viral load was found in 24/69(35%) with HAND and 12/60(20%) without HAND. There was no significant association between HAND and a detectable viral load after 6 months of ART use (p=0.06).
**Conclusions:** Whilst the prevalence of HAND was high, it was not associated with impaired functional capacity. This finding suggests that early asymptomatic disease was prevalent in this population. A low CD4 count was not associated with HAND. The get-up-and-go-test and CESD-R were not useful in the diagnosis of HAND. A further study is needed to determine whether a relationship between HAND and non-adherence to ART exists.

## WEPDB0105

### AGEING AND ASSOCIATED MORBIDITY IN HIV-POSITIVE PERSONS IN THE COHORT OF THE SPANISH AIDS RESEARCH NETWORK (CORIS)

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**Background:** Improved survival among HIV-positive people due to the success of antiretroviral therapy has increased the risk of developing comorbidities linked to ageing. We describe the pattern of morbidity according to age in HIV-positive per-

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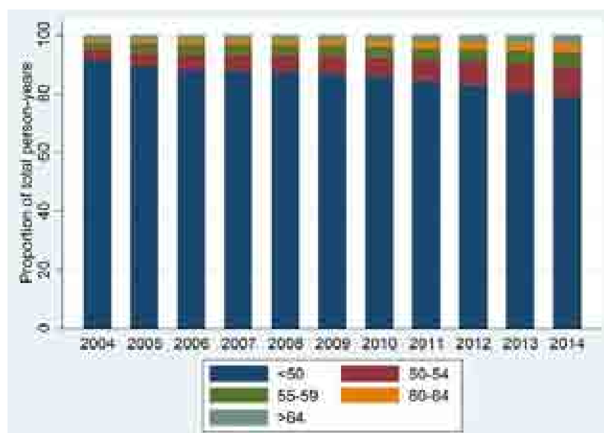
sons in the Cohort of the Spanish AIDS Research Network (CoRIS).

**Methods:** We calculated the age distribution in CoRIS, from 2004 to 2014, as the proportion of total person-years(py) in each age group (< 50;50-55;56-60;61-65;>65). We calculated incidence rates (per 1000py) for each comorbidity and the distribution of the number of comorbidities in persons >=50 compared with persons < 50 years. Age was modelled as a time-dependent variable.

**Results:** Overall, 9,569 (34385py of follow-up) persons were included, 83.5% were men, median age at entry was 35 years (Interquartile Range(IR): 29-43)and median CD4 count 384 (IR:203-582). Figure 1 shows changes in current age distribution by year; the proportion of total py aged >=50 years increased from 8.8% to 21.2%, from 2004 to 2014. Among those aged >=50 years, 17% of the total py presented one co-morbidity and 4% two or more, compared to 8% and 1%, respectively, among those aged < 50 years. Table 1 presents incidence rates for each comorbidity by age group. The most common comorbidities were psychiatric and Non-AIDS-Defining Malignancies (NADM).Comorbidity rates for cardiovascular, kidney-associated, bone fractures, metabolic and NADM were significantly higher for persons aged >=50years.

| | | Rate (95% CI) per 1000 person-years, by age group | | | |
|---|---|---|---|---|---|
| **Comorbidity** | **n** | **All** | **<50 years** | **>=50 years** | **P-value** |
| **Cardiovascular** | 85 | 2.49 (2.01;3.08) | 1.38 (1.01;1.88) | 8.75 (6.53;11.72) | <0.001 |
| **kidney-associated event** | 89 | 2.61 (2.12;3.21) | 2.07 (1.61;2.67) | 5.60 (3.89;8.06) | <0.001 |
| **Liver-associated event** | 94 | 2.76 (2.25;3.37) | 2.63 (2.10;3.29) | 3.46 (2.18;5.48) | 0.299 |
| **Bone** | 122 | 3.58 (3.00;4.28) | 3.19 (2.60;3.91) | 5.81 (4.06;8.31) | 0.004 |
| **Psychiatric** | 212 | 6.30 (5.50;7.20) | 6.30 (5.44;7.29) | 6.28 (4.44;8.88) | 0.987 |
| **Metabolic** | 87 | 2.55 (2.07;3.15) | 1.69 (1.28;2.24) | 7.40 (5.38;10.17) | <0.001 |
| **Other Non-AIDS infections** | 11 | 0.32 (0.18;0.58) | 0.27 (0.14;0.55) | 0.57 (0.18;1.77) | 0.281 |
| **Non-AIDS malignancies (more than one event per person is considered)** | 181 | 5.32 (4.60;6.16) | 5.16 (4.40;6.06) | 13.61 (10.77;17.20) | <0.001 |

*[Incidence rates (95% CI) per 1000 person-years for each comorbidity by age group]*




*[Age distribution in CoRIS since 2004 to 2014]*

**Conclusions:** Non-AIDS events have emerged as an important cause of comorbidity and multi-morbidity, especially among those with older age, and pose a new challenge for HIV treatment and care.

## WEPDB0106

### LOW RATES OF CHOLESTEROL SCREENING DESPITE CARDIOVASCULAR RISK IN PROTEASE INHIBITOR-TREATED HIV PATIENTS IN BOTSWANA

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**Background:** Treatment of human immunodeficiency virus (HIV) with protease inhibitors (PIs) is associated with increases in serum cholesterol levels. This association is strongest among those on 1st generation ritonavir boosted PIs. However, little is known about routine cholesterol screening and statin use to reduce risk of cardiovascular disease (CVD) among HIV-infected patients on PIs in sub-Saharan Africa (SSA) and how to increase appropriate screening.

**Methods:** Cholesterol screening and statin use was retrospectively assessed among HIV-infected patients on ritonavir boosted PI-containing antiretroviral (ART) between 2008 and 2012 at a large public urban HIV clinic in Botswana. Non-fasting lipid profile blood testing was prospectively recommended to the patient by the study team at time of enrolment for those without a lipid profile in the prior 12 months. Proportion of patients screened per year was calculated, and statin recommendation ascertained for each participant using atherosclerosis risk score (ASCVD) and Framingham risk score (FRS) as of 2012

**Results:** A total of 375 patients, median age 40 years, on ritonavir boosted PIs were enrolled. Sixty-four percent were female. Proportion of patients screened for hypercholesterolemia ranged between 19% and 30% per year during four years of observation, with 3% having hypercholesterolemia (>5.0mmol/L) and 1% using statins. After enrolment, the proportion of patients screened increased to 80%, and 31% had hypercholesterolemia. ASCVD guidelines recommended statin therapy for 14.3% of participants versus 9.4% by FRS.

**Conclusions:** Cholesterol screening during routine care among high risk HIV patients was low in a clinical setting in Botswana. The high rate of hypercholesterolemia and indication of statin therapy for nearly 15% of patients highlights a huge gap in addressing CVD risk reduction among PI-treated patients. The fact that patients obtained testing when directed to do so by study staff suggests that patient behaviour is not the barrier to testing. Future work should explore innovative ways to increase and sustain cholesterol screening and statin use to reduce CVD risk among HIV-infected patients in Botswana.

## WEPDC01 CIRCUMCISION: WHERE TO, HOW TO, WHO TO?

## WEPDC0102

### EVALUATION OF THE ACCUCIRC DEVICE FOR EARLY INFANT MALE CIRCUMCISION IN KISUMU, KENYA: UPTAKE AND SAFETY

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**Background:** As countries in sub-Saharan Africa scale up medical male circumcision (MMC), they are considering long term sustainable strategies, including early infant male circumcision (EIMC). AccuCirc is a single use, disposable device that comes in a sterile pre-packaged kit and may have advantages over the Mogen clamp, which is the currently approved device for EIMC in Kenya. This study assesses the safety and acceptability of the AccuCirc device for EIMC in 600 male infants in Kisumu, Kenya.

**Methods:** Infant boys are recruited through informational talks and materials at antenatal and maternal child health clinics, maternity wards and during post-natal visits. Mothers ≥18 years and their healthy infants aged ≤60 days with no genital abnormalities nor history of bleeding disorder and meeting weight-for-age criteria are enrolled. They are given a dorsal penile block, and circumcised using the AccuCirc. During the one-hour post-op observation period, questionnaires are administered to mothers to assess knowledge about EIMC and levels of satisfaction. Three days after circumcision the wound is assessed and mothers are asked additional questions. Data are entered into RedCap and analyzed using STATA version 13.1.

**Results:** Among 541 mothers and babies screened, 359 (66%) were eligible. Of these 110 (31%) opted for a Mogen clamp procedure; 249 (69%) were enrolled and circumcised using AccuCirc. The median age of mothers was 26 years (IQR=22,30); 20% were unmarried and 62% had greater than a primary education. The median age of infants circumcised was 16 days (IQR=7,32); 27% were ≤7 days and 73% were ≤30 days. There were no severe adverse events (AEs); there were 17 (6.8%) moderate AEs, all due to bleeding that occurred immediately after device removal. All were resolved in less than one hour. There were also 9 (3.6%) incomplete cuts, which required completion using surgical scissors or the Mogen clamp. Bleeding and incomplete cuts were more frequent in older/heavier babies. No infections or injuries to the glans were observed.
**Conclusions:** The AccuCirc device may be an efficient and safe alternative for EIMC. Restricting procedures to babies ≤30 days may reduce AEs. These results contribute evidence needed as countries transition from adult toward infant circumcision.

## WEPDC0103

### THE INTERACTION OF LOW MALE CIRCUMCISION AND HIGH PARTNER CONCURRENCY ON HIV RISK IN AFRICA: EVIDENCE FROM DEMOGRAPHIC AND HEALTH SURVEYS

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**Background:** HIV rates vary widely across Sub-Saharan Africa. High rates of multiple concurrent sexual partners (MCP) and low rates of male circumcision (MC) have each separately been identified as underlying drivers of HIV in Sub-Saharan Africa. However, their joint contribution to HIV risk has not been examined empirically.
**Methods:** Using Demographic and Health Survey data on couples with linked serostatus, the joint impact of MC and MCP on HIV risk for men and women was examined through multilevel models that accounted for the prevalence of both indicators at the regional-level. "High-risk individuals" were categorized as those whose partner had other sexual partners and where the male was uncircumcised and "high-risk regions" as those where >5% of the population had multiple partners and < 80% of the population was circumcised. A varying-intercept model was run to identify the intercepts for MC prevalence and MCP prevalence and their interaction on individual risk for HIV infection, adjusting for individual demographic and behavioral covariates. The models were run on nearly 30,000 observations across 96 regions within 11 Sub-Saharan countries.
**Results:** Assessing the joint impact of MC and MCP at the individual-level, higher-risk individuals had up to a 15% higher likelihood of contracting HIV (p< 0.05). Assessing the joint impact at the regional level, living in a high-risk region was associated with up to a 3.2 times higher likelihood of being HIV-positive for men and up to nearly two times higher likelihood for women (p< 0.001). The lowest-risk regions had a mean HIV prevalence of 1.4% and highest-risk regions had a prevalence of 21.6%. With nearly a three-times higher relative risk, the regional-level interaction risk factor was more predictive of the HIV status for both sexes than the individual-level interaction factor (p< 0.001).
**Conclusions:** MC and MCP should not be addressed as separate interventions. While much emphasis has been placed on scaling up male circumcision, in the absence of concerted efforts to reduce sexual concurrency, increased circumcision may have a less-than-anticipated impact. Adopting an integrated approach to addressing male circumcision and sexual concurrency is critical to achieving the Sustainable Development Goal target 3.3: Ending the AIDS epidemic by 2030.

## WEPDC0104

### BARRIERS TO AND FACILITATORS OF VMMC UPTAKE AMONG OLDER MEN AGED 25-39 YEARS IN NYANZA REGION, WESTERN KENYA: THE TASCO STUDY

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**Background:** Kenya began rolling out voluntary medical male circumcision (VMMC) in 2008, with a goal of reaching 80% of approximately 1 million uncircumcised males aged 15-49 years by 2013. While over 700,000 males were circumcised by 2013, client demand for VMMC was primarily among younger clients, and uptake was lowest among men aged ≥25 years. We present reasons reported by men ≥25 years for going or not going for VMMC.
**Methods:** Between May 2014 and December 2015, we conducted a cluster randomized controlled study to assess the impact of two interventions (enhanced interpersonal communication and dedicated clinics for men aged ≥25 years) on the uptake of VMMC. We administered a questionnaire to men aged 25-39 years who were already circumcised at enrollment and those who received VMMC during the study on their reasons for going for VMMC. We also interviewed men who were uncircumcised at enrollment and those who remained uncircumcised at the end of the study, on their reasons for not going for circumcision.
**Results:** We interviewed 3,200 circumcised men and 2,781 uncircumcised men. For men who were circumcised before the study (n=2,848), reduction in HIV risk (43.7%) *(95% CI, 41.9, 45.6)* and culture/religion (18.4%) *(95% CI, 17.1, 19.9)* were the two most important reasons for getting circumcised, while for men circumcised during the study (n=352), reduction in HIV risk (50.9%) *(95% CI, 45.6, 55.6)* and improved genital hygiene (16.2%) *(95% CI, 12.5, 20.2)* were the top reasons for getting circumcised. For those uncircumcised at enrollment (n=2,781), lost wages was the main barrier (34.2%) *(95% CI, 32.6, 36.0)* followed by pain (27.8%) *(95% CI, 26.1, 29.4)* while among those who remained uncircumcised when the study closed and were interviewed at exit (n=1,265), top barriers were inconvenient time/venue *(43.2%) (95% CI, 40.4, 46.0)* and lost wages *(26.0%) (95% CI, 23.7, 28.5)*.
**Conclusions:** Reduction in HIV risk remains the primary reason why men aged 25-39 pursue circumcision while losing wages is the primary reason others remain uncircumcised. Demand creation efforts for older men must amplify key client-level facilitators while overcoming primary barriers.

## WEPDC0105

### SAFETY OF THE NO-FLIP TECHNIQUE AND SPONTANEOUS DETACHMENT FOR SHANGRING CIRCUMCISION IN BOYS AND MEN: RESULTS FROM A RANDOMISED CONTROLLED TRIAL

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**Background:** Use of medical devices for voluntary medical male circumcision (VMMC) can offer several advantages. The ShangRing, a disposable single-use circumcision device, is simple to use, safe, and well-accepted in males 13 years old and above. We evaluated the safety, effectiveness, and acceptability of circumcision in males 10 years and above using a modified "no-flip" ShangRing technique, in addition to allowing spontaneous detachment of the device (as opposed to ring removal seven days after circumcision).
**Methods:** We enrolled men and boys seeking VMMC at two sites in Kenya. Participants were randomised to standard ShangRing removal seven days after circumcision vs. spontaneous device detachment. Weekly follow-up visits included evaluation of the degree of detachment if the ring was still in place, occurrence of adverse effects (AEs), and status of wound healing. Participants in the spontaneous detachment group could request device removal at any point during follow-up.
**Results:** 230 men and boys underwent ShangRing circumcision using the no-flip technique; 114 and 116 were randomised to the seven-day and spontaneous detachment groups, respectively. Mean ages in the two groups were 17.4 and 19.0 years, respectively. Mean circumcision times between the groups were similar (7.3±2.5 vs 7.0±2.6; p=0.4). All circumcisions were successfully completed using the ShangRing. Six (5.2%) and two (1.7%) moderate AEs were reported in the seven-day and spontaneous detachment groups, respectively, and were similar (p=0.17); there were no severe AEs. 84(72.4%) participants in the spontaneous detachment group wore the ring until it fell off; the remainder requested earlier removal. The probability of complete spontaneous detachment on seven, 14, and 28 days post-circumcision was 0.11, 0.63, and 1.00, respectively. Satisfaction with cosmetic results was high and similar in both groups—98.9% and 96.0% (p=0.3).
**Conclusions:** These results demonstrate the safety, acceptability, and effectiveness of the "no-flip" technique in males 10 years old and above, with 100% eligibility for all screened participants. Spontaneous detachment of the ring was safe and effective and was acceptable to a majority of men and boys. Use of the ShangRing as a single visit may significantly reduce the burden of service provision at health facilities.

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## WEPDC0106

### ADOLESCENT GIRLS' SUPPORT OF MALE PEERS AND SEXUAL PARTNERS RECEIVING VOLUNTARY MEDICAL MALE CIRCUMCISION SERVICES: IMPLICATIONS FOR DEMAND CREATION

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**Background:** Voluntary medical male circumcision (VMMC) in sub-Saharan Africa has reached a large number of adolescent males (ages 10-19). While some research has evaluated what attracts these boys to services, little is known as to female adolescents' involvement, if any, in the decision-making process and support of males being circumcised. This study explored adolescent girls' support of their male peers and sexual partners undergoing the procedure.

**Methods:** Twelve focus group discussions (FGDs) were conducted with female adolescents (ages 16-19) in South Africa, Tanzania, and Zimbabwe. These FGDs focused on the girls' opinions and perceptions of VMMC, including their perceived influence on VMMC uptake. In addition, 92 interviews were conducted with male adolescent VMMC clients 6-8 weeks post-procedure, which asked about their experiences in sharing their VMMC status or experience with girls. Audio recordings were transcribed, translated into English, and coded by two independent coders using qualitative coding software. Coders discussed discrepancies until at least 85% agreement was reached. Coded text was then assessed for themes.

**Results:** Overall, girls are supportive of VMMC. Girls discussed preferring circumcised male sexual partners over uncircumcised ones, citing the former's sexual appeal, hygiene, better sexual performance, and reduced chances of passing on infections (including HIV). Additionally, girls discussed being supportive of boys' decision to be circumcised and both overtly and covertly influencing their peers/partners to undergo VMMC. This was corroborated by some older boys who described how girls made them feel that if they got circumcised, then such girls would be more interested in them. In some instances, older boys reported girls using VMMC as criteria for selecting male partners. Girls discussed not necessarily offering tangible support during the healing process, but rather emotional support in making the decision to get circumcised. Younger boys (< 15 years) reported not interacting with girls much at all regarding VMMC.

**Conclusions:** Findings show that adolescent girls are involved in the VMMC decision-making process, especially with older adolescent boys. Given the apparent role of female peers/partners as support in influencing VMMC uptake, demand creation initiatives should continue to engage females in promoting VMMC to their male counterparts.

## WEPDC0107

### SAFETY OF A FACILITY-BASED VERSUS COMMUNITY-BASED MODEL OF EARLY INFANT MALE CIRCUMCISION USING THE MOGEN CLAMP IN WESTERN KENYA: MTOTO MSAFI MBILI STUDY

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**Background:** As countries in sub-Saharan Africa (sSA) scale up male circumcision, they are considering long term sustainable strategies, including early infant male circumcision (EIMC). An important aspect of introducing EIMC in sSA settings is safety. We present AE rates associated infant circumcisions achieved during the Mtoto Msafi Study.

**Methods:** A standard delivery package (SDP) included training health providers in four facilities to deliver safe EIMC and all health facility staff to educate, promote and mobilize mothers in antenatal, maternal neonatal child health (MNCH) and immunization clinics and surrounding communities. A SDP-PLUS model included all SDP activities in four facilities plus provision of EIMC services in the community by trained domiciliary midwives (DM). Infant boys were recruited through informational talks at MNCH and maternity wards, during post-natal visits and in the community by the DMs. Mothers ≥16 years and their healthy infants aged ≤60 days with no genital abnormalities nor history of bleeding disorder and meeting weight-for-age criteria were eligible. They were circumcised using the Mogen clamp after a dorsal penile block. Follow-up to assess the wound occurred three days after circumcision or as needed.

**Results:** Among 1681 babies screened, 1598 (95%) were eligible and circumcised: 561 in the SDP and 1037 in the SDP-PLUS community. Reasons for ineligibility were: under weight-for-age (34%), rashes or infections (18%), fever (15%) genital abnormalities (12%), jaundice (8%) and other (13%). Median age of mothers was 24 years (IQR=20,28); median age of infants was 8 days (IQR=1,36) and median weight was 3.6kg (IQR=3.1,4.4). Follow-up occurred in 72% of babies. There were 6 moderate (0.3%) and 5 severe (0.3%) adverse events (AEs). Among SAEs, 3 were in the context of training. Three were deaths, two of which were unrelated to EIMC, one possibly related. One was intra-operative bleeding requiring suturing, and one was a post-operative hematoma. No AEs were associated with procedures done in the community by DMs.

**Conclusions:** EIMC can be provided in a sSA community setting safely with low occurrence of AEs. SAEs possibly related or unrelated to the procedure may occur, requiring emergency response. These results contribute evidence needed as countries transition from adult toward infant circumcision.

# WEPDC02 PREVENTION FOR WOMEN: THE NEED FOR MULTIDISCIPLINARY APPROACHES

## WEPDC0201

### VAGINAL BACTERIA ASSOCIATED WITH INCREASED RISK OF HIV ACQUISITION IN AFRICAN WOMEN

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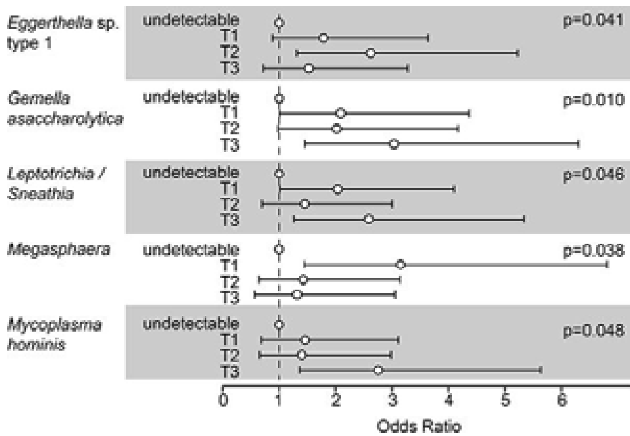
**Background:** Disruptions of the vaginal microbiota have been associated with increased HIV-1 risk. This study utilized molecular characterization of vaginal microbiota to test the hypothesis that specific vaginal bacteria are associated with increased risk of HIV-1 acquisition.

**Methods:** A nested case-control study was conducted in cohorts of women in Kenya, Uganda, Tanzania, Zambia, Botswana, and South Africa. Vaginal microbiota was compared at the pre-seroconversion sample in women who acquired HIV-1 (cases) versus women in the same cohort who remained seronegative (controls). Characterization of vaginal microbiota included deep sequence analysis of broad-range 16S rRNA gene polymerase chain reaction (PCR) products, and bacterium-specific quantitative PCR (qPCR) assays for selected bacteria.

**Results:** Among 349 women (87 cases and 262 controls), 40 were from a female sex worker cohort, 112 were from a cohort of pregnant and post-partum women, and 197 were HIV-seronegative women in discordant couples cohorts. Their median age was 28 years (interquartile range 22-35) and 77 (22.1%) were pregnant. Vaginal bacterial community diversity was higher in women who acquired HIV-1 compared to seronegative controls (mean Shannon Diversity Index 1.3 (standard deviation (SD) 1.0) versus 0.9 (SD 0.9), p=0.02. Based on comparison of relative abundance in cases versus controls, 15 taxa were selected for qPCR testing. Of these, *Eggerthella* species type-1, *Gemella asaccharolytica*, *Leptotrichia/Sneathia*, *Megasphaera*, and *Mycoplasma hominis* each showed a significant association with HIV-1 acquisition when undetectable levels were compared to tertiles representing increasing bacterial concentrations. High correlation between species precluded including multiple species together in a single multivariable model. These results remained significant after adjustment for age, pregnancy, contraceptive type, number of sex partners, frequency of sex, and recent unprotected intercourse (Figure 1).




*[Figure 1: Association between vaginal bacterial concentration and odds of HIV acquisition]*

**Conclusions:** Women's HIV-1 susceptibility may be influenced by the presence and quantity of key vaginal bacteria, including a number of fastidious bacteria recently linked to bacterial vaginosis.

## WEPDC0202

### A brief, trauma-informed intervention is feasible and acceptable, increases safety behaviour, and reduces HIV risk among drug-involved women who trade sex

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**Background:** The HIV epidemic among female sex workers (FSWs) is shaped by structural, social network, and behavioral factors. Violence is pervasive and associated with risk behavior and infection, yet interventions to respond to violence are limited.
**Methods:** Our intervention was developed in partnership with practitioners and clients from community-based organizations, who prioritized violence-related support, connection to services and responding to the myth that sex workers cannot be raped. The brief (3-5 minute), trauma-informed intervention (INSPIRE) was implemented with drug-involved FSWs in Baltimore, MD and evaluated for feasibility, acceptability and effect via a quasi-experimental, single group pretest-posttest study; baseline n=60; n=39 (65%) at follow-up; non-differential by baseline measures.
**Results:** At follow-up, participants had improved condom negotiation confidence (p=0.04), and reduced frequency of sex trade under the influence of drugs/alcohol (p=0.04). Endorsement of sex work-related rape myths decreased (p=0.04), and safety behavior scores increased (p< .001). Participants improved knowledge and use of support services for sexual violence and intimate partner violence. At follow-up, 68% knew at least one place to obtain assistance reporting violence to police, and 29% had approached such a program. Participants emphasized the value of a safe and supportive space to discuss violence; their feedback and that of community partners indicated high feasibility and acceptability of this brief, low-dose intervention.
**Conclusions:** Findings indicate the feasibility and acceptability of brief, trauma-informed discussion of safety and resources in the context of HIV risk reduction for FSWs, and suggest the potential for impact. This approach appears to prompt engagement in safety strategies, decrease the extent of sex trade under the influence, and bolster confidence in condom negotiation. INSPIRE influenced endpoints identified as valuable by community partners, specifically connection to support services and countering structural forces that falsely blame sex workers for violence. Future implementation research can advance limitations of our pilot study, including the short follow-up duration and attrition. These early results can inform scalable interventions that address the impact of trauma on HIV acquisition and care trajectories for FSWs, and in doing so address the dual epidemics of violence and HIV to support health and human rights.

## WEPDC0203

### HIV pre-exposure prophylaxis (PrEP) formulation preference among women participating in the qualitative component of the ASPIRE (MTN-020) study

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**Background:** During MTN-020/ASPIRE, a phase III trial of the Dapivirine vaginal ring in Africa, preferences for various PrEP delivery forms (including the ring) were explored in a subsample of participants receiving exit in-depth interviews (IDIs).
**Methods:** Participants were presented with pictures and descriptions of 9 possible PrEP formulations (vaginal gel, ring, suppositories, and films; oral tablets, injections, implants, male and female condoms) and asked to discuss these, first in relation to the ring and second to select the formulations they would be most/least interested in for future use. IDIs were summarized in reports for rapid review of key findings; levels of interest in products were tabulated and themes related to product preference were extracted.
**Results:** In the qualitative subsample (N=71; Malawi n=12; South Africa n=34, Uganda n=13, Zimbabwe n=12), baseline median age was 26 (range 18-45 years), all had a primary sex partner; 41% reported using a male condom at last sex; the most common current contraceptives were injections (52%) and implants (24%). Participants expressed most interest for future PrEP formulated as rings (94%), implants (39%) and injections (34%). Positive attributes of these methods included being long-acting, discreet, familiar and easy-to-use. The ring was also liked for reliability, lack of side effects and comfort. Opinions were divided for implants and injections (28% and 32% uninterested in future use, respectively) due to needle-phobia, pain upon administration, low reversibility and fear of side effects based on previous contraceptive experience. Formulations participants had least interest in included: oral tablets (61%), vaginal gel (55%) and film (41%). Attributes of tablets that were disliked included the daily regimen, difficulty in swallowing and stigma related to taking HIV medicines. The gel, films and other vaginal formulations were disliked because of the act of vaginal insertion, coital use, effect on sex and lack of familiarity.
**Conclusions:** Diverse PrEP formulations elicited interest in this subsample, with long-acting methods being favored. Despite high interest in the vaginal ring, other vaginal products did not generate much interest. Familiarity, reliability, absence of side effects and low burden in terms of administration and use were determined as important attributes to consider for new PrEP formulations.

## WEPDC0204

### Sexual behaviour of men and women within age-disparate partnerships in South Africa: implications for young women's HIV risk

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**Background:** Age-disparate partnerships are hypothesized to increase HIV-risk for young women. However, the evidence base remains mixed. Most studies have focused only on unprotected sex among women in the partnership. Consequently, little is known about other risky behaviours, such as transactional sex, alcohol use, and concurrency, as well as the behaviours of the men who partner with young women. We therefore examined various sexual behaviours of both young women and of men in partnerships with young women in order to investigate whether age-disparate partnerships involve riskier sexual behaviour.
**Methods:** We used nationally representative data from South Africa (2012) on partnerships reported by 16-24 year old women (n=818) and by men in partnerships with 16-24 year old women (n=985). We compared sexual behaviours in age-disparate partnerships and age-similar partnerships, using multivariate logistic regression to control for potential confounders and to assess rural/urban differences.
**Results:** Young women in age-disparate partnerships were more likely to report unprotected sex than in similar-aged partnerships (aOR:1.51; p< 0.05). Men in partnerships with young women were more likely to report unprotected sex (aOR:1.92; p< 0.01), transactional sex (aOR:2.73; p< 0.01), drinking alcohol before sex (aOR:1.60;

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p< 0.1), and concurrency (aOR:1.39; p< 0.1) when their partners were five or more years younger. Significant associations between age-disparate partnerships and transactional sex (aOR:4.14; p< 0.01) and alcohol use (aOR:2.24; p< 0.05) were only found in urban areas.
**Conclusions:** Results provide evidence that young women's age-disparate partnerships involve greater sexual risk, particularly through the risky behaviours of their male partners, with the risk amplified for young women in urban areas.

## WEPDC0205

### EVIDENCE FOR SELECTION EFFECT AND HAWTHORNE EFFECT IN BEHAVIOURAL HIV PREVENTION TRIAL AMONG YOUNG WOMEN IN RURAL SOUTH AFRICA

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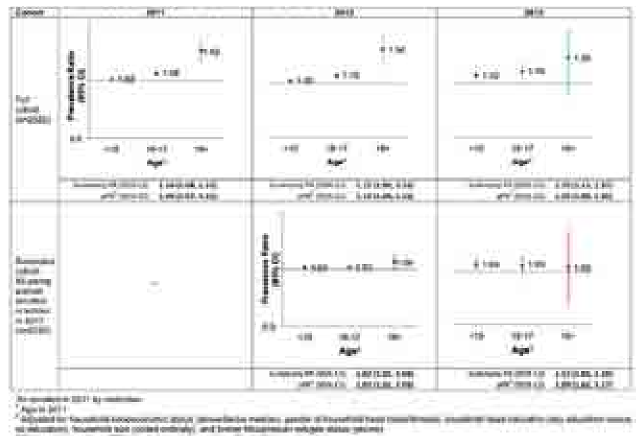
**Background:** HPTN 068 was a randomized controlled trial to examine whether cash transfers conditional on school attendance reduce the risk of HIV acquisition in young South African women. Findings indicated no difference in HIV acquisition between study arms, with low HIV incidence and high levels of school enrollment in both treatment and control groups. We examine whether school enrollment trajectories of the study participants differed from the underlying study population, and whether differences could be attributed to existing differences in school enrollment at baseline (selection effect) or differences that arose during study participation (Hawthorne effect).
**Methods:** Using census data from the Agincourt Health and Socio-Demographic Surveillance System within which the HPTN 068 trial was nested, we constructed a cohort of 2525 young women between the ages 13-20 in 2011. Using log-binomial regression models, we compared 2011 and 2012 school enrollment between those who did (n=1145) and did not (n=1380) enroll in HPTN 068 in 2011. To isolate the Hawthorne effect we restricted the cohort to those enrolled in school at time of study enrollment. We adjusted for key sociodemographic characteristics and stratified by age.
**Results:** Nearly all HPTN 068 participants (97%) were still enrolled in school in 2012 compared to 86% of non-participants. The magnitude of association between study enrollment and school enrollment was strongest among those who were older at baseline. Small but statistically significant effects remained in the restricted cohort. Similar preliminary findings were observed in 2013.
**Conclusions:** HPTN 068 participants, regardless of study arm, were more likely to be enrolled in school than non-participants. Our findings suggest that both selection and Hawthorne effects may have diminished the differences in school enrollment between study arms and is one plausible explanation for the null study effect. The Hawthorne-specific findings generate hypotheses for how to structure school retention interventions to prevent HIV.



*[Figure 1. The association between enrollment in the HIV prevention trial in 2011 and school enrollment in 2011, 2012 and 2013, stratified by age, in both the full cohort and a restricted cohort of those enrolled in school in 2011]*

## WEPDC0206

### ADHERENCE TO TOPICAL PREP: QUALITATIVE FINDINGS FROM THE FACTS 001 TRIAL

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**Background:** In the FACTS 001 phase III trial, a peri-coital (before and after sex) vaginal application of tenofovir 1% gel did not prevent HIV-1 infection amongst young South African women. Given that sub-optimal adherence can dilute estimations of efficacy, understanding what shaped gel use in FACTS 001 is critical to comprehend these outcomes.
**Methods:** A random sample of 145 participants was selected from the trial population, weighted to reflect enrolment distribution at the nine trial sites. Participants were invited to an in depth interview (IDI) at their product discontinuation visit. IDIs were conducted in a language of the participant's choice and were recorded, transcribed and translated. Nvivo 10 was used to code interview text that reflected the key research objectives and themes arising from the literature on other HIV prevention trials: risk of HIV; perceived efficacy and acceptability of the gel; comprehension of the peri-coital dosing regimen; and relationship dynamics.
**Results:** A total of 136 participants were interviewed. Interviewees broadly represented the main trial population: a cohort of predominantly young (average 22 years), single (87%) and unemployed women (78%), who mostly resided with their parents (62%). Recognising their risk of HIV infection, they expressed hopefulness that the trial gel would provide protection. Women liked the gel because it enhanced their sexual experiences, and they believed it improved their health. However, the required dosing regimen, especially the post-sex dose, was not always feasible under certain circumstances, particularly when living apart from partners, and when attempting to conceal gel use from partners.
**Conclusions:** Despite their perceived vulnerability to HIV, the hope for an effective product, and favourable experiences of using the gel, many FACTS 001 participants were unable to integrate the gel into their lives and use it consistently enough to provide protection against HIV. Social contextual factors such as residential and intimate partner dynamics can be critical in limiting women's agency to use HIV prevention products. This has implications for the PrEP field and indicates the need for programs to support adherence that considers women's everyday lives.

# WEPDD01 TRANSLATING TRADITION IN THE AIDS RESPONSE

## WEPDD0101

### PROMISE OR PERIL? THE NATURE OF MEDICAL PLURALISM ALONG THE CASCADE OF CARE FOR HIV/AIDS IN EASTERN AND SOUTHERN AFRICA

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**Background:** There are concerns that medical pluralism may delay patients' progression through the HIV cascade and contribute to poor treatment outcomes. However there is a dearth of evidence regarding pluralistic practices among PLHIV in different African settings in the context of widespread ART use. We aimed to address this gap by documenting patients' experiences with HIV care across medical systems, identify dominant patterns of medical pluralism, and explore their implications for health outcomes.
**Methods:** We purposively selected 180 participants from each stage of the cascade in six demographic surveillance sites in five east and southern African countries: Uganda, Kenya, Tanzania, Malawi, Zimbabwe, and South Africa. In-depth interviews were conducted using shared tools across sites. We used pathways to care analysis to code and map the health care-seeking journeys of participants, which were com-

pared with their illness experiences using a constant comparison method.
**Results:** Identified patterns of medical pluralism included use of dominant public sector clinics and hospitals with use of
1) private sector practitioners and chemists,
2) indigenous sector traditional healers and herbalists, and
3) religious sector faith healers and prophets.
These patterns differed depending on the cascade stage, available sources of health care, and other contextual factors in each country. Sequential medical pluralism, adopted for alternative care purposes, appeared more common prior to ART, largely around HIV testing and linkage to care, both associated with delays. Concurrent medical pluralism, used for complementary purposes, appeared more common among ART patients. Patients engaged in medical pluralism predominantly to compensate for aspects of HIV care needed but not received from their main public sector providers, rather than to seek substitute services.
**Conclusions:** Sequential medical pluralism may act as a bottleneck towards ART initiation. Concurrent medical pluralism suggests a tendency towards complementary forms of health care utilization among ART users, which may be deemed necessary by individual patients in order to complete their desired or required package of health care. Complementary approaches may serve a purpose of resolving tensions and minimize competition between sources of health care, but carry the risk of drug-drug interactions.

## WEPDD0102

### CLAIMS OF A CURE: USE OF CD4 CELL COUNT RESULTS TO GUIDE TRADITIONAL TREATMENT IN BUSHBUCKRIDGE, SOUTH AFRICA

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**Background:** Traditional healers play an important role in providing health care in much of sub-Saharan Africa, due to both their greater accessibility and acceptability. In rural northeastern South Africa (SA), studies have documented HIV patients using both traditional and allopathic healers, often 'ping-ponging' back and forth between the two systems. The initial use of traditional healers can cause delays in initiation of life-saving medicine for serious conditions such as HIV.
**Methods:** We conducted 27 in-depth interviews and 133 surveys with a random sample of traditional healers living in Bushbuckridge, SA to document illnesses treated, methods for diagnosis, self-reported effectiveness of treatments, and the monetary fees they charged for a variety of ailments, including HIV.
**Results:** Healers in the rural Bushbuckridge were mostly female (77%), older (median = 58 [IQR: 50-67 years]), with low levels of education (median = 3.7 [IQR: 3.2-4.2]) years). Our qualitative interviews revealed that healers treating probable HIV-infected patients first referred them to the clinic for testing and confirmation. Subsequently if the patient preferred traditional treatment, they differentiated between two categories of known HIV-infected patients: (1) those with CD4 < 350 cells/mm$^3$ and (2) those with > 350 cells/mm$^3$. Only patients with "low" CD4 cell counts were routinely referred back to health facilities for antiretroviral therapy. Among those surveyed, 39 (30%) reported successfully treating adult HIV-infected patients with CD4 cell >350 cells/mm$^3$. Healers who reported treating HIV-infected patients treated more patients (median 8.7 vs. 4.8 per month; p=0.03), had been practicing for less time (median 16.9 vs. 22.8 years; p=0.03), and had lower levels of education (2.8 vs 4.1 years; p=0.017). Both groups experienced similar number of blood exposures during their treatments (median 1.5 vs 1.0; p=0.24). Healers charged a median of 1500 Rand (~92 USD) to treat patients (with high CD4) for HIV.
**Conclusions:** Traditional healers in rural SA do refer suspected HIV-infected patients to biomedical care, yet continue to treat patients once confirmed, particularly when patients have a CD4 cell count >350 cells/mm$^3$. Given that patients with higher CD4 cell counts have fewer physical symptoms of HIV-infection, a greater emphasis on patient education and healer engagement are warranted.

## WEPDD0103

### MOONLIGHT METHADONE FOR MUSLIMS ON MEDICALLY ASSISTED THERAPY CURBING DRUG RELAPSE IN MALINDI, KENYA

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**Background:** It is widely acknowledged that heroin dependence results in homelessness, family disruption, social instability and marginalization. Anecdotal reports indicate many members of society regard people who use drugs as sinners. Although 2011 UNODC Study Kenya revealed 55% of all PWID are Christian, 42% Muslim. Nairobi PWID comprise 16% versus 72% at Coast. Evidence regarding spiritual support for PWID is limited.
**Description:** Following initiation of Medically Assisted (MAT) Program in Malindi, enrolled Muslim MAT clients expressed a desire to fast during Ramadhan 2015. From May 2015 they requested MAT clinic team to to dispense methadone after sunset for Muslim clients or wean them off methadone 6 weeks before Ramadhan. Unfortunately national guidelines for MAT don't recommend take home doses, dispensing by non-pharmacists or beyond operational hours. International MAT experts restricted detox for incarcerated MAT clients and advised against shifting MAT Clinic operational hours to assure structured way of life for clients. Religious leaders recommended MAT clients adopt Islam's waiver from fasting for sick, pregnant or nursing women. Malindi hospital unwilling to dispense methadone at 24-hour main pharmacy due to security concerns. Mathari MAT Clinic in Nairobi rejected a similar plea as its Muslim MAT Clients were few (< 10).
**Lessons learned:** On 1st day of Ramadhan 2015, almost 40 clients missed daily methadone dose. By third day, severe withdrawal drove a few Muslim clients to MAT pharmacy for daily dose. Clients who showed up on subsequent days required re-induction. However, by 7th Ramadhan, 29 clients still kept away. Rumours that some fasting clients were taking heroin after sunset and at pre-dawn to manage their withdrawal prompted Malindi MAT Clinic team to unanimously approve evening dispensing for fasting Muslim clients. Eligibility for evening doses for MAT defaulters: 3-days re-induction at daytime. 3 fasting clients refused to comply. On 12th Ramadhan, 26 fasting clients accessed evening services. All routinely reported immediately after prayers; within 40 minutes, all doses dispensed. This service was halted on Eid day.
**Conclusions/Next steps:** Moonlight dispensing enabled Muslim clients to fast after years of drug use while improving client-provider relations. As Kenya scales up MAT program, prioritize spiritual recovery for MAT Clients.

## WEPDD0104

### TAKING ON FAITH: A NARRATIVE ANALYSIS OF DISCUSSIONS ABOUT HIV USED BY PARTICIPANTS PLATFORMS FOR CONTESTING FAITH IN 9 HIGH HIV-BURDEN COMMUNITIES IN THE WESTERN CAPE, SOUTH AFRICA

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**Background:** The history of HIV in southern Africa is interwoven with faith. Faith-based institutions and prominent faith leaders were often key in championing HIV rights. Community-based care networks were often underpinned by faith-based principles of altruism and care. Conversely, faith institutions may also be associated with harmful moralising and sexual conservatism linked to stigma and with a focus on abstinence and partner fidelity. With increasing ART availability, faith is sometimes now equated with 'alternative health beliefs' that hinder uptake and adherence.
**Methods:** Between December 2012 and May 2013 we conducted research to describe the HIV landscape in 9 study communities in the Western Cape, South Africa. In each study community, we spent approximately 10 days conducting semi-structured observations, group discussions (48, participants = 232) and interviews (32) with residents and health service stakeholders (some also faith leaders). We present a narrative analysis of how HIV is used in community discussions in relation to interpreting 'faith'.
**Results:** Over the course of data collection participants often used this HIV research as an opportunity to talk about faith. A core faith-based dilemma underpins the narratives which we interpret as 'charity *versus* justice'. On the one hand, HIV requires people to act charitably - holding empathetic attitudes, showing community solidarity, and acting selflessly. When describing this response, participants often also drew on wider post-colonial, post-*Apartheid* narratives of returning to cherished cultural values of inclusivity. On the other hand, HIV is also often aligned with stigmatised (or otherwise morally marginalised) social groups. In this positioning, faith-based values of chastity, being held accountable to moral choices, and penance for sin are called upon to justify marginalising people living with HIV. Several faith-based leaders circumvented this dilemma by drawing a distinction between matters of the body (like HIV) and soul. This distinction enabled discussion of experiences of living with HIV and sexual morality on separate registers (empathy *and* justice).
**Conclusions:** Faith is a double-edged sword for HIV interventions, both preaching charity and being used to justify alienating individuals who are deemed responsible for acquiring HIV. Attempts to re-interpret this narrative (to facilitate faith-based participation in health messaging) should be further investigated.

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## WEPDD0105

### CAPACITY BUILDING OF TRADITIONAL HEALTH PRACTITIONERS TO MAINSTREAM HIV AND AIDS PREVENTION IN ZIMBABWE

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**Background:** The purpose of this project was to strengthen the capacity of Traditional Health Practitioners (THPs) in HIV and AIDS prevention and treatment. The National AIDS Council spearheaded the local implementation of the project, which was simultaneously implemented in South Africa and Botswana, funded by the SADC. Specifically, the project sought to train 360 THPs in HIV prevention and treatment in Zimbabwe in two years.

**Description:** A three member project steering committee, comprising NAC, Ministry of Health and Child Care and a representative of the THPS was established. After this, an all inclusive stakeholders consultative meeting to sensitise them on the objectives of the project and obtain their buy-in was held. A manual was then developed and translated into Ndebele and Shona. Six people, including three THPS were trained as facilitators.

A total of 296 THPs were trained in five provinces. At the end of the SADC funded project, the National AIDS Council adopted the project and has trained an additional 180 THPs. During the training most THPs confirmed claims that condoms contain HIV causing worms and that the THPs could treat AIDS. These claims and others were demystified during training. 40% of the trained THPs underwent HIV counselling and testing, provided during training. In addition condoms were provided to the THPs to dispense to their clients at home. 100 healers have been followed up 12 months after training and 90% of them found to be practising what they learnt, in particular referring clients for HIV counselling and testing, record keeping and art adherence counselling.

**Lessons learned:**

- Most THPs have serious misconceptions about causes of HIV and that they treat AIDS
- The misconceptions are due to lack of knowledge on the causes of HIV and its management
- THPs are willing to collaborate with mainstream health care as long as this does not lead to loss of income
- Engaging THPs should not discredit their work but amplify it
- THPS can become good partners in responding to HIV and AIDS

**Conclusions/Next steps:** NAC continues to fund this intervention to ensure all provinces are covered and also monitor post course behaviour.

## WEPDD0106

### DEVELOPING AN ETHICAL INDIGENOUS RESEARCH PROTOCOL: SOWING SEEDS FOR THE INCLUSION OF INDIGENOUS PEOPLES WITH HIV

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**Background:** Indigenous responses to HIV/AIDS have been underway for over two decades. The International Indigenous Working Group on HIV and AIDS (IIWGHA) includes seventeen Indigenous leaders from five continents, thirteen countries and multiple Indigenous communities. IIWGHA is an international voice that links Indigenous Peoples with their leadership, governments, AIDS service organizations, cooperatives, and others in collective action to reduce these health inequities. Robust responses to HIV/AIDS must be grounded in country and population-specific evidence generated through high-quality research. The distinct histories of research exploitation within our communities have led to distrust; therefore it is imperative that research becomes Indigenous-led.

We are generating a meaningful engagement protocol for use within IIWGHA to ensure that research is conducted in a culturally respectful way, responsive to the diverse needs of IIWGHA members.

**Description:** Our initiative responds to the dearth of Indigenous HIV-focused research. Our goal is to sow seeds for community-led research benefitting Indigenous populations affected by HIV. This protocol will strategically support Indigenous researchers implementing research meeting the highest standards of scientific excellence, and respectful and ethical community engagement, contributing to knowledge building and strengthening partnerships, which underpin and inform strategic action

**Lessons learned:** We ground ourselves in Indigenous knowledges and paradigms that inform our understandings of the world. We will also incorporate knowledge generated through the academy and apply Two-Eyed Seeing and community-based research frameworks. Mutually respectful, ethical partnerships address socioeconomic and structural health determinants. Decolonizing methodologies and processes are central themes in this protocol development and modalities of research partnerships. Key principles include: 1. Inclusion of Indigenous Peoples throughout the research process; 2. Research in good faith, with free, prior and informed consent; 3. Evidence of vulnerability and risks; 4.Grounding research in the strengths, cultures and ancestral practices of Indigenous Peoples; 5. Honoring both Indigenous and Western Ways of Knowing.

**Conclusions/Next steps:** This work brings together Indigenous HIV research networks from IIWGHA member countries for a constructive and critical look at Indigenous HIV research. Next steps will include finalizing a research protocol for use nationally and internationally by members of IIWGHA and its collaborators and funders.

## WEPDE01 FILLING THE GAPS IN PMTCT/B+ PROGRAMMES

## WEPDE0101

### SCALING UP PARTNER TESTING IN MATERNAL & CHILD HEALTH CLINIC (MCH) SETTINGS: A CASE STUDY OF GUCHA SUB-COUNTY HOSPITAL, WESTERN KENYA

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**Background:** Male partner involvement is generally low in MCH settings due to a myriad of factors including lack of policy guidance and socio-cultural factors. The objective of this study was to assess male involvement in PMTCT services, including partner counseling and testing in the MCH and to gather recommendations for improvement and strengthening of these services.

**Description:** Two mentor mothers were trained in mid-2013 and placed at Gucha Sub-county hospital, Western Kenya to support PMTCT interventions at the facility, including encouraging partner testing among women receiving PMTCT services. All women attending 1st ANC services were counseled on the importance of partner involvement and testing, provided with an invitation card for the partner to accompany them to the clinic for their next ANC visit. Couples who attended clinic were provided with a variety of services including HIV counseling and testing. Community mobilization and sensitizations were done around the facility catchment on importance of partner involvement and testing. Routinely collected data for partner counseling and testing uptake from MCH registers was compared before (2012) and after placement of the mentor mothers (2014)

**Lessons learned:** A total of 1690 and 1619 pregnant women attended the facility for ANC services for the first time in 2012 and 2014 respectively. Forty three percent (741/1690) and (97%) 1582/1619 were counseled and tested for HIV. Among these, 17/741(3%) partners were counseled and tested for HIV in 2012 as compared to 953/1582 (60%) in 2014. Among the partners tested, 0/17 (0%) were HIV discordant in 2012 while 14/953 (1.4%) were discordant in 2014. A total of 12 community sensitization meetings were held in 2014.

**Conclusions/Next steps:** Scaling up partner testing is feasible but requires both facility and community level coordination. With good mobilization and community education, partner testing can be institutionalized. With improved partner testing, uptake of PMTCT interventions can be improved. There is need for County governments to put in place guidance of male involvement in RMNCH services.

## WEPDE0102

### COUNSELLED TO COMPLIANCE: EXPERIENCES OF OPTION B+ FOR THE PREVENTION OF MOTHER TO CHILD TRANSMISSION IN FOUR HEALTH AND DEMOGRAPHIC SURVEILLANCE SITES IN SUB-SAHARAN AFRICA

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**Background:** Option B+ for the prevention of mother-to-child transmission (PMTCT) was intended to improve PMTCT coverage and retention in HIV care for mothers and virtually eliminate perinatal infections. Although Option B+, and wider test and treat policies, are to be rolled-out in many countries, little is known about how pregnant women and health workers perceive Option B+ and its influence on HIV care-seeking behaviours. This qualitative study explored these experiences in four African settings.
**Methods:** Thirty in-depth interviews (IDIs) were conducted with HIV-positive women, purposefully sampled from ART clinics or health and demographic surveillance datasets in Karonga, (Malawi), Kisesa (Tanzania), Kyambuliwa and Rakai (Uganda). 20 IDIs were conducted with health-care providers. IDIs explored health worker and patients' understanding and experiences of Option B +. A framework analysis using a thematic approach was conducted, and findings compared across sites.
**Results:** Health providers and women generally considered the main benefit of Option B+ as being to protect the unborn baby with few references to potential or expected health benefits of early ART for the mothers. Across all sites, health workers reported a desire to maximise opportunities to initiate HIV positive women onto ART through Option B+ programmes. Both providers and women reported instances of repeated counselling sessions until consent to initiate ART was obtained, particularly in women for whom the positive test result was new or unexpected. Some pregnant women responded to a perceived lack of autonomy over Option B+ participation by covertly refusing to adhere to ART, while others avoided antenatal clinics completely.
**Conclusions:** Most women willingly initiated ART through Option B+, however there was an occasional disconnect between health worker actions, and the 'readiness' of women to start lifelong treatment resulting in practices that could be perceived as coercive. This could be further exacerbated by the perceived requirements among some health workers to meet Option B+ programme targets. ART initiation following an HIV diagnosis should be accompanied by greater efforts to ensure preparedness for life-long ART. These findings may also be relevant to guiding the implementation of universal test and treat policies.

## WEPDE0103

### MOMCONNECT: MHEALTH STRENGTHENING OF DEMAND AND SUPPLY SIDES OF THE SOUTH AFRICAN HEALTH SYSTEM TO IMPROVE PMTCT

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**Background:** MomConnect is a South African National Department of Health initiative that aims to use the ubiquity of cell phones. It sends pregnant women messages appropriate to their stage of pregnancy to strengthen the **demand** for health services and empower women. It enables these women to interact with the health system, obtain further health information and to provide feedback on the quality of care that they receive to improve supply of services.
**Description:** Since its launch in August 2014 MomConnect has registered 583 929 pregnant women. More than 95% (34887) of all facilities dealing with pregnant women have recorded MomConnect registrations, indicative of its universal roll out.
**Lessons learned:** Women interact free of charge with a help desk. Over 200,000 questions have been asked. Examples related to HIV include:
*"Why are health care workers initiating ARV treatment without CD4 Count";*
*"What is the safest method of delivery if you are HIV positive";*
*"What are the chances of the baby getting infected with the virus when one has cracked nipples should breastfeeding continue*?"
Each question is answered on a daily basis and if serious women are directed to a health facility.
Women also have the ability to compliment the service. To date 4173 compliments received more than six times the complaints (690) received. Examples of complaints impacting on PMTCT include:
*"Lack of confidentiality for HIV Patients, as files were labelled, consulting rooms designated only for HIV patients, treatment room labelled ARV room".*
The resultant action was that the district focal person visited facility and met the manager. They looked at areas that patient complained and removed all the signs related to HIV.
*"Complained that she went to the clinic to collect HIV treatment and she was sent off without medication."* Client advised to return to facility, where she received the necessary ARVs after managers of facility were briefed.
**Conclusions/Next steps:** MomConnect has empowered pregnant women and improved the demand for better quality as well as improving supply and the quality of health services. The help desk is being upgraded to be more responsive to feedback from pregnant women. MomConnect data is being integrated with national data system.

## WEPDE0104

### VIRAL LOAD SAMPLE LOGISTICS FOR HIV-POSITIVE WOMEN IN RURAL SETTINGS: EXPERIENCE FROM THE INSPIRE MOMENT NIGERIA PMTCT STUDY

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**Background:** Due to its earlier detection of treatment failure, Viral Load (VL) is preferred over CD4 count in treatment monitoring. In Nigeria, VL is not routinely available to rural patients at Primary Healthcare Centers (PHCs). Whole blood samples require transport on ice and processing within 6 to 8 hrs. Routine sample transport is difficult in rural areas due to distance and terrain. We present our experience in the establishment of a rural VL transport logistics system in North-Central Nigeria.
**Description:** The MoMent study evaluates PMTCT service uptake, ARV adherence, and retention among mother-infant pairs in rural areas. VL is a study proxy for maternal ART adherence, and in order to measure this outcome, a VL sample transport system had to be developed *de novo*. Field Research staff were trained with a VL sample collection and transport SOP alongside clinical PHC staff. Study sites were mapped to the Central Lab; sites too distant were linked to a hub facility for sample centrifugation and storage before delivery to the central processing lab. Sample collection and transport materials were provided to each study site. Where official vehicles were not available, commercial transport was costed and utilized.
**Lessons learned:** In total, 28 staff received one-day training on VL sample collection and transport. In 13 months, 201 maternal VL samples were collected and transported from 20 PHCs to the Central Lab; 28/201 (13.9%) were transited through the hub. Overall, 4/201 (1.9%) samples were rejected, comparable to rejection rates from secondary and tertiary clinics; major reason being sample lysis. Average collection, transport and processing cost per VL sample was 55.50 USD; rejected samples cost 57.50 USD to repeat. High turnover rate of trained PHC staff (7/17, 41.2%) was also observed.
**Conclusions/Next steps:** Routine VL in rural Nigeria is feasible if resources can be directed at training, staff retention, and quality assurance. Additionally, we recommend mapping of facilities and strategic placement of molecular labs or point-of-care testing to reduce transport cost and logistic challenges. However, processing cost remains high, especially for rejected samples. Innovative financing and technology is needed to provide equitable access to VL monitoring for HIV-positive women in hard-to-reach areas.

## WEPDE0105

### EARLY RETENTION IN ANTENATAL CARE AMONG HIV-POSITIVE WOMEN ENROLLED IN THE OPTION B+ PROGRAM IN KINSHASA, DRC

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**Background:** Effective retention in prevention of mother-to-child HIV prevention (PMTCT) programs implementing universal, lifelong treatment (“Option B+”) is critical to achieving pediatric HIV elimination. Innovative strategies are needed to strengthen retention in PMTCT/antenatal care (ANC). The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) assessed early loss to follow-up of HIV-positive pregnant women in ANC following introduction of a standard operating procedure (SOP) in select facilities in Kinshasa, Democratic Republic of the Congo. The SOP included guidance to health providers and mentor mothers (HIV-positive expert patients) on 1) linking newly and known HIV-positive women to these mothers, 2) counseling at first ANC, 3) tracking those who miss antenatal appointments through phone calls and home visits, and 4) documenting appointments and follow-up activities.
**Methods:** A quasi-experimental study was conducted from May to November 2015 in 16 EGPAF-supported health facilities, purposively selected for high volume and high HIV prevalence. Facilities were randomized to receive the SOP enhancement or no intervention. All records of HIV-positive women who attended their first ANC visit were abstracted during the data collection period. Multiple logistic regressions were used to identify determinants of second ANC visit attendance by HIV-positive pregnant women enrolled in the PMTCT Option B+ program.
**Results:** One-hundred-and-seventy-four women were included in the analysis: 43.7% (n=76) in the intervention and 56.3% (n=96) in the comparison group. Women’s average age was 31 years (SD: 6.4). Approximately 86.2% of participants were assessed as WHO Clinical Stage I. Overall attrition at the second ANC visit was 25.8% (n=45). After multivariable logistic regression, being in the comparison group remained independently associated with early attrition (AOR=3.49, CI 95%: 1.58-7.71, p=0.002). Women attending facilities without SOP implementation were 3.5 times more likely to miss the second ANC visit (n=35, 35.7%) compared to the women from the intervention group (n=10, 13.2%).
**Conclusions:** Study findings demonstrated a positive effect of the SOP intervention on second ANC visit attendance. This SOP should be expanded to include the full range of ANC visits and delivery. This tool should be promoted and scaled up to contribute to the improvement of the retention in care for PMTCT clients.

## WEPDE0106LB

### SELF-REPORTED ANTENATAL ADHERENCE TO PREDICT POSTNATAL VIRAL REBOUND AMONG WOMEN INITIATING ART DURING PREGNANCY IN CAPE TOWN, SOUTH AFRICA: A PROSPECTIVE STUDY

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**Background:** Maintaining postnatal viral suppression is critical to minimize risk of breastfeeding mother-to-child transmission and ensure ongoing maternal health. Determining simple ways to identify women at risk of postnatal viraemia will have benefits for both mother and child.
**Methods:** HIV+ women initiating ART during pregnancy at a large primary care clinic were recruited and followed in the MCH-ART study in Cape Town, South Africa. Consenting women completed up to eight study visits from ART initiation through 12 months postpartum, including viral load (VL) measurement, demographics and self-report of missed ART doses in the previous 30 days. We investigated time to VL >1000 copies/mL and associations between antenatal adherence and viral rebound among women suppressed at delivery.
**Results:** Overall, 339 women with VL ≤50 copies/mL at delivery were included in this analysis (median age 28 years, median 18 weeks on ART). From ART initiation through delivery, 28% of women reported any missed ART doses; 16% reported one or more missed doses/month on average. Using product limit methods 79% of women maintained VL ≤1000 copies/mL at 12 months postpartum. In a proportional hazards model adjusted for age, duration of antenatal ART and ART history, reporting one or more missed doses per 30 days on average during pregnancy was associated with a more than twofold increase in the hazard of postnatal viral rebound (adjusted hazard ratio [aHR] 2.64, p< 0.001). Previous ART use increased the hazard of viral rebound; increasing age and weeks on ART were protective. When stratified by age, the association between missed doses and viral rebound was stronger among women ≥25 years compared to younger women (aHR 3.88 and 2.20, respectively).
**Conclusions:** In this cohort of women who initiated ART in pregnancy and were suppressed at delivery, report of antenatal missed ART doses was predictive of postnatal viraemia. Self-reported antenatal missed doses, together with other routinely collected antenatal risk factors like age, could be used to flag women at high risk of postnatal viral rebound. There is need for further research to explore how reported antenatal adherence could be used in low-resource settings to target interventions to recently postpartum women most at risk.

# WEPDE02 IT TAKES A COMMUNITY: LEADERSHIP, ENGAGEMENT AND INNOVATION

## WEPDE0201

### COMMUNITY LEADER ENGAGEMENT AND PEER GROUP ATTENDANCE IMPROVES SELECTED MCH AND PMTCT SERVICES UPTAKE AND RETENTION: PRELIMINARY FINDINGS FROM PROJECT ACCLAIM

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**Background:** Project Advancing Community Level Action for Improving maternal and child health (MCH)/prevention of mother-to-child HIV transmission (PMTCT) (Project ACCLAIM), a three-arm randomized trial with 45 PMTCT-implementing health facilities and their catchment areas across Swaziland, Uganda and Zimbabwe, aimed to improve access, uptake and retention in MCH and PMTCT services.
The study evaluates three interventions:
Arm 1) Community leader (CL) engagement (training in MCH/PMTCT, community action mentoring including dialogues;
Arm 2) CL plus community days (CDs), a community event with structured dialogues on MCH/PMTCT and provision of health services;
Arm 3) CL plus CDs and male and female MCH classes: four structured peer-led sessions. We report preliminary results on outcomes of increased proportions of HIV exposed infants (HEI) receiving HIV testing at 6-8 weeks, health facility deliveries, male partners tested.
**Methods:** Routine health facility data were collected prior to implementation (July 2013, Swaziland and Zimbabwe, January 2014, Uganda) and for each quarter through June 2015. We compared changes in proportions pre-implementation and the last quarter after implementation in the three arms using chi square tests for linear proportions.
**Results:** The interventions’ effects differed in the three countries. In Uganda, the proportion of HEI tested increased from 31% (56/182) to 48% (56/116), p< 0.001 in Arm 1, and in Arm 3 from 19% (20/106) to 43% (22/51), p< 0.001; male partners tested increased from 11% (224/2,067) to 22% (533/2,475) p< 0.001 in Arm 1 and 10% (71/728) to 15% (119/797) in Arm 3, p< 0.001. The proportion of women delivering in health facilities increased from 60% (1,252/2,083) to 94% (1,694/1,797) p< 0.001, Arm 1. In Swaziland the proportions of women delivering in a health facility increased in both Arm 1 and Arm 3-49% (160/325) to 81% (26 4/324) p< 0.001, and 50% (100/199) to 78% (153/195) respectively, p< 0.001. In Zimbabwe, the proportions of male partners tested increased in Arm 1 from 42% (66/159) to 73% (130/178), p< 0.001.
**Conclusions:** The CL and peer group interventions appeared to increase MCH/PMTCT services update and retention, with Uganda registering the most improvements. The CL plus CD intervention, Arm 2, appeared to have no effect on the outcomes.

## WEPDE0202

### THE IMPORTANCE OF INVOLVING YOUNG WOMEN LIVING WITH HIV IN SEXUAL REPRODUCTIVE HEALTH RESEARCH: INTERNATIONAL COMMUNITY OF WOMEN LIVING WITH HIV EASTERN AFRICA (ICWEA) EXPERIENCE

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**Background:** Almost 60% of new HIV infection among young people aged 15-24 occur among adolescent girls and young women (2013). Globally, 15% of the women living with HIV are aged 15-24, of whom 80% live in sub-Saharan Africa. Although young women living with HIV can have a role in ensuring that research in Sexual and Reproductive Health and Rights (SRHR) is relevant to their needs, they have historically not been targeted as research assistants and the benefits and opportunities of involving them are not well documented.
**Description:** The young women were engaged in multi stakeholder dialogue on SRHR violations. Experiences and lessons learnt involving women living with HIV as research assistants have been documented in a toolkit to inform future research. In April 2014 ICWEA involved young women living with HIV (15-30years) in a research "Violation of Sexual Reproductive Health Rights of women living with HIV in clinical and community settings in Uganda." ICWEA called for application for research assistants on list- servers and HIV civil society including youth focused organizations in 9 research focus districts. Thirty five young women living with HIV, were selected and underwent training in research methods, data collection and understanding SRHR.They participated in identifying research respondents, pre-tested research tools, collected and transcribed data, participated in report writing, validation and dissemination of findings. They were represented on the Advisory Board to the research.
**Lessons learned:** The process enhanced the capacity of the young women to engage in research and dialogue on SRHR violations. The process built confidence in the respondents, because research assistants were also women living with HIV and some spoke out for the first-time on sensitive issues such as forced and coerced sterilization. The young women got in-depth understanding of SRHR information and services to inform their own advocacy.
**Conclusions/Next steps:** Involving young women living with HIV as research assistants is beneficial for respondents of SRHR research and empowering to them. Population specific recruitment and capacity building strategies with greater gender consideration for young women living with HIV are important to ensure their involvement in research processes. Their experiences should be documented and shared to inform future researchers.

## WEPDE0203

### "WHEN YOU DON'T HAVE MONEY, HE CONTROLS YOU": FINANCIAL SECURITY, COMMUNITY SAVINGS GROUPS, AND HIV RISK AMONG FEMALE SEX WORKERS IN IRINGA, TANZANIA

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**Background:** There is a growing literature indicating the importance of financial insecurity as a structural driver of HIV risk behaviors such as unprotected sex including among female sex workers (FSW), who are at heightened risk for HIV infection across geographic settings.
**Methods:** A Phase II randomized controlled trial of a community-empowerment based combination HIV prevention intervention is being conducted in Iringa, Tanzania. Using baseline survey data from 254 FSW of an ongoing cohort, bivariate and multivariate logistic regression was conducted to examine the statistical association between community savings group participation and HIV protective behaviors. Iterative, semi-structured in-depth interviews were also conducted with 15 FSWs participating in community savings groups. Interviews were audiotaped, transcribed, translated from Swahili into English, coded and analyzed through thematic content analysis.
**Results:** Participants qualitatively described that immediate financial need inhibited their ability to refuse high-risk sexual behaviors such as sex without a condom and anal sex with clients. With insufficient capital to participate in formal banking, community savings groups were described as a mechanism through which FSW can securely save their money, and create a safety net they can utilize when they have immediate financial need, safeguarding against HIV risks. Quantitative analysis confirmed the women's qualitative narratives. Approximately 25% of the cohort participates in community savings groups. In multivariate analysis controlling for age, education, marital status, number of children, and length of time in sex work, participating in a community savings group was significantly associated with always using a condom with new clients (AOR 2.06 [95% CI 0.98-4.32]) and refusal of unsafe sex (AOR: 2.94 [95%CI: 1.33-6.49]), including when a client was unwilling to use a condom, requested anal sex, or was unwilling to pay the requested price. Savings group participation was also significantly associated with a lower odds of having reported an STI in the last 6 months (AOR 0.37 [95% CI 0.16-0.84]).
**Conclusions:** Findings demonstrate the promising role of community savings groups as a structural intervention to promote financial security and reduce HIV risk among FSW.

## WEPDE0204

### CHASING THE POSSIBLE: ARE WE THERE YET? INNOVATIONS IN TESTING TO END THE HIV EPIDEMIC IN NSW, AUSTRALIA

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**Background:** To achieve the ambitious targets for reducing HIV transmission set in the *NSW HIV Strategy 2012-2015*, NSW implemented a suite of innovations to facilitate increased HIV testing and better detect undiagnosed HIV infections among priority populations.
**Description:** In 2013-2015, NSW:
- Integrated rapid HIV testing (RHT) into the mix of testing options for gay men at public clinics across NSW.
- Delivered RHT at community sites and mobile locations through peer educators to increase accessibility.
- Facilitated service redesign in public clinics to increase targeted testing delivery.
- Realigned purchasing arrangements with non-government organisations to support Strategy targets.
- Established a 'real-time' monitoring and reporting framework to drive performance among key stakeholders.
- Delivered targeted marketing and communications activities, including the award-winning *Ending HIV* campaign.

**Lessons learned:** From January-September 2015, HIV testing in laboratories increased by 7%, 11% and 18% compared with January-September 2014, 2013 and 2012. From July-September 2015, there was a 68% increase in HIV testing at sexual health services among gay men compared with the same period in 2014. Self-reported HIV testing rates among gay men were the highest on record since 1996, with 76% surveyed in 2014 and 75% surveyed in 2015 reporting an HIV test within the last 12 months. From January-September 2015, there were 247 new HIV diagnoses in NSW; 7% less than the 2009-2014 average during the same period. Of these, 41% had evidence of early stage infection; less than the January-September 2009-2014 average of 46%.
**Conclusions/Next steps:** The combination of increases in HIV testing, a decrease in new diagnoses count and evidence for reductions in early stage diagnosis suggest a reduction in HIV transmission. The diversity and range of program efforts have contributed towards *NSW HIV Strategy* targets. However, further innovations are needed to meet the Strategy's goal of virtual elimination of HIV transmission by 2020, including the introduction of self-sampling testing to reach high-risk populations testing infrequently for HIV.

## WEPDE0205

### A COHORT STUDY OF COMMUNITY-BASED TEST AND TREAT FOR MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN: PRELIMINARY FINDINGS FROM THAILAND

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**Background:** HIV prevalence is high among men who have sex with men (MSM) and transgender women (TG) in Thailand. We explored the feasibility of the community-based Test and Treat strategy conducted by community-based organization (CBO) staff, to provide early case identification and immediate antiretroviral therapy (ART), for MSM and TG.

**Methods:** MSM and TG were recruited into an operational research cohort through 5 CBOs in Bangkok, Pattaya and Chiang Mai. Trained CBO staff provided same-day result HIV testing and sexually transmitted infection (STI) screening at baseline. At diagnosis, HIV-positive individuals had point-of-care CD4 count measurements and ART immediately offered. Data on demographic, risk behavior, knowledge and attitudes towards HIV and ART were collected using self-administered questionnaires.

**Results:** From May to November 2015, 1,029 participants were enrolled (71% MSM and 29% TG). HIV prevalence was 17% (20% in MSM: 8% in TG). HIV-positive participants were more likely to

i) have never had HIV testing (72% vs. 42%, p< 0.001);

ii) have been screened positive for STIs (58% vs. 29%, p< 0.001);

iii) perceive themselves to be moderate to high risk for HIV (62% vs. 48%, p=0.001);

iv) had unprotected sex in the past 6 months (87% vs. 78%, p=0.01);

v) have used amphetamine-type stimulants in the past 6 months (12% vs. 7%, p=0.02); and

vi) have low knowledge on HIV transmission routes (p=0.007).

Overall, 39% knew that ART could reduce HIV risk for their partners. Among 172 HIV-positive, 141 (82%) accepted immediate ART while 31 declined or did not start ART after more than 2 weeks of diagnosis. Binary logistic regression identified being sex workers or unemployed (OR 0.40, 95%CI 0.16-0.98, p=0.046) and having used illicit drugs in the past 6 months (OR 0.26, 95%CI 0.11-0.63, p=0.003) to be factors associated with unsuccessful ART initiation.

**Conclusions:** Implementing the community-based Test and Treat strategy by trained CBO staff is feasible in Thailand. Overall acceptance and success of immediate ART initiation were high. Additional efforts are needed to more effectively target HIV-positive MSM and TG who are unemployed, sex workers or using drugs in order to strengthen linkages to care and treatment.

Wednesday 20 July

# POSTER EXHIBITION

## VIRAL DIVERSITY, PHYLOGENETICS AND PHYLODYNAMICS

### WEPEA001

### GENETIC VARIABILITY OF HIV-1 IN THE NORTH-WEST OF BENIN, AFRICA: THE RISE OF COMPLEX CIRCULATING RECOMBINANT FORM 30_0206 (CRF30_0206)

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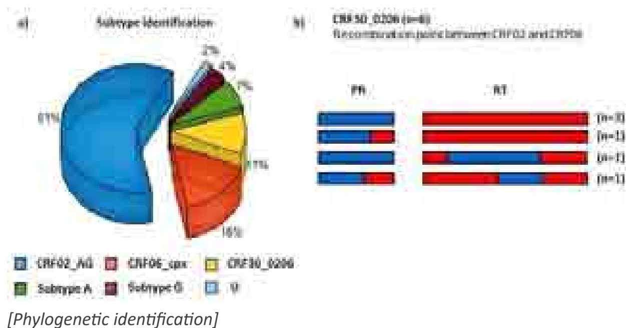
**Background:** West and Central Africa is characterized by the birth of the greatest number of circulating and unique recombinant forms (CRF and URF). Recent reports shows the rise of CRF30_0206, a more complex recombinant strain, identified for the first in parts of West Africa (Burkina Faso and Niger). Benin is a West African country with a relatively low seroprevalence and failing reports about the HIV subtypes and CRF circulating. The aim of this study is the evaluation of HIV subtypes and CRFs circulating in a rural area of the north-West of Benin, on the commercial route with Burkina Faso and the other neighboring country.
**Methods:** Plasma samples were collected from 57 HIV-positive patients associated with the Fatebenefratelli Saint Jean de Dieu Hospital in Tanguiéta, located in the north-West of Benin. A portion of HIV-1 reverse transcriptase (RT, codons 38-247) and protease (PR, codons 4-99) genes were sequenced. For phylogenetic analysis, a neighbor-joining tree was built with Tamura-Nei substitution model and 1000 replicates (Bootstrap value ≥ 70% was considered significant). Unknown sequences were examined using SimPlot (Similarity Plotting) and/or aligned with Basic Local Alignment Search Tool (BLAST) search engine.
**Results:** Phylogenetic analysis showed that CRF02_AG was predominant, followed by CRF06-cpx, subtype A and subtype G (Figure 1a). Finally, 6 (11%) sequences were included in CRF30_0206-like groups because they showed a different pattern of recombination in PR and/or in RT region or a suspected recombinant event in the region not sequenced (Figure 1b).
**Conclusions:** The study shows, for the first time, presence of a new circulating recombinant form (CRF30_0206) in Benin, probably linked to the contact of this area with the neighboring country.




*[Phylogenetic identification]*

### WEPEA002

### HIV-1 SUBTYPE-SPECIFIC CONSTRAINTS ON VIRAL ESCAPE FROM HOST CELLULAR IMMUNITY

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**Background:** HIV-1 mutational escape from cellular immunity is predictable based on host HLA. However, the extent to which viral genetic context influences HIV-1 escape pathways remains incompletely understood. We investigate this by studying HIV-1 sequences paired to host HLA genotypes from Uganda, where multiple HIV-1 subtypes and CRFs co-circulate in a single host population. We focused on the two predominant HIV-1 subtypes in Uganda, A and D.
**Methods:** We performed high-resolution HLA class I typing and HIV-1 Gag, Pol and Nef plasma RNA genotyping for 513 antiretroviral-naïve individuals from Kampala and Mbarara, Uganda. After exclusion of recombinant and non-subtypeA/D sequences, datasets of approximately N=200 (subtype A) and N=135 (subtype D) remained for analysis. First, HLA-associated polymorphisms were identified in each HIV-1 subtype via statistical association with phylogenetic correction. We then took the union of all HLA-associated polymorphisms identified and compared their strength of selection in subtypes A vs. D using a phylogenetically-corrected logistic regression approach to identify instances of differential selection between subtypes. Multiple tests were addressed using q-values.
**Results:** Of the 103 unique HLA alleles observed in study participants, none differed in frequency between subtype A and D datasets, consistent with co-circulation of multiple HIV-1 subtypes in a single population. Overall, 83 Gag, 198 Pol and 105 Nef HLA-associated polymorphisms were identified in subtype A and/or D at $q< 0.2$ (all $p< 9x10^{-4}$). Of these, 34%, 39% and 27% in Gag, Pol and Nef, respectively, exhibited significant differential selection *between* the two subtypes ($p< 0.05$; $q< 0.1$). For example, HLA-B*57:03 was strongly associated with selection of Gag-T242N in subtype D (Odds Ratio [OR]=250; $p=2x10^{-10}$), but not in subtype A (OR=1.8; p=0.8), a difference that was highly significant (inter-subtype comparison $p=8x10^{-6}$; q=0.001). This raises the hypothesis that the subtype A consensus proline at adjacent Gag codon 243, which differs from the consensus leucine observed in most other subtypes including D, is incompatible with T242N.
**Conclusions:** Our results support HIV-1 subtype-specific genetic constraints on immune escape and identify a large number of candidate cases for functional verification. Characterization of subtype-constrained HIV-1 escape pathways may help identify subtype-specific mutationally-constrained viral regions for vaccine design strategies.

### WEPEA004

### ANALYSIS OF INTRA-PATIENT, FULL LENGTH HIV *GAG* SEQUENCES IDENTIFIES REGIONS OF VARIABILITY

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**Background:** HIV Gag polyprotein is central to assembly, budding, and maturation of HIV virions, and there is substantial interest in Gag as a therapeutic target. Previously, maturation inhibitors have been limited by natural polymorphisms in *gag*. A more comprehensive analysis of intra-patient *gag* genetic variation, including linkage analysis is essential to inform novel approaches to therapeutics. As a first step, we developed a new single genome sequencing (SGS) assay to analyze full length HIV *gag* to investigate intra-patient genetic variation, localize regions of variability, and determine linkage patterns.
**Methods:** Antiretroviral naïve individuals with detectable HIV RNA were recruited at NIH and Walter Reed National Military Medical Center and underwent phlebotomy. Plasma derived HIV RNA was subjected to cDNA synthesis and PCR primers were designed to amplify the entire 1.5kb fragment from upstream p17 through p6. SGS (9-21 sequences per patient) were aligned (CLUSTAL W), and subjected to phyloge-

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netic (MEGA) and population genetics (DNASP) analyses.
**Results:** Patients (N=22, median age 30 years, 37% non-white, median baseline CD4 =568 cells/µl, median HIV RNA =3.9 log10 copies/ml) were enrolled, and 181 sequences from 13 patients have been analyzed thus far (average: 14 sequences/ patient). Full length *gag* sequences were genetically diverse (average pairwise difference range 0.4% to 1.59%, one acute patient excluded). Although diversity was present throughout *gag*, most of the variation was attributed to p6. On the protein level, translated p6 sequences had significantly higher average pairwise difference (APD) compared to translated full length *gag* (1.7-fold p=0.041, Students t-test). Indels were common in p6, including PTAP duplications and contribute additional variability. Polymorphisms were common, (mean 45 segregating sites/patient dataset) but no significant linkage between *gag* polymorphisms was detected (Fisher's exact =NS, Bonferroni corrected ).
**Conclusions:** Intra-patient *gag* genetic diversity is substantial but overall variability is largely limited to p6. No significant linkage between polymorphic positions was detected, indicating that populations were in linkage equilibrium. Next generation sequencing approaches focusing on specific regions in *gag* will be useful in characterizing intra-patient diversity.

## VIRAL DYNAMICS AND FITNESS

### WEPEA005

### NATURAL VARIATION AND CO-VARIATION OF THE HIV-1 INTEGRASE IN DRUG-NAÏVE NEWLY DIAGNOSED HIV-1 INFECTIONS IN GERMANY

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**Background:** The objective of our study was to analyse the natural evolution of the HIV-1 integrase. For the first time integrase sequences of HIV-1 infections newly diagnosed between 1986 and 2006 in Germany were analysed to determine time trends of natural variation and co-variation of amino acid substitutions in the viral enzyme prior to the approval of integrase inhibitors (INI) in 2007.
**Methods:** The population sequences of HIV-1 integrase (amino acids 1-278) were determined from 386 archived EDTA-plasma samples of newly diagnosed individuals (1986-2006). Analyses of amino acid substitution were restricted to subtype B strains (n=337). Resistance-associated mutations were identified according to the IAS 2014 list and the Stanford HIVdb genotype resistance interpretation. Time trends of variation were identified by linear regression examined by bootstrap distributions and corrected for multiple testing. Co-variation was assessed by mutual information values in combination with Jaccard index.
**Results:** Some established minor INI resistance mutations (T124A, V151I, K156N, T206S, S230N) and potential resistance mutations to new INI (T124N, V165I, V201I) were identified at overall frequencies >5%. The most prevalent polymorphisms (overall frequencies >10%) were E10D, E11D, S17N, V31I, M50I, I72V, L101I, S119P, T122I, T125A, M154I, G193E, D256E, and A265V. Time trends were identified for eleven amino acid substitutions, including four potentially resistance-associated mutations (L101I, T122I, V165I, V201I). Thirty-nine pairs of amino acid substitutions showed co-variation, of which eleven pairs included the (potential) INI resistance mutations E157Q, G193E, T122I, V165I, V201I, or N222K. Finally, 19 co-varying pairs contained amino acid substitutions that exhibited a time trend, including the potentially resistance-associated mutations T122I, V165I, and V201I as well as some of the most prevalent polymorphisms (E11D, I72V, M154V, A265V).
**Conclusions:** Detailed knowledge of the evolutionary potential of the polymorphic sites and resistance-associated positions of the HIV-1 integrase is important to understand the development of resistance in the presence of INI. An INI-independent epistatic association of resistance-related sites with secondary sites might increase the likelihood of INI-selection of resistance mutations. Taking into account the observed natural variation and co-variation in the HIV-1 integrase will contribute to improve resistance prediction algorithms and the preclinical development of new INI.

### WEPEA006

### IMPACT OF GAG-PROTEASE MUTATIONS ON VIRAL FITNESS AND DRUG SUSCEPTIBILITY IN HIV-1 SUBTYPE C INFECTED PATIENTS FAILING A PROTEASE INHIBITOR INCLUSIVE TREATMENT REGIMEN FROM DURBAN, SOUTH AFRICA

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**Background:** Virologic failure due to protease inhibitor (PI) resistance is increasing, even in the absence of mutations in protease (PR). Studies on HIV-1 subtype B attribute this to mutations in Gag, however information is limited for HIV-1 subtype C, the most prevalent subtype globally. We aimed to investigate mutations in HIV-1 subtype C full-length Gag-Protease and their impact on viral fitness and drug susceptibility.
**Methods:** Gag-Protease amplicons of 80 patients failing a PI inclusive treatment regimen were sequenced and co-transfected with pNL43Δgag-protease to produce chimeric viruses which were subject to: a replication capacity (RC) assay using a green fluorescent protein GXR reporter cell line and a phenotypic drug susceptibility luciferase-based assay. Associations of Gag-Protease mutations with RC and drug susceptibility were confirmed by site-directed mutagenesis (SDM).
**Results:** Eight known Gag RAMs (i.e. R76K, Y79F, V128I, A431V, K436R, L449F, R452K and P453L) and four novel Gag mutations, possibly associated with PI failure, (i.e. Q69K, S111C/I, T239A/S and I256V) were identified. Samples with PR RAMs (M46I, I54V, V82A and/or L76V) had a significantly lower RC than samples without PR RAMs (P< 0.0001). Samples with Gag RAMs showed no difference in RC compared to samples without Gag RAMs (P< 0.01). Samples with both PR RAMs and Gag mutations had significantly lower RC than samples with/without Gag mutations (p< 0.01). The A431V mutation was the only Gag mutation significantly associated with reduced RC. Interestingly, the Q69K novel gag mutation rescued viral replication and increased viral cleavage of samples harboring the A431V Gag RAM, without altering susceptibility to Lopinavir (LPV) or Darunavir (DRV). This was confirmed by SDM. All samples with PR RAMs showed reduced susceptibility to LPV and DRV whilst only certain combinations of Gag mutations, in the absence of PR RAMs, displayed reduced susceptibility to LPV and DRV.
**Conclusions:** Overall we identified novel mutations in Gag associated with PI failure. We showed that certain Gag mutations can rescue RC of viruses harboring Gag and PR RAMs and that viruses with certain Gag mutations can confer reduced susceptibility to PI's in the absence of PR RAMs. This data advocates for the inclusion of gag in PI resistance algorithms.

## HIV-1 SUPER-INFECTION/INTER/INTRA SUBTYPE CO-INFECTION

### WEPEA007

### HIV-1 GROUPS M+O DUAL INFECTIONS AND HIV-1/MO RECOMBINANT FORMS CIRCULATING IN CAMEROON

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**Background:** Cameroon is considered as the epicenter of HIV-1 group O. Therefore, the simultaneous presence of HIV-1 groups M and O in the country provides an ideal environment for HIV-1 groups M+O dual infections to occur and the emergence of HIV-1/MO recombinant forms. To date, no data on the prevalence of these forms are available. In this work, we determined the proportions of M+O dual infections and M/O recombinants forms in Cameroon and characterized genetic profile of the recombinants.
**Methods:** From March 2013 to June 2015, 275 HIV infected patients were included in the study based on an "In-house" serotyping test. Specific RT-PCR targeting the Prot, RT, Int and Gp41 regions of HIV-1/M and O were further performed. In the likelihood M+O dual infections and/or presence of M/O recombinant, a recombination point in the *vpr* gene was investigated. Genetic profile of recombinants was characterized by full length genome sequencing and genetic link with previous recombinants was investigated by phylogenetic and recombination analyses.

**Results:** Among the 275 patients, 47 were HIV-1/O mono-reactive, 199 HIV-1/M mono-reactive and 29 were M+O dual reactive. Mono-infections with HIV-1/O were confirmed by RT-PCR in 48 patients (17%) and HIV-1/M in 217 (79%). For 3 patients (1%) all RT-PCR were negative. M+O dual infections were identified in 4 patients (1.4%) and the presence of recombinants forms were confirmed in 3 patients (1%). The first recombinant form was associated with 'parental' strain HIV-1/M and two breakpoints were indentified (*vpu* and *LTR*). Two breakpoints were also present (*vpr* and *LTR*) in the two other recombinants but no parental strain was found. These two recombinants were identified in couple and the great similarity between the two viruses showed that both spouses were infected with a unique recombinant virus. The recombination patterns [M-O-M] were identical for the three recombinants described here but no link with previous recombinants was found.
**Conclusions:** Our results confirmed the co-ciculation of HIV-1/M+O dual infections and HIV-1/MO recombinants in Cameroon. Their distinct recombination profiles demonstrate the complexity of these recombinants. The transmissibility of an HIV-1/MO recombinant form described here point out the diffusion potential of such forms and emergence of CRF_MO.

## INTRINSIC CELLULAR DEFENCES AND RESTRICTION FACTORS

### WEPEA008

#### INTERFERON-INDUCED STERILE ALPHA MOTIF AND HISTIDINE/ASPARTIC ACID DOMAIN-CONTAINING PROTEIN 1 (SAMHD1) EXPRESSION IS MEDIATED BY MIR-181A

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**Background:** Human immunodeficiency virus associated neurocognitive disorders (HAND) is highly prevalent in the aging patient population. The pathogenesis of HAND is related to excessive secretion of interferon. Sterile alpha motif and histidine/aspartic acid domain-containing protein 1 (SAMHD1), a newly discovered human immunodeficiency virus-1 host restriction factor, has been found to be expressed in astrocytes and microglia, and to be regulated by microRNA-181a (miR-181a). As a negative regulator of interferon response, SAMHD1 is induced by interferon-γ and may be an important factor in HAND. However, the mechanism of interferon induction of SAMHD1 expression is unclear. We hypothesized that interferon induces SAMHD1 expression through JAK-STAT signaling pathways, which are mediated by miR-181a.
**Methods:** We examined the effect of interferon-α and interferon-γ on SAMHD1 expression and miR-181a levels in astrocytes and microglia,and then explored the mediation of miR-181a on SAMHD1 expression by over expression and inhibition of miR-181a. We also studied the role of JAK-STAT signaling pathway in SAMHD1 expression using specific inhibitor.
**Results:** We found that both isoforms of interferon increased SAMHD1 mRNA and protein expression. Interferon-α and interferon-γ also reduced levels of miR-181a, particularly in microglia. To determine whether interferon-induced SAMHD1 expression was mediated by miR-181a, we overexpressed or inhibited miR-181a in these cells and exposed them to interferon. We found that overexpression of miR-181a counteracted induction of SAMHD1 expression by interferon, and inhibition of miR-181a mimicked interferon treatment. Inhibition of JAK-STAT signaling pathways resulted in increased miR-181a levels and decreased SAMHD1 mRNA expression.
**Conclusions:** Our results suggest that both interferon-α and interferon-γ can induce SAMHD1 expression; this induction mechanism is mediated by miR-181a. MiR-181a is a key regulator of SAMHD1 and may become a new drug target for the treatment of HAND.

### WEPEA009

#### ENDOGENOUS TRIM5A FUNCTION IS REGULATED BY SUMOYLATION AND NUCLEAR SEQUESTRATION FOR EFFICIENT INNATE SENSING IN DENDRITIC CELLS

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**Background:** During retroviral infection, viral capsids are subject to restriction in the cytoplam by the cellular factor TRIM5a. For instance, rhesus macaque (RM) TRIM5a restricts HIV-1, SIVagm, and N-MLV, but not SIVmac, whereas human TRIM5a can block N-MLV and EIAV, but is less effective against HIV-1 (Bieniasz, 2004). However, while RM T lymphocytes efficiently block HIV-1 infection, we have previously shown that RM dendritic cells (DCs) lack TRIM5a-mediated restriction and are permissive to HIV-1 infection (Arhel et al., 2008). Recent work proposed that TRIM5a is a SUMO substrate and its restriction may be modulated by the SUMO machinery (Arriagada et al., 2011; Dutrieux et al., 2015). The aim of this study is to characterize whether TRIM5a SUMOylation participates in the permissiveness of DCs to HIV-1 infection.
**Methods:** To assess endogenous TRIM5a localization in PBLs and DCs from human and RM donors cells were co-labeled with the TRIM5a and GM-130, PML and Coilin antibodies. TRIM5a SUMOylation was investigated by gingkolic acid (GA) treatment, a SUMOylation inhibitor. The interferon (IFN) a and b, IL-6 and cGAS levels in DCs were assessed by qPCR after HIV-1, N-MLV and EIAV infection. The function of E3 SUMO ligases was investigated using stable RNA interference.
**Results:** In DCs, endogenous TRIM5a accumulates in nuclear bodies that partly co-localize with Cajal bodies in a SUMOylation-dependent manner. Nuclear sequestration of TRIM5a allowed potent induction of type I IFN responses during infection, mediated by sensing of reverse transcribed DNA by cGAS. Overexpression of TRIM5a or treatment with the GA resulted in enforced cytoplasmic TRIM5a expression and restored efficient viral restriction but abrogated type I IFN production following infection.
**Conclusions:** Our results demonstrate that DCs TRIM5a is sequestered in the nucleus in a SUMOylation-dependent manner, favoring innate sensing of retroviruses in the cytoplasm by cGAS and thus an antiviral response. This work adds to our understanding of how retrovirus restriction factors are regulated.

## VIRAL ASSEMBLY AND MATURATION

### WEPEA010

#### HIV-1 CRF07_BC DISPLAYS SLOW DISEASE PROGRESSION AND DELAYED TYPE OF VIRAL BUDDING

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**Background:** HIV-1 circulating recombinant form 07_BC (CRF07_BC) has been reported to cause serious HIV-1 epidemics among injecting drug users (IDUs) in Asia. 7-13 amino-acid deletion in the $p6^{Gag}$ was illustrated . The deletion contains Alix binding domain. Alix is known to coordinate with ESCRT complex to promote HIV-1 budding through interacting to the HIV-1 $p6^{Gag}$. Limited information is available regarding the viral characteristics and impacts of HIV-1 CRF07_BC on disease progression and virus replication.
**Methods:** A cohort study was conducted to compare viral loads and changes of CD4+ cells
between patients infected with subtype B and CRF07_BC. Viral replication kinetics and virus release efficacy were performed to compare the differences between subtype B and CRF07_BC. Site direct mutagenesis was used to construct the 7 amino acid deleted infectious clone. Co-immunoprecipitation and total internal reflec-

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tion fluorescence(TIRF) microscope were used to evaluate the co-localization and interaction between Alix and truncated p6[Gag]. Immunoblotting and transmission electromicroscope(TEM) were used to observe the level of gp120 expressing level on virus envelope.

**Results:** Clinical results revealed that patients infected with CRF07_BC had significantly lower viral loads than patients with subtype B infection ($p< 0.01$). Replication kinetics between CRF07_BC and subtype B isolates indicate that CRF07_BC displayed significantly lower replicative capacity than subtype B. Results from virus release efficacy showed that CRF07_BC had lower virus releasing capabilities compared with subtype B strain($p< 0.05$). The NL4-3 mutant virus containing 7 amino-acid deletion(7d mutant) in p6[Gag] showed that this virus had significantly lower replication capacity, poorer protease-mediated processing and viral proteins production. Co-IP and TIRF microscope analyses showed that significantly lower co-localization and interaction occurred in NL4-3 7d mutant($p< 0.05$). TEM and immunoblotting showed that CRF_07 BC or NL4-3 7d mutant expressing higher level of gp120 on the envelope compared with subtype B and NL4-3 wild type viruses, respectively.

**Conclusions:** We conclude that patients infected with CRF07_BC dispayed significantly lower viral loads and higher CD4+ cells were due to 7 amino acid deletion on p6[Gag.] This study offers valuable information of virological characteristics of HIV-1 CRF_07 BC and dissects the possible mechanism of slow disease progression observed in clinical.

## Transcriptional and gene expression regulation (including regulatory genes)

### WEPEA011

#### Changes in Rev in HIV isolates from different clades have a significant impact on Rev/RRE functional activity

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**Background:** HIV-1 replication requires the nucleocytoplasmic export of intron-containing mRNAs which is ordinarily restricted. HIV accomplishes this by means of interaction of the viral Rev protein and an RNA secondary structure called the Rev Response Element (RRE). Recent work in subtype B from our group and others has demonstrated that the Rev/RRE regulatory axis functions as a rheostat to modulate viral protein production and replication. For this reason, we examined Rev/RRE functional activity in non-subtype B isolates.

**Methods:** Rev/RRE function was assayed using an HIV vector system. The vector transduces target cells to become resistant to hygromycin, and vector titer correlates with Rev/RRE function. Rev/RRE cognate pairs from two subtype A, two G, four CRF02_AG, and three B viruses were compared to determine the degree of activity variation. Artificial Rev/RRE pairs were also created to permit assay of Rev and RRE contributions to activity individually. Steady state levels of Rev protein were determined by Western blotting.

**Results:** The Rev/RRE functional activity of cognate pairs varied 24-fold from the least to most active virus. Large intra-subtype activity variation was observed for subtype G. An analysis was performed of the variation in activity of the individual RREs and Revs. There was no correlation between variation in RRE activity and that of the corresponding cognate pair. Rev activity did correlate closely with cognate pair activity ($R^2$=0.7248). Some artificial Rev/RRE combinations displayed greater functional activity than the original cognate pairs. There was no correlation between Rev expression and cognate pair activity ($R^2$=0.1174).

**Conclusions:** There is significant variation in Rev/RRE functional activity between non-subtype B HIV isolates. This variation tracks with Rev sequence but not with the RRE. Variation in Rev activity cannot be explained by differences in protein expression. Differences in Rev amino acid sequence and/or Rev/RRE intracellular complexes may be responsible for modulating the activity of this regulatory axis. Further research using non-subtype B viruses may further clarify the structural determinants of Rev/RRE activity and lead to greater understanding of the role of Rev/RRE in pathogenesis.

### WEPEA012

#### HIV-1 RNAs of the 1 kb class, splicing near the 3' end of the viral genome, lack coding capacity and enhance viral replication in peripheral blood mononuclear cells

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**Background:** HIV-1 RNAs have been usually classified in three major categories: unspliced (~9 kb); singly spliced (~4 kb); and doubly spliced (~2 kb). We recently described a fourth RNA class, of ~1 kb, using 3' splice sites near the 3' end of the viral genome, within Nef coding sequence, which was subsequently confirmed by other authors. Most of these RNAs potentially code for a 33-34 amino acid peptide in the Nef C-terminus. Here we examine whether the predicted peptide is expressed from 1 kb RNAs and whether they have an effect on viral replication.

**Methods:** Peripheral blood mononuclear cells (PBMCs) from 24 HIV-1-infected individuals were subjected to immunomagnetic separation to obtain $CD4^+CD25^+$ lymphocytes. HIV-1 1 kb RNAs were amplified from total RNA by RT-nested PCR using primers recognizing sequences near both viral genome ends. RT-PCR products were cloned and sequenced. Six clones from 1 kb RNAs were subcloned into a mammalian expression vector. Coding capacity was examined through transfection into 293T cells and Western blot with a monoclonal antibody targeted to the C-terminus of Nef. Effect on HIV-1 replication was examined by nucleofection of endotoxin-free plasmids with HIV-1 infectious molecular clone p89.6, with p24 antigen measurement in supernatant at 48 h.

**Results:** Clones from HIV-1 1 kb RNAs were detected in 9 (37.5%) of 24 individuals, in 7 of which they were more abundant than clones derived from doubly spliced RNAs. In 7 samples, sequences predicted coding for a 33-34 C-Nef peptide. However, in Western blot assays the predicted peptide failed to be detected in all tested clones. In nucleofection assays in activated PBMCs, three cloned 1 kb cDNAs enhanced HIV-1 production by factors of 2.7-7.1 compared to the control plasmid lacking 1 kb cDNA sequences.

**Conclusions:** HIV-1 1 kb RNAs splicing near the 3' end of the viral genome are frequently detected in vivo. Although most potentially code for a 33-34 C-Nef peptide, it failed to be detected in transfection assays, probably due to short upstream open reading frames. In nucleofection assays in PBMCs, they enhance HIV-1 replication. A mechanism by sequestering cellular miRNAs targeted to the 3'UTR of HIV mRNAs is proposed.

## Viral replication (including necessary cellular elements)

### WEPEA013

#### Metabolic dependency of HIV-1 replication: glucose and glutamine metabolism in HIV-infected primary CD4+ T cells

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**Background:** All viral replication cycles are dependent on the host cell for provision of biosynthetic and bioenergetic resources to support virion biogenesis. We investigated ways in which HIV-1 is dependent on, and modulates the activity of, host metabolic pathways. Activated CD4+ T cells are the primary target for HIV-1 infection and replication, and are characterised by high rates of glycolysis and glutaminolysis. Thus, we have investigated the role of glucose and glutamine in *in vitro* HIV-1 infection studies.

**Methods:** Metabolite profiling, heavy-isotope tracing and starvation/supplementation studies to investigate the metabolic activity of HIV-1 infected cells. Virus replication as well as cell proliferation and survival were assessed by a combination of ELISA, western blotting and flow cytometry.

**Results:** We observed elevated glycolysis in HIV-1 infected primary CD4+ T cells. By providing cells with the alternative carbohydrate galactose that cannot support glycolysis, we demonstrated that glycolysis is required for HIV-1 virion biogenesis and also predisposes infected cells to apoptosis. We furthermore investigated the role of glutamine in HIV-1 infection. We detected elevated levels of glutamine in HIV-1 infected compared with uninfected primary CD4+ T cells, but found no evidence that entry of glutamine into the citric acid cycle is significantly altered upon infection with HIV-1. Instead, we have preliminary data from NMR studies with C13-

labeled glutamine that the secretion of glutamine-derived metabolites is altered in HIV-1 infected cells.
**Conclusions:** We have demonstrated dependency of HIV-1 replication on glycolysis and glutamine metabolism as well as significant upregulation of glycolysis by HIV-1. Our data support the notion that HIV-1 infected primary CD4+ T cells operate at their maximum glycolytic capacity, which is also associated with elevated apoptosis. Our studies have the potential to reveal metabolic factors that might serve as novel drug targets for antiretroviral therapy. Furthermore, HIV-1 carriers that receive ART are at risk for developing metabolic syndrome, which will cause many of these individuals to receive additional therapy to relieve those symptoms in addition to their HIV infection. It will be important to gain an understanding how such metabolic interventions may impact on virus replication and reservoir establishment in the face of ART.

## WEPEA014

### DEPENDENCY OF HIV-1 REPLICATION ON AND VIRAL MANIPULATION OF THE GLYCOLYTIC METABOLISM OF ACTIVATED PRIMARY CD4+ T CELLS

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**Background:** HIV-1, like all viruses, relies entirely on the host cell to provide biosynthetic resources to complete its life cycle. Glycolysis converts glucose to pyruvate and lactate, generating biosynthetic components and a small amount of ATP. Our laboratory recently reported that HIV-1 infection increased flux through this pathway in primary CD4+ cells. This research is investigating the mechanisms of increased glycolytic metabolism in HIV-1 infection in primary CD4+ T cells.
**Methods:** To investigate the interplay between HIV-1 infection and cellular metabolism, primary CD4+ T cells were cultured in galactose or glucose, with galactose preventing glycolysis but maintaining cell viability and proliferation. Glucose uptake inhibitors were used to investigate the roles of glucose transporters in increased glycolysis and HIV-1 infection. Glycolytic flux were analysed in real-time with the Seahorse XF24 extracellular flux analyser. To determine the impact of alterations in the cells metabolic state upon HIV-1 virion production, p24Gag ELISA and TZM-bl assays were performed.
**Results:** Using galactose or glucose to manipulate the metabolic state of primary CD4+ cells, we demonstrate that HIV-1 replication is dependent on the ability of the host cell to engage glycolysis. In order to investigate if glycolysis is also required to support the integrity of assembling virions, we compared the infectivity of HIV-1 virions from cultures containing galactose or glucose. Virions harvested from cultures containing galactose were far less infectious than virions from cultures containing glucose, when normalised for equal amounts of the p24Gag protein. We furthermore investigated the increase in glycolytic flux that persists in HIV-1 infected primary cells compared with uninfected cells. By monitoring the activity of glycolytic enzymes in cell lysates, we observed that the activity of Hexokinase, which commits glucose to glycolysis, is increased in HIV-1 infected cells.
**Conclusions:** This work demonstrates the important interaction between HIV-1 and cellular glycolytic metabolism, in particular the reduced infectivity of virions in the absence of glycolysis. As we continue to characterise this and the mechanisms by which HIV-1 manipulates cellular metabolism, there is the potential to identify novel therapeutic targets.

## WEPEA015

### EXPLORING THE ROLE OF PHOSPHORYLATION AS REGULATORY MECHANISM INDUCED BY HIV-1 TO FAVOR VIRUS REPLICATION

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**Background:** It is known that HIV-1 regulates post-translation modifications to reprogram cellular signaling mechanisms. In particular, it has been demonstrated that HIV-1 modulates host cell phosphorylation pathways in order to favor its own replication (Wojcechowskyi JA et al, Cell Host & Microbe 2013). Here, we aimed to identify new host factors regulated by HIV-1 through phosphorylation, performing a global analysis of phosphoproteoma of both CD4+T cells from viremic naïve patients and healthy CD4+T cells exposed *in vitro* to viral antigens.
**Methods:** CD4+ T-cells were purified from PBMCs of 22 patients and 21 donors by negative immunomagnetic separation. Aliquots of healthy CD4+ T-cells were separately exposed to Tat, gp41/gp120, and Nef for a short time. After triptic digestion, we employed $TiO_2$ approach for enrichment of phosphopeptides. Quantitative proteomic analyses were performed using LC-MS/MS. Bioinformatics tools were employed for the determination of functional protein annotations and kinase/phosphatase/substrate associations.
**Results:** We identified 77 differentially modified proteins in patients compared to donors. In detail, 21 were newly phosphorylated, 35 dephosphorylated, while 19 showed modifications at different sites. Other two proteins showed differences in terms of localization and of total number of phosphosites. GO annotation established that platelet activation, poly(A)RNA binding, and extracellular exosomes were the most significant terms ($p< 0.05$). Interestingly, we observed an HIV-dependent phosphorylation of LMNB1, CETN2, LYN, VIM, FYN, and LFNA, known as potential substrates for phosphatases. As observed in patients, we revealed that Tat, and to lesser extent, Nef mainly stimulated a *de*-phosphorylation of target proteins. On the contrary, after gp41/gp120 exposure the majority of modified proteins showed an increase of phosphosites. Of particular importance, we found that Nef modulated PPP1CB phosphatase activity, essential for cell division, as well as activity of both SRRM1 and SRRM2, which are involved in numerous pre-mRNA processing events.
**Conclusions:** These findings highlighted the complexity of regulatory mechanisms induced by HIV-1, that, in particular, seems to preferentially trigger a dephosphorylation of target proteins to modify host microenvironment. This study also provided strong evidence for potential targets of new therapeutic approaches.

# VIRAL MECHANISMS OF HIV/SIV PERSISTENCE AND LATENCY

## WEPEA016

### HUMAN CYTOMEGALOVIRUS LATENT INFECTION MODULATES HIV RESTRICTION FACTORS IN CD34$^+$ HEMATOPOIETIC STEM CELLS

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**Background:** Individuals pre-exposed to human cytomegalovirus (HCMV) are more prone to HIV/AIDS disease progression but the reasons remain elusive. HCMV is a ubiquitous DNA virus that establishes natural lifelong latent infection in CD34$^+$ progenitor cells, where latency-specific viral genes modulate the host cell environment. Myeloid-lineage cells are known to resist replicative HIV-1 infection but recent studies provided evidence that latent reservoir may be established in CD34$^+$ myeloid progenitors. Therefore, an intricate relationship between HCMV and HIV-1 may occur in these cells.
**Methods:** CD34$^+$ cells isolated from healthy PBMCs were cultured in specialized media for ~30 days to allow expansion. Phenotype of CD34-subsets were assessed by flow cytometry before infection by HCMV. Establishment of HCMV latency and modulation of cellular responses were assessed using real-time PCR and plaque assay. X4/R5-HIV-1 was used to infect CD34$^+$ cells harboring latent HCMV and successful HIV-1 infection was examined for proviral DNA by digital PCR.
**Results:** Peripheral blood-derived (PB-)CD34$^+$ cells expanded up to 50-fold after 30 days in culture and retained early progenitor phenotype. The success of the establishment of HCMV latency was assessed by the detection of latency-specific transcripts UL111.5A, LUNA and UL138, lack of infectious virions, and the ability to reactivate upon co-culture with permissive cells. Importantly, latent HCMV infection downregulated the HIV-1 restriction factors SAMHD1, APOBEC3A/G, tetherin and Mx2 in PB-CD34$^+$ cells, which led to higher HIV-1 transcriptional activity and proviral DNA. Interestingly, these cells retained HCMV-induced downmodulation of MHC class II molecules and did not show differentiation tendency. Furthermore, we demonstrated that the expression of CXCR4 and CCR5 on CD34$^+$ cells were not altered by HCMV latent infection, but HIV-1 infection can be inhibited by antiretrovirals. Lastly, using a dual-reporter pseudovirus, infection of latent HCMV PB-CD34$^+$ cells resulted in increased active infection compared to mock cells.
**Conclusions:** This study describes an *in vitro* CD34$^+$ cell expansion culture model to study the establishment of HCMV and HIV-1 infections. Furthermore, we demonstrated that interplay exists between latent HCMV and HIV-1 infection in CD34$^+$ progenitor cells. These findings provide insights into the importance of pre-existing latent HCMV that affects HIV-1 infection outcome.

## CELLULAR AND TISSUE RESERVOIRS OF HIV/SIV

### WEPEA017

### MEMORY CD4+ T CELLS EXPRESSING HLA-DR CONTRIBUTE TO HIV PERSISTENCE DURING PROLONGED ART

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**Background:** Most measurements of HIV reservoirs are performed using "resting" CD4+ T cells depleted for cells expressing HLA-DR, which is considered an activation marker. However, little is known about the possible role of these cells in HIV persistence during ART. Here, we examine the contribution of memory CD4+ T cells expressing HLA-DR to HIV persistence after prolonged ART
(≥15 yrs).
**Methods:** Using LTR-specific qPCR, HIV RNA and DNA were quantified in memory CD4+ T cells expressing HLA-DR or not from 6 participants (P1-P6) on ART (≥15 yrs). Using single-genome/proviral sequencing, we characterized HIV-RNA/DNA (p6-RT) sequences from HLA-DR+ and HLA-DR- memory T cells, central (CM), transitional (TM) and effector (EM) memory T cells. Clonal expansions were defined as ≥2 identical sequences in phylogenetic trees.
**Results:** CD4+ HLA-DR+ and HLA-DR- memory cells contained a median of 3400 and 1000 HIV-RNA copies/million cells; and 36 and 60 HIV-DNA copies/million cells respectively, indicating the HIV transcriptional activity of HLA-DR+ cells is 6-fold higher than HLA-DR-. In participants treated during chronic infection, proportions of HIV-DNA clonal expansions were similar between HLA-DR+ and HLA-DR- memory T cells but HIV-DNA sequences from EM were more often identical to HIV-DNA sequences from HLA-DR+ memory cells (43% P1, 88% P2) than CM and TM (8-18% P1; 8-44% P2;
p< 0.0001-0.03). For one participant treated during acute infection, approximately 50% of the sequenced HIV-DNA from HLA-DR- memory T cells, CM, TM, and EM was defective (hypermutated and/or containing stop codons) and 26% of HIV-RNA from HLA-DR- memory T cells was defective. However, the amount of defective HIV-DNA and RNA from HLA-DR+ memory T cells was much lower (21% and 0% respectively).
**Conclusions:** These findings demonstrate that memory CD4+ T cells expressing HLA-DR contain persistent HIV-DNA and measurable HIV-RNA. Furthermore, these cells appear to contain more intact virus in the region sequenced than other cellular subsets. Therefore, measurements of the HIV reservoir during ART should include memory cells expressing activation markers, including HLA-DR. HLA-DR+ and EM cells had clonal expansions of genetically identical HIV-DNA, suggesting these cell subsets replenish the HIV reservoir through proliferation during prolonged ART.

### WEPEA018

### IS THE LUNG A SITE OF PRODUCTIVE HIV INFECTION THAT PERSISTS THROUGH ART?

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**Background:** HIV persistence is maintained by viral reservoir(s) discrete from the peripheral viral population. These viral reservoirs are particularly significant during the rebound of peripheral viremia following failure of anti-retroviral therapy (ART). Using Fluorescent *in situ* Hybridization (FISH)-based detection system we demonstrated previously that chronically HIV-infected, ART-naïve individuals have virus in their lungs that is present predominantly in alveolar macrophages (AM). AM are long-lived cells that could represent an under-appreciated reservoir for HIV.
**Methods:** HIV mRNA was detected by FISH. The ability of cells isolated by bronchoalveolar lavage (BAL) to generate infectious virus was probed using a novel reporter cell line (TZM-GFP) engineered to express GFP in a tat/rev-dependent manner. Further characterization of the co-receptor utilization of these viral populations is being conducted using the Affinofile cell line expressing differing levels of CD4 and CCR5.
**Results:** Here we show that AM from Malawian HIV-1-infected adults who had been on ART for extended periods (>4yrs) remain positive for HIV-1 *gag* mRNA. The majority of these individuals possess a plasma viral burden below the limit of detection. To probe for production of infectious virus, we used a reporter cell line that exhibited HIV tat/rev-dependent expression of GFP and was permissive to infection when co-incubated with HIV-1-positive human monocyte-derived macrophages (HMDM) in culture. When co-cultured with BAL cells from ART-naïve HIV-infected individuals we could readily detect infection of the fluorescent reporter cell line. Furthermore, we also demonstrated production of infectious virus in individuals on extended ART, who lacked peripheral viremia but had detectable HIV-1 *gag* mRNA in their AM. The further characterization of the cell-tropism and infectious characteristics of this viral population is currently under investigation using Affinofile cells under differing levels of induction of CD4 and CCR5.
**Conclusions:** AMs are extremely long-lived cells that are not killed by HIV-infection. This raises the possibility that HIV-1-infected AM could contribute to the maintenance of productive HIV infection that persists through long-term ART. Phenotypically, with respect to the evolution of viral diversity, drug suppression of transcriptionally-active, HIV-infected AMs by ART would be indistinguishable from the arrested genomic diversity observed as a result of latent infections.

## MEASUREMENT OF HIV/SIV RESERVOIRS

### WEPEA019

### QUANTIFICATION AND CORRELATES OF THE REPLICATION COMPETENT HIV-1 LATENT VIRAL RESERVOIR IN A VIRALLY SUPPRESSED UGANDAN POPULATION

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**Background:** HIV-1 persists in latently infected cells resting memory CD4+ T cells, which is the major barrier to curing infection. Previous studies have quantified this pool of latently infected cells in North Americans and Europeans; however, no study has quantitated the latent HIV-1 reservoir (LVR) in sub-Saharan Africans, who make up the largest population of HIV-infected individuals globally.
**Methods:** Peripheral blood was collected from 30 virally suppressed HIV-infected individuals from Rakai, Uganda, who initiated ART during chronic infection (nadir CD4 count 76-192 cells/μl) and had an undetectable viral load (≤40 copies/μl) for a minimum of 18 months before enrolment. Resting CD4+ T cells were isolated by negative selection. The quantitative viral outgrowth assay (Q-VOA) was used to determine the minimum frequency of latently infected cells with replication competent virus. Multivariate regression analysis was used to identify correlates of LVR size.
**Results:** The median LVR size in this Ugandan population was estimated to be 0.31 IUPM (Infectious Units per Million; range 0.037 - 8.15 IUPM). LVR size correlated positively with pre-ART viral load (p=0.003) and the number of times plasma viral load became transiently detectable (>400 copies/μl) after initial ART-suppression (p=0.031). The LVR correlated negatively with CD4:CD8 T cell ratio (p=0.032). LVR size did not correlate with age, gender, duration of viral suppression, nadir CD4 count or CD4 count at the time of Q-VOA. Analyses of viral subtype sequences isolated from the supernatants of p24+ wells of the Q-VOA are ongoing. Of note, the LVR size in this Ugandan population is over 3-fold smaller than that previously reported in Americans
(Margolis *et al.* JID 2015).
**Conclusions:** We report the first quantification of latently infected resting CD4+ T cells with replication competent virus in an ART treated, virally suppressed sub-Saharan African population. LVR size correlated positively with pre-ART viral load and transient viral detection, and correlated negatively with CD4:CD8 T cell ratio. LVR size was smaller than previously reported in an American population; further studies will determine if this is attributable to differences in sample handling or other covariates, such as viral subtypes.

# Targeting HIV persistence during ART (cure strategies)

## WEPEA020

### Therapy with the immunomodulatory agent pomalidomide does not lead to changes in HIV-1 viral populations *in vivo*

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**Background:** HIV persistence in long-lived infected cells represents a barrier to viral eradication. Immune modulatory agents (IMiDs), including pomalidomide, have marked effects on T cell function, including increased CD4/CD8 proliferation (Polizzotto et al 2014). However, the impact of IMiDs on the HIV reservoir is unknown. We evaluated the effect of pomalidomide on HIV reservoirs by characterizing the size, structure and dynamics of HIV populations in individuals undergoing pomalidomide treatment.
**Methods:** HIV-1 infected individuals (14 males, median age 49.5 y, median CD4=437 cells/µl), undergoing combination antiretroviral therapy with HIV RNA < 50 copies/ml, enrolled in an NCI trial (NCT01495598) of pomalidomide (5 mg/day for 21 days per 28 day cycle) for co-morbid Kaposi sarcoma were studied. PBMCs were obtained at study entry, following cycle 2, and at therapy completion (median 7 cycles). Levels of plasma RNA, peripheral blood mononuclear cell (PBMC) associated HIV DNA and RNA were determined (ddPCR, real time PCR), and HIV populations analyzed using single genome sequences obtained from the p6-RT region of PBMC-derived HIV DNA. Sequences were aligned (CLUSTALW), analyzed to characterize phylogenetic structure (MEGA), population shifts (geographic subdivision), and migration (Simmonds AI, Slatkin-Maddison in HyPhy).
**Results:** Participants tolerated pomalidomide without complications. Levels of plasma RNA, PBMC-associated HIV DNA (CAD) and RNA (CAR) at study entry (range < 0.5- 58, median 1.5 RNA copies/ml; range 102-2072, median 779 CAD copies/million PBMC; range 220-1600, median 470 CAR copies/million PBMC) did not undergo significant change (p=0.16 RNA, p=0.29 CAD, p=0.53 CAR) after two cycles of pomalidomide or at study completion (p=0.25 RNA, p=0.53 CAD, p=0.27 CAR). HIV populations were genetically diverse at baseline (average pairwise difference, range 0.5-2.4 %) and included identical sequences. No evidence of expansion, population shift, or migration of any viral population was detected during or following pomalidomide therapy; some identical sequences persisted throughout study period. Minor changes in populations were detectable by pairwise difference analysis.
**Conclusions:** Pomalidomide neither expanded nor reduced cell associated HIV populations. HIV clonal variants persisted during pomalidomide therapy, but clonal expansions were not detected. Our data suggests that the sole use of pomalidomide is not sufficient to alter the HIV reservoir and impact HIV persistence.

## WEPEA021

### Novel pathways of Tat expression identify new targets for reactivation of latent HIV-1

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**Background:** HIV-1 remains incurable due to the persistence of cells that harbour replication-competent virus in a non-productive state of infection. In this study, we characterised the expression of the HIV-1 Tat protein through a novel internal ribosome entry site (IRES) and explored its significance for reactivation of latent HIV. We examined the structure of chimeric cellular:HIV products in latently infected primary cells and assessed the properties of Tat translation from an IRES element within chimeric cell:*tat* readthrough transcripts.
**Methods:** HIV-containing RNAs were enriched from the CCL19-chemokine induced primary cell model of HIV-1 latency, as well as latently infected patient cells. Chimeric cellular:HIV RNAs were identified by RNA-Seq using Ilumina Mi-Seq. The Tat coding potential of these was investigated using expression plasmids and derivative lentivectors that contain either the HIV-$1_{NL4.3}$ Tat-86 coding exons in a conventional cap-dependent mRNA translation context, or in an unfavorable chimeric human growth hormone:*tat* mRNA context where Tat exons were embedded in the hGH gene, requiring Tat to be translated from an IRES underlying *tat*-coding RNA. The ability of both native and chimeric Tat-encoding RNA to reactivate latent virus was assessed by lentivector transduction of the latently infected T cell line, J-Lat10.6.
**Results:** In the CCL19-induced model of HIV-1 latency, chimeric messages represented ~0.2% of the RNA-Seq reads that were HIV sequences, and within these, several species of cellular:*tat* mRNA were detected. We showed that these are capable of Tat translation through the IRES element but with 6-fold lower efficiency than cap-dependent translation of Tat. The relative efficiency of Tat expression from the IRES was significantly increased during oxidative stress. HIV was also modestly increased in J-Lat10.6 cells after transduction with hGH-Tat lentivectors.
**Conclusions:** Primary T-cells latently infected with HIV contain cell:*tat* chimeric RNA that can translate HIV-1 Tat protein at low efficiency using an IRES element underlying coding exon 1. Tat expression from these mRNAs may be sufficient to weakly reactivate HIV from latency. Pharmacological approaches that increase the production of chimeric mRNA or Tat translation through its IRES may foster specific reactivation of latent HIV-1.

## WEPEA022

### Combinatorial CRISPR/Cas9 approaches targeting different steps in the HIV life cycle can prevent the selection of resistance

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**Background:** HIV presents one of the highest mutation rates, which in combination with a fast replication rate and a large population size accelerates viral evolution. Combination antiretroviral therapy can overcome the plasticity of the virus population and profoundly control viral replication. However, conventional treatment lacks the ability to stop viral production and clear the latent reservoir, which remains the major obstacle towards cure. Novel strategies, such as CRISPR/Cas9 genome editing, are required to permanently disrupt the HIV genome in the latently infected cells. In this study we investigated the ability of HIV to escape the CRISPR/Cas9 endonucleases targeting different steps in the viral life cycle.
**Methods:** The CRISPR/Cas9 system is comprised of a Cas9 protein, which in combination with a guideRNA (gRNA), is able to cleave a complementary dsDNA sequence. gRNAs were designed to target HIV-LTR, protease, reverse transcriptase, integrase and matrix. The CRISPR/Cas9 system was cloned in a lentivirus vector and transduced in SupT1 cells and the J.Lat Full-Length Clone 15-4. In the latter cells, impact of CRISPR/Cas9 on HIV reactivation was investigated. Transduced SupT1 cells were infected with HIV and viral replication and escape was monitored. On- and off-targeting efficiency (three genes per gRNA) and viral escape was assessed by deep sequencing.
**Results:** The CRISPR/Cas9 endonuclease induced efficient HIV genome editing (75%-99%), while off-target efficiency was < 0.9%. Subsequent TNFα-induced HIV reactivation was significantly reduced (single gRNA (40%-95%); two gRNAs (>98%)). We also demonstrated a significant reduction of HIV replication after six days of culture in SupT1 cells (single gRNA (82%-97%); two gRNAs (93%-99%)). Reduction in viral replication could be directly correlated to the number of CRISPR/Cas9 induced changes in the target sites (mostly indels). Independent of the potency of the gRNAs, selection of resistance was observed for all single gRNAs. However, all combinations of two potent gRNAs resulted in the generation of such a large number of CRISPR/Cas9 induced mutations (mostly indels) that viral replication could not be rescued after months of in vitro selection.
**Conclusions:** This is the first study to demonstrate that combining potent gRNAs targeting different steps in the viral lifecycle can prevent the selection of viral resistance.

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## WEPEA023

### ENHANCING HIV-1 VIRION TETHERING BY BST2/TETHERIN SENSITIZES PRODUCTIVELY AND LATENTLY INFECTED T CELLS TO ADCC MEDIATED BY BROADLY NEUTRALIZING ANTI-HIV ANTIBODIES

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**Background:** Increasing evidence supports a role of Antibody-Dependent Cell-mediated Cytotoxicity (ADCC) in controlling HIV transmission and disease progression. HIV has evolved several mechanisms to limit the recognition of ADCC-preferred Env epitopes on infected cells. We previously reported that HIV-1 uses Nef- and Vpu-mediated CD4 downregulation to efficiently reduce exposure of Env epitopes recognized by A32, a non-neutralizing, CD4-induced ADCC-competent antibody. Moreover, BST2 antagonism by Vpu limits A32 binding to gp120 on infected cells. BST2 is a type I interferon (IFN)-upregulated restriction factor that inhibits HIV-1 release by tethering nascent virions at the surface of infected cells. In this study, we hypothesized that broadly neutralizing anti-HIV antibodies (bNAbs) can also mount ADCC response and that in this context, physical tethering of virions by BST2 will promote ADCC.
**Methods:** Primary CD4+ T cells or T cells expressing only CD4, BST2, or both were infected with wild-type (WT) HIV or viruses deficient for Nef, Vpu or both proteins. Infected T cells were examined by flow cytometry for Env recognition by anti-HIV Env antibodies and susceptibility to ADCC.
**Results:** Using CD4+ T cells infected with CCR5-tropic laboratory-adapted or transmitted-founder HIV strains, we show that bNAbs efficiently induce ADCC, with those targeting the N332 glycan-V3 loop (*e.g.*, PGT121 or PGT126) or CD4-binding site (*e.g.*, 3BNC117) being most potent. For most bNAbs, BST2 counteraction effectively attenuates Env recognition and ADCC activity. Conversely, IFNα treatment enhances antibody binding to Env and potentiates ADCC in a BST2-dependent manner. Importantly, upon reactivation with HDAC inhibitors, latently infected T cells become potent targets of ADCC, with exogenous IFNα promoting further their elimination by bNAbs such as PGT121. Lastly, we find that modulating the levels of surface gp120 in a CD4-bound conformation, via Vpu and Nef, affects ADCC activity of only 17b, which binds the co-receptor binding site.
**Conclusions:** Overall, our study indicates that physical retention of HIV virions by BST2 at the cell surface sensitizes infected cells to ADCC by most classes of bNAbs. Strategies aimed at restoring the BST2 restriction represent a promising avenue to enhance clearance of latent viral reservoirs by ADCC in "Shock and Kill" cure approaches.

## WEPEA024

### SMALL MOLECULE INHIBITORS OF BAF: A NEW FAMILY OF COMPOUNDS IN HIV-1 LATENCY REVERSAL

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**Background:** New pharmaceutical strategies aimed at HIV-1 eradication have focused on molecules able to induce HIV replication from latently infected cells in order to render them susceptible to immune clearance. We investigated the activity of a new class of latency reversal compounds targeting BAF chromatin remodeling complex, a key player required for establishment and maintenance of HIV-1 latency and thus a promising molecular target for HIV-1 latency reversal.
**Methods:** Activation of latent HIV-1 following treatment with BAF inhibitors (BAFi's) was determined in cell line models of latency. Active compounds were further characterized at the molecular level by Western Blot, chromatin immunoprecipitation and FAIRE assays. Furthermore, cells were treated with BAFi's in combination with Prostratin and SAHA to determine whether BAFi's synergistically interact with known latency reversal agents (LRAs). Finally BAFi's activity was confirmed in primary models of latency and in cells obtained from virally suppressed HIV-1 infected patients.
**Results:** Latency reversal was strongly induced by 2 of the BAFi's included in the initial screening: Caffeic Acid Phenethyl Ester (CAPE) and Pyrimethamine (PYR). BAFi's reversed HIV-1 latency in cell line based latency models, in two ex vivo infected primary cell models of latency as well as in HIV-1 infected patient's CD4+ T cells, without inducing T cell proliferation or activation. Consistent with the observed latency reversal activity, treatment with BAFi's resulted in displacement of BAF complex from HIV-1 LTR as well as nucleosome remodeling in HIV-1 promotor region. Moreover, BAFi-induced HIV-1 latency reversal was synergistically enhanced upon treatment with the PKC pathway activator Prostratin and the HDAC inhibitor SAHA.
**Conclusions:** Molecules targeting the BAF complex reverse HIV-1 latency. For their activity in primary CD4+T cells and the synergistic interaction with known LRAs, BAFi's represent a promising family of molecules for inclusion in HIV-1 latency reversal regimens.

## WEPEA025

### NOVEL ACTIVATORS AND SUPPRESSORS OF LATENT HIV-1 FROM NATURAL PRODUCTS

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**Background:** Combination antiretroviral therapy (cART) durably suppresses HIV replication, but virus persists in cellular reservoirs. Latency reversal agents (LRAs) capable of reactivating HIV-infected cells may promote their elimination through host or viral cytopathic effects; an approach termed "shock-and-kill". However, current LRAs have shown limited clinical success, and no single LRA reactivates all latent cells. Conversely, "deep-latency" agents (DLAs) that promote long-term suppression of viral transcription that is refractory to subsequent reactivation are few in number and not yet assessed *in vivo*. Thus additional LRAs and DLAs are needed.
**Methods:** We examined 433 pure compounds from marine natural products and medicinal plants using J-Lat 8.4 GFP-reporter T cells containing an NL4.3Δenv/nef genome. Compounds that induced GFP in >5% of cells while retaining >30% cell viability at 5µg/mL were assessed for synergism with established LRAs. Compounds that blocked >50% GFP expression induced by 50ng/mL TNFα were assessed for antagonism of LRAs and ability to block a doxycycline-induced, Tat/TAR-deficient provirus. Select compounds were also tested in infected, primary resting CD4 T-cells using the Tat/Rev-Induced Limiting Dilution Assay (TILDA).
**Results:** We identified 8 new LRAs and 2 DLAs. Two novel phorbol esters induced GFP in 6.0 ± 0.6 and 6.9 ± 0.4% of cells at 0.03µg/mL, respectively, having ~10-fold less activity than PMA but ~100-fold greater than prostratin. Interestingly, these compounds originate from a plant used by African traditional healers to treat AIDS symptoms. Anthrone "p61" reactivated 9.9 ± 0.9% of cells at 5µg/mL and synergized with panobinostat (HDAC inhibitor), prostratin (PKC activator), and TNFα, suggesting a distinct mechanism of action. p61-containing plants are traditionally used to treat malaria, and p61 does not synergize with the anti-malarial artemisinin, suggesting related modes of targeting latent HIV. Two novel flavonoids at 5µg/mL suppressed >85% of GFP induction by TNFα, control LRAs, and production of Tat/TAR-deficient provirus, suggesting mechanism(s) distinct from previously-reported DLAs. Finally, both phorbol esters induced multiply-spliced vRNA expression in resting CD4 T-cells, while one flavonoid suppressed >80% of PMA/ionomycin-induced vRNA.
**Conclusions:** We identified potential new LRAs and DLAs of natural origin, including some supported by traditional medicine, that display synergy with established LRAs and/or distinct mechanisms of action.

## WEPEA026

### HETERODIMERIC IL-15 INDUCES EFFECTOR CELL ACTIVATION AND TRAFFICKING TO THE GERMINAL CENTERS OF SIV INFECTED MACAQUES

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**Background:** IL-15 stimulates the growth and activation of NK cells and cytotoxic lymphocytes. We have produced heterodimeric IL-15 (hetIL-15), the authentic form of IL-15 found in the circulation, and demonstrated that administration of hetIL-15 in macaques shows improved pharmacokinetics and pharmacodynamics compared to previous preparations of IL-15 without significant side effects. We have previ-

ously reported that therapeutic DNA vaccination together with pDNA encoding hetIL-15 in ART-treated macaques induces T cell responses able to control viremia after ART release.
**Methods:** Heterodimeric IL-15 (hetIL-15) was purified and tested in macaques upon subcutaneous (SC) administration. Phenotype and functional changes in lymphocyte subsets were monitored by flow cytometry and multiplexed confocal imaging (MCI).
**Results:** Treatment with hetIL-15 resulted in a significant increase of CD8+ effector T cells and NK cells with activated cytotoxic phenotype (Granzyme+). This expanded T lymphocyte population was distributed in the tissues and was also present in secondary lymphoid organs where an increased frequency of Ag-specific effector and total effector CD8 T cells could be observed by both flow cytometry and MCI. A subset of CD8 T cells present in lymph nodes expresses CXCR5, indicating ability to migrate into germinal centers where chronically infected CD4+Tfh cells reside. MCI confirmed the presence of effector CD8 in germinal centers and showed that these cells are cytotoxic (GrzmB+) and actively proliferating (Ki67+) in response to hetIL-15.
**Conclusions:** We are exploring the potential of hetIL-15 as a viral reservoir reducing agent in ART-treated SIV infected macaques therapeutically vaccinated with DNA. Effective levels of hetIL-15 can be delivered without side effects. hetIL-15 treatment in combination with DNA vaccination enhances access to virus sanctuary areas (germinal centers) and is a promising HIV eradication strategy.

## NOVEL ASSAYS OF HIV INFECTION

## WEPEA027

### MULTISITE EVALUATION OF THE BD FACSPRESTO™ CD4 COUNTER

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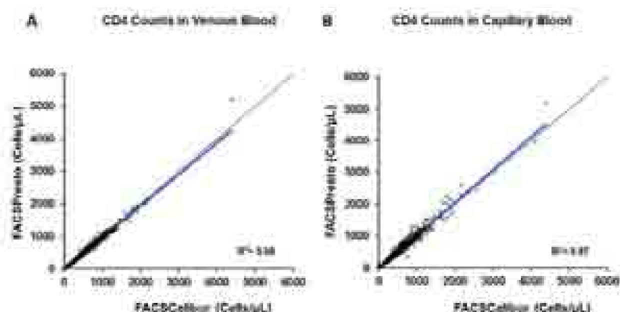
**Background:** The BD FACSPresto™ CD4 Counter is designed for resource-limited settings to improve HIV/AIDS patient care. The portable system features include on-board quality control and single-use disposable cartridges. It reports absolute CD4, %CD4, and hemoglobin (Hb) results from 2-3 drops of blood (capillary or venous) within 22 minutes with 10-sample/hour throughput. We conducted an evaluation at eight clinical sites in five countries: Kenya, India, Thailand, China, and USA, to evaluate performance for establishing claims.
**Methods:** Method comparison was conducted using capillary and venous samples from HIV-infected patients and uninfected individuals with and without concomitant medical conditions. For comparison, venous samples were tested using the BD FACSCalibur™ system with BD Tritest™ CD3/4/45 reagent, BD Trucount™ tubes, and BD Multiset™ software for CD4 and %CD4, and the Sysmex® KX-21N for Hb concentration. Controls were used for multisite reproducibility testing.
**Results:** Enrollment included venous (N=795) and capillary (N=691) specimens (1.27 male/ female ratio), including 57 from subjects 2-11 years old, 68 between 12-21, and 592 subjects 22 years and older. The data was pooled for analysis. Venous and capillary samples were analyzed independently. CD4 (N=716) Deming regression results in venous and capillary samples are shown. Deming regression gave slopes within 1.00-1.05 with $R^2 \geq 0.96$ for %CD4 (N=716), and within 0.99-1.06 with $R^2 \geq 0.89$ for Hb (N=720). The overall agreement at 200 CD4 cells/μL clinical cutoff in venous blood (N=85) was ≥98.5%, and ≥97.7% in capillary blood (n=67). Multisite reproducibility had total precision (%CV/%SD) for CD4 < 5.32, %CD4 < 0.59,
and Hb < 2.83.
**Conclusions:** The BD FACSPresto provides accurate clinical results for CD4, %CD4, and Hb from capillary or venous samples, and ease of use for monitoring of CD4 and enabling treatment access. This product was CE Marked (IVD Directive 98/79/EC) and WHO prequalified (2014), and received FDA clearance (2015).



*[CD4 Counts in Venous and Capillary Blood]*

## WEPEA028

### PILOT ASSESSMENT OF THE DIAGNOSTIC ACCURACY OF CEPHEID GENEXPERT HIV-1 QUAL FOR EARLY INFANT DIAGNOSIS

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**Background:** Implementation of early infant diagnosis (EID) of HIV infection requires availability of diagnostic tests that are affordable, simple to use and improve diagnostic and treatment outcomes by enabling earlier initiation of infected infants on antiretroviral therapy (ART). The Xpert HIV-1 Qual assay (Cepheid, CA, USA) is a novel platform licensed for diagnosis of HIV among children. There are limited reports on its accuracy in the field settings.
MSF-Belgium and Malawi Ministry of Health collaborate on implementation of EID in Nsanje district, southern Malawi. In preparation for a larger feasibility study on Xpert HIV-1 Qual implementation, we implemented a pilot assessment of accuracy of Xpert HIV-1 Qual for diagnosis of HIV infection among infants and children.
**Methods:** Pilot study included samples from HIV-exposed infants and children aged 6 weeks to 18 months having HIV-PCR testing for diagnosis or confirmation of HIV infection. Samples were diagnostic samples from Nsanje district that were tested using the Abbott RealTime HIV-1 Qualitative at Queen Elizabeth Hospital Laboratory located in Blantyre, Malawi.
Samples were selected retrospectively, and included consecutive tests performed between 4 December 2015 and 6 January 2016, and were limited to availability of the Xpert test cartridges (n=400). Laboratory tests were performed as per manufacturer instructions. Testing was done on heel-prick dried blood spots. Samples that were taken more than 2 months before the start of the study, and those not meeting quality criteria were excluded.
STATA version 10 was used to estimate sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of Xpert HIV-1 Qual.
**Results:** 378 samples were selected. 17/378 (4.5%) were HIV positive. Xpert HIV-1 Qual detected 16 out 17 HIV positive, and 358 out 361 HIV negative cases. The sensitivity of Xpert HIV-1 Qual was 94.1% (95% CI; 71.3-99.9%); and specificity 99.2% (92% CI; 97.6-99.8%), whereas PPV was 84.2% (63.2-94.3%)and NPV was 99.7% (98.2-100%).
**Conclusions:** Pilot assessment demonstrates high accuracy of Xpert HIV-1 Qual in diagnosing HIV among children less than 18 months. Further research is warranted to evaluate feasibility and effectiveness of decentralized Xpert HIV-1 Qual implementation at district level.

# SEX-BASED DIFFERENCES IN HIV

## WEPEB029

### GENDER-BASED DIFFERENCES IN ART OUTCOMES

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**Background:** Studies examining gender differences in antiretroviral therapy (ART) outcomes have produced varying results. We investigated gender differences in HIV clinical outcomes over a decade among urban and rural men and women in a HIV treatment program in KwaZulu-Natal, South Africa.
**Methods:** Patient characteristics and clinical/therapeutic outcomes, including mortality, were analysed prospectively among4043 patients (64% women) in the PEPfAR-funded CAPRISA AIDS Treatment Programme (CAT) from October 2004 to August 2013. The log-rank test was used to assess differences between men and women.
**Results:** At baseline, women had higher median CD4+ count (131 vs 113 cells/mm$^3$; p<0.001), higher median body mass index (BMI) (24.2 vs. 21.0 kg/m$^2$; p<0.001) and lower mean log viral loads (4.9 vs 5.0 copies/ml; p<0.001). In contrast, men presented more often in advanced WHO Stage 4 disease (14.3 % vs 9.7 %; p< 0.001) and with a history of past TB (34.4 % vs 26.3%; p<0.001).
During follow-up on ART, women demonstrated a better immunological response than men as they had consistently higher mean CD4+ counts at each clinical assessment (p=0.042). Viral suppression on ART, retention rates, TB incidence and ART regimen change rates did not differ by gender.
Overall all-cause mortality was 31% higher in men after adjustment for multiple co-variates including baseline CD4+ counts. The crude mortality rates were 6.9 per 100 person-years (95% confidence interval (CI): 5.9-8.0) in men and 4.4 per 100 person-years (CI: 3.8-5.0) (Crude IRR: 1.57; Adjusted hazard ratio: 1.31; CI: 1.07-1.61; p=0.01).
**Conclusions:** Women presented for care with higher CD4+ counts and lower viral loads, had consistently higher CD4+ counts throughout ART follow-up. Treatment response was similar in men and women. Men had more advanced disease at baseline; at comparable CD4+ counts and suppressed viral loads and a 31% higher chance of dying while on ART. These gender differences in disease stage at presentation and mortality outcomes are concerning. Effort needs to be directed toward encouraging men to test early and frequently, with effective linkage to care for early ART initiation and vigilance for opportunistic diseases with the aim of reducing mortality in men.

# DIAGNOSTICS OF CO-INFECTIONS (INCLUDING SYPHILIS, TB, CRYPTOCOCCUS, HEPATITIS B, C AND OTHER)

## WEPEB030

### SCREENING HIV-INFECTED PATIENTS WITH LOW CD4 COUNTS FOR CRYPTOCOCCAL ANTIGENEMIA PRIOR TO INITIATION OF ANTIRETROVIRAL THERAPY: COST-EFFECTIVENESS OF ALTERNATIVE SCREENING STRATEGIES IN SOUTH AFRICA

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**Background:** The South African government established a national cryptococcal antigenemia (CrAg) screening policy targeted at HIV-infected patients with CD4 counts <100 cells/µl not yet on antiretroviral treatment (ART). Two screening strategies are currently utilised: a reflex policy (RP) in which a CrAg test is performed using remnant blood samples from CD4 testing; and a provider-initiated policy (PIP) in which providers order a test after a patient returns for CD4 results. This analysis compares the costs and effectiveness of these two screening strategies.
**Methods:** We developed a decision-analytic model for the two policies in terms of screening and treatment costs (2015 USD) and health outcomes (years of life saved). We evaluated a base case using CrAg prevalence (4.6%) with other parameters based in part on data collected during screening projects in Gauteng, Free State, and Western Cape provinces. Unit costs for screening and treatment were based on National Health Laboratory Service estimates and published government data.
**Results:** Table 1 presents key unit costs for the analysis**.** Table 2 presents key results. In sum, per 100,000 CD4 tests, RP compared to PIP has higher screening costs but lower treatment costs and saves more life years. The incremental cost per incremental life year saved for RP compared to PIP is $3.49. Further results from sensitivity analyses leads to similar conclusions.

| | Rand | USD | Year of analysis is 2015. Exchange rate = 15.14 ZAR/USD. |
|---|---|---|---|
| Unit cost of CrAg test (reflex) | 75.00 | 4.95 | Unit cost based on NHLS estimate. |
| Unit cost of CrAg test (provider-initiated) | 93.75 | 6.19 | 25% above reflexive. |
| Unit cost (200 mg fluconazole tablet) | 0.86 | 0.06 | 2015 NDOH Master Procurement list. |
| Preemptive fluconazole treatment (outpatient) | 455.72 | 30.09 | Based on recommended regimen. |
| Hospitalization and treatment for cryptococcal meningitis | 29,535.00 | 1,950.10 | 15 days hospital; national average hospital costs per day from District Health Barometer report. |
| Post-hospital maintenance fluconazole treatment (outpatient) | 405.84 | 26.80 | Based on recommended regimen. |
| Other | | | |
| Life expectancy at death (death at age 35-39) | 32.6 years | | WHO Global Health Observatory. |
| Years of life saved per death avoided | 21.6 life years saved | | Calculated by authors using a 3% discount rate. |

*[Table 1. Unit costs and key model assumptions]*

| | Reflexive Policy (RP) | Provider-Initiated Policy (PIP) | Difference (RP - PIP) |
|---|---|---|---|
| Total number of patients missed (and incident CrAg-positive) | 98.4 | 145.8 | -47.4 |
| Total number of patients correctly identified for preemptive treatment | 64.8 | 17.5 | 47.3 |
| Total number of patients identified for preemptive treatment but CrAg-negative | 44.7 | 12.0 | 32.7 |
| Total number of patients screened | 9,500 | 1,536 | 7,964 |
| Total cost of screening (2015 USD) | $47,044 | $9,508 | $37,536 |
| Total cost of treatment (2015 USD) | $161,052 | $194,868 | -$33,815 |
| Total cost of screening + treatment (2015 USD) | $208,096 | $204,375 | $3,721 |
| Total lives saved from screening and treatment | 134 | 84 | 49 |
| Total years of life saved from screening and treatment | 2,891 | 1,824 | 1,067 |

*[Table 2. Summary results per 100,000 CD4 tests]*

**Conclusions:** A reflex screening strategy generally saves more lives than a provider-initiated policy, with a very low cost per additional life year saved and could potentially be cost neutral.

## WEPEB031

### SOUND COLLABORATION BETWEEN HEALTH CENTRES AS STEPS TOWARD DECENTRALIZING ARV DISPENSATION: IMPACT FOR EASIER ACCESS TO ARV FOR MSM IN CAMEROON. THE CASE OF ACCESS CENTER, DOUALA

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**Background:** Since its creation in 2008, the Access Centre cares for MSM living with HIV. However those MSM depend on an Authorized Treatment Centres (CTA) for ARVs. In Cameroon in fact, ARVs are only available in such Centers. Therefore Access Center's beneficiaries had to go first to Access Center for the prescription and then to the CTA for the drugs. This double movement was causing several treatment in-

terruption and poor adherence among those MSM, because it took too much time and hassle, given the large number of people going to the CTA for ARVs. Beyond this, those MSM suffered from stigma at the level of CTA. These observations were made as the result of a systematic evaluation of adherence made by the management team of the Centre.

**Description:** To remedy this serious problem, we began negotiations with the CTA in order to increasingly facilitate the collection of ARVs. An agreement was reached so that we could go there to collect ARVs for all those who are in care at Access Centre. This took beneficiaries, a single trip to pick up their drugs at the Centre, instead of two. Thanks to an ongoing project, we are about to get permission to collect monthly all the ARVS we need for Access Center's beneficiaries.

Best of all, an agreement was reached to ensure that the annual physical identification at CTA for all those on ARVs, was done directly at Access Centre for its own beneficiaries. This was a great relief because each person had to wait for long hours or even two days before his annual identification is complete.

**Lessons learned:** Complaints about time consuming procedures are increasingly rare, and also the difficulties of drug adherence. We observed that the proportion of undetectable Viral loads rose from 56% to 80% before and after we started our collaboration with CTA about ARVs.

**Conclusions/Next steps:** We have in the near future to continue the process of becoming a fully autonomous center specialized forf MSM living with HIV.This will give MSM a unique opportunity to access global and stigma free care while keeping all chance to be retained under efficient care.

# OPPORTUNISTIC INFECTIONS (EXCLUDING TB)

## WEPEB032

### EVALUATION OF REFLEX LABORATORY CRYPTOCOCCAL DISEASE SCREENING, SOUTH AFRICA, 2012-2015

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**Background:** Screening for cryptococcal antigenemia is recommended to reduce mortality related to HIV-associated cryptococcal meningitis (CM). We evaluated a reflex laboratory-based cryptococcal antigen (CrAg) screening program that was implemented at 199 healthcare facilities in Gauteng and Free State provinces during September 2012 - August 2015.

**Methods:** Remnant plasma from any routinely-collected EDTA-blood sample for a CD4 count test, where the result was < 100 cells/µl, was tested with a CrAg lateral flow assay. Healthcare workers managed CrAg-positive patients using a standardized algorithm, including symptom screening and lumbar puncture (LP). At 114 enhanced surveillance (ES) sites, study nurses abstracted information on management of CrAg-positive patients from medical records. Screening data were merged with data from an established national CM surveillance program to determine patients with prior CM.

**Results:** Over 3 years, 50,324 of 50,327 specimens with a CD4 count < 100 cells/µl were tested for CrAg, including 7,658 specimens (15%) tested in duplicate. Of 42,666 unique patients, 667 (2%) had prior CM. Of the remaining 41,999, 1271 patients (3%) had new antigenemia. The number needed to screen to detect a case of new antigenemia was 33. Of 688 patients with new antigenemia at ES sites, 138 (20%) had no recorded follow-up visit. Of the remaining 550, symptom data were available for 539. Of these, 316 (59%) had headache and/or confusion; 223 (41%) were asymptomatic. LP was performed and results were available for 135 (25%) patients. Of these, CM was confirmed among 74% (68/92) and 26% (11/43) of symptomatic and asymptomatic patients respectively; 87% (69/79) received an amphotericin B-based regimen. Fluconazole was initiated among 88% (332/378) of all those with new antigenemia, where data were available (median time to fluconazole: 14 days [IQR, 5-27]).

**Conclusions:** In this reflex laboratory-based screening program, nearly all eligible patients were tested for CrAg. Redundant testing of the same patient was minimal. Screening enabled diagnosis of CM and detection of asymptomatic antigenemia. Of those with available data, the vast majority with CM received amphotericin B-based treatment, and asymptomatic patients received pre-emptive fluconazole. Improved linkage to care is needed to reduce the proportion of patients who did not return for CrAg results.

## WEPEB033

### OPPORTUNISTIC INFECTIONS AMONG HIV+ PEOPLE WITH CD4 COUNTS > 500/MM$^3$: A EUROSIDA STUDY

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**Background:** For reasons unknown, some HIV+ persons develop opportunistic infections (OIs) at high CD4 counts. We investigated determinants of OIs among persons with CD4 ≥ 500/mm$^3$ in a large international HIV cohort.

**Methods:** EuroSIDA participants were followed from the latest of 1/1/2001 or recruitment to last visit or death. Patient follow-up and events were censored when CD4 count was < 500/mm$^3$. Poisson regression determined factors associated with OIs. Three treatment categories were defined using time-updated cART and VL: off cART; on cART, VL < 400 (good response); or on cART, VL > 400 (intermediate response).

**Results:** Of 11,378 persons (median age 40y, median baseline CD4 589/mm$^3$, 73.3% male, 87.7% on cART and 77.1% VL < 400 at baseline), 336 persons developed 360 OIs during 64716 PYFU with CD4 ≥ 500/mm$^3$ (incidence 5.6/1000 PYFU [95% CI 5.0 - 6.1]). AIDS-cancers were the most common events, followed by fungal, bacterial, viral and protozoal OIs. After adjustment, those with any previous OI had an overall increased incidence of new OIs (aIRR: 1.96[1.54-2.50]), as did those with CD4 ≥ 500/mm$^3$ off cART (2.19[1.65-2.90] *vs* good response) and with intermediate response to cART (2.93[2.13-4.04] *vs* good response), anaemia (2.78 [2.21-3.49]), and current smokers (1.60[1.22-2.10]). After adjustment, a higher nadir CD4 was associated with a marginally significantly increased incidence of cancer and a lower incidence of viral OIs (Table). Other than viral or protozoal OIs, prior history of all types of OIs was associated with a new OI after immune recovery (Table).

| Opportunistic Infection (OI) (number of events) | % events occurring with nadir CD4 <200/ mm3 | Median (IQR) nadir CD4 (/ mm3) | Adjusted (a) Incidence Rate Ratios for new OI : Relationship with doubling nadir CD4 | | P-value | Adjusted (a) Incidence Rate Ratio for new OI : Relationship with prior diagnosis of different OIs | | P-value |
|---|---|---|---|---|---|---|---|---|
| AIDS-defining cancers (b) (n=80) | 41.3 | 242 (145 - 345) | 1.18 | 0.99 - 1.42 | 0.072 | 2.53 | 1.81 - 3.54 | <0.0001 |
| Viral (n=49) | 69.4 | 72 (49 - 230) | 0.88 | 0.77 - 1.01 | 0.062 | 1.45 | 0.93 - 2.26 | 0.10 |
| Bacterial (n=66) | 50.0 | 201 (135 - 300) | 0.99 | 0.85 - 1.17 | 0.94 | 1.93 | 1.36 - 2.73 | <0.0001 |
| Fungal (n=73) | 43.8 | 225 (120 - 328) | 1.15 | 0.96 - 1.37 | 0.13 | 1.38 | 1.00 - 1.90 | 0.049 |
| Protozoal (n=16) | 68.8 | 147 (56 - 240) | insufficient data | | | 1.11 | 0.60 - 2.02 | 0.75 |
| Other (n=10) | 60.0 | 100 (49 - 277) | insufficient data | | | 1.91 | 1.19 - 3.04 | 0.0068 |
| Fatal AIDS (c) (n=6) | 63.9 | 132 (52 - 266) | 1.02 | 0.89 - 1.18 | 0.74 | insufficient data | | |
| All (n=360) | 53.1 | 185 (74 - 137) | 1.02 | 0.94 - 1.10 | 0.63 | 1.96 | 1.54 - 2.50 | <0.0001 |

(a) Models adjusted for treatment category, current CD4 count, prior OI, prior non-AIDS event, anaemia and smoking status as time dependent variables. Anaemia was defined as a haemoglobin <14 mg/dl for males and <12 mg/dl for females. Treatment categories were defined as off cART; on cART, VL < 400 (good response); on cART, VL > 400 (intermediate response). (b) Kaposi sarcoma, non- Hodgkin lymphomas and cervical cancer. (c) Not included in any other category.

*[Relationship between nadir CD4, prior OIs and new OIs while CD4 > 500/mm3]*

**Conclusions:** A subset of HIV+ persons with CD4 ≥ 500/mm$^3$, particularly those with prior history of OIs and without good response to cART, remains at subsequent risk of OIs. Clinical scores to quantify individual risk of developing OIs after immune recovery are needed.

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## WEPEB034

### PATHWAYS TO CARE AND OUTCOMES OF PATIENTS WITH CRYPTOCOCCOSIS, GAUTENG PROVINCE, SOUTH AFRICA, 2015

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**Background:** We aimed to evaluate pathways to care prior to hospital admission and outcomes among patients with HIV-associated cryptococcosis in routine care in Johannesburg, South Africa.
**Methods:** Patients were sampled consecutively at five public-sector hospitals and were eligible for enrolment if they were ≥18 years old and admitted for amphotericin B-based treatment of an episode of laboratory-confirmed cryptococcosis (positive cryptococcal antigen or India ink or culture from cerebrospinal fluid, blood or other specimen). Demographic, health-seeking behavior and clinical data were collected using structured questionnaires. Patients were followed up for 12 weeks post-admission.
**Results:** From May through October 2015, 184 patients were diagnosed with cryptococcosis; all were screened for eligibility and 105 (57%) were enrolled. Of 68 patients with questionnaires, 36 (53%) were male with a median age of 39 years (IQR: 34-45). Among 62 patients with recorded HIV infection status, 59 (95%) were HIV-infected; 43 (73%) were diagnosed HIV-seropositive prior to admission. Of 60% (26/43,) who were antiretroviral treatment (ART)-experienced, 24 patients (92%) were on ART at admission; median duration on ART was 215 days (IQR: 50-383). In the 6 weeks preceding admission, headache was the most common symptom (48/58; 83%) followed by neck stiffness (44/57; 77%), fever (28/56; 50%) and confusion (25/58; 43%). Of 52 patients with data, 23 (44%) had first sought help at a public clinic, 11 (21%) at a private doctor, 9 (17%) at a public-hospital casualty, 4 (8%) at a pharmacist and 1 at a traditional healer. For 57 patients with data, the median number of healthcare contacts prior to admission was 2 (IQR: 1-3). Of 66 patients who were followed up during admission, 21 (32%) died in hospital; 23 of 45 survivors had a known 12-week outcome, 8 of whom died.
**Conclusions:** In this urban hospital study, almost all patients eventually diagnosed with cryptococcosis had had an outpatient healthcare contact prior to admission; a large proportion was already diagnosed HIV-seropositive and ART-experienced. More than a quarter sought private care first. Screening for cryptococcal antigenaemia in these settings has potential to reduce the high in-hospital and 12-week mortality associated with meningitis.

## WEPEB035

### OUTCOMES OF HIV-INFECTED PATIENTS WITH CRYPTOCOCCAL MENINGITIS IN LATIN AMERICA AND ONE US SITE

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**Background:** Cryptococcal meningitis (CM) is associated with substantial mortality. Timing of antiretroviral therapy (ART) represents a clinical challenge. Studies suggest that patients who receive early ART have higher mortality, but studies of CM in Latin America are scarce. We investigated mortality and timing of ART among patients with CM at 5 sites in Latin America and one in the U.S.
**Methods:** All HIV-infected patients enrolled between 1985-2014 at the Vanderbilt Comprehensive Care Clinic (VCCC-Nashville, TN, USA) and participating sites in the Caribbean, Central and South America network (CCASAnet) who had CM at age ≥18 years were included. Survival probabilities were estimated using Kaplan-Meier techniques. The odds of death for initiating ART within the first 2 weeks after CM diagnosis versus initiating between 2-8 weeks were estimated using a dynamic marginal structural model adjusting for site, age, year of CM, CD4 at CM diagnosis (and subsequent measurements), and route of transmission.
**Results:** 340 patients were included (Argentina 58, Brazil 138, Chile 28, Honduras 27, Mexico 34, VCCC 55). 42% died during the observation period. 124 (36%) patients had CM before they started ART; they had lower rates of mortality than those with CM after ART initiation (p< 0.001). The probability of survival was not statistically different between those who started within 2 weeks of CM vs. those initiating between 2-8 weeks (p=0.45). However, using the dynamic marginal structural model, the odds of death for starting ART < 2 weeks after CM were 2.33 [95% confidence interval 1.06, 5.13] times higher than for starting between 2-8 weeks.
**Conclusions:** Patients with CM have high mortality rates regardless of site. Those with CM after ART had worse outcomes. Similar to previous clinical trial data, our results suggest that mortality is reduced by delaying ART initiation to 2-8 weeks after CM diagnosis.

## WEPEB036

### HIV-ASSOCIATED CRYPTOCCOCCAL MENINGITIS IN BOTSWANA: NATIONAL INCIDENCE AND TEMPORAL TRENDS FOLLOWING ART ROLLOUT

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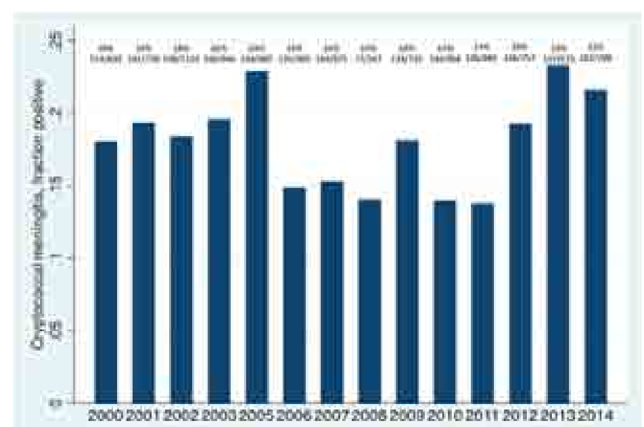
**Background:** HIV-associated cryptococcal meningitis (CM) causes hundreds of thousands of deaths annually in sub-Saharan Africa. Incidence should decline with greater access to ART, but this relies on early HIV recognition and linkage-to-care. We performed a laboratory-based surveillance study to determine the incidence of CM in Botswana, a country with a well-established ART program and high ARV coverage.
**Methods:** Data from all laboratories in Botswana performing cerebrospinal fluid (CSF) analysis were obtained for 2014 (paper registers and electronic records). Diagnosis of CM was confirmed by CSF microscopy/India ink stain, cryptococcal antigen (CrAg), and/or positive fungal culture. UNAIDS country-estimates for 2014 were used to calculate incidence of CM, stratified by age, gender, HIV-status and CD4 count. At the largest referral center in Botswana, Princess Marina Hospital (PMH), we evaluated temporal trends in CM diagnosis over a 15-year period (2000-2014).
**Results:** In 2014, 319 cases of CM were diagnosed in Botswana. Overall annual incidence was 15/100,000 persons (95%CI: 13-16/100,000). Incidence was 78/100,000 (95%CI: 68-87/100,000) in HIV-infected persons, and 249/100,000 (95%CI: 222-279/100,000) in adults (≥15 years) with AIDS (CD4 count < 200 cells/µL). 38% (121) of patients were female and the median age was 37 years (IQR 32-44 years) with only 3% (10/319) of cases in children (< 15 years). At PMH, there were 2047 cases of CM over 15 years, comprising 17.8% of all CSF samples in adults, making cryptococcal meningitis the most common laboratory-confirmed cause of meningitis (Figure).



*[Figure. Percentage of cerebrospinal fluid samples in adults positive for cryptococcal meningitis at Princess Marina Hospital, 200-2014]*

**Conclusions:** A high burden of cryptoccoccal meningitis is still observed in Botswana, with no evidence of a reduction in case numbers over the past 6 years despite widespread ART access. Expanded HIV testing to prevent late presentation to care, CrAg

screening in individuals with low CD4 counts, and HIV-program strengthening to prevent default from ART are required for prevention of cryptoccoccal meningitis and other opportunistic infections.

## WEPEB037

### ANTIRETROVIRAL THERAPY AS PREVENTION... OF INVASIVE PNEUMOCOCCAL INFECTIONS?

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**Background:** Despite antiretroviral (ARV) therapy, it is generally admitted that HIV patients remain at increased risk of pneumococcal infections (PI) and thus eligible to pneumococcal vaccination (PV). Most studies in this field, however, have been conducted before 2010, while the proportion of virologically controlled patients has dramatically increased these latter years, thanks to larger indications and more effective ARV regimens.
The aim was to reevaluate the current residual risk of PI and the PV coverage among HIV patients in France.
**Methods:** This retrospective study was conducted in two regional centers that overall reflect the current French HIV epidemiology. The total 1996-2014 cohort (30.371 patients) allowed to determine the incidence of PI. The 80 most recent cases of PI (2000-2014) were compared to 160 controls (patients without PI matched by date of HIV diagnosis) to analyze the residual risk factors of PI and the determinants of PV.
**Results:** From 1996-2014, 116 PI cases were observed among which 40 invasive infections (bacteremia or meningitis) with only 2 directly attributable deaths. The incidence of invasive PI among patients with comorbidities or uncontrolled HIV infection was 12 times higher than that of general French population (107 vs 9/100.000), while the incidence among virologically controlled patients without comorbidity was of only 7.6/100.000. The matched analysis showed that risk factors of PI among HIV patients were (a) detectable VL (p=0.003), and (b) other factors shared by the general population such as a BMI< 19 (p=0.005), addiction to alcohol (p=0.0004), tobacco (p=0.0003) or IV drugs (p=0.005), renal failure (p=0.01), or respiratory insufficiency (p=0.02). The PV coverage was low for controls (91/160, 57%) as well as for cases (44/80, 55%), with only 5 cases (6%) having been vaccinated before the first episode of PI. Determinants for PV coverage were regular follow-up (p< 0.001), acceptance of flu vaccine (p< 0.001) and higher count of CD4 T-cells (296, *vs* 152, p=0.03).
**Conclusions:** These data suggest that HIV infection is no longer *per se* a significant risk factor for invasive pneumococcal infections, raising the question to interrupt "systematic" pneumococcal vaccination (not well applied in real life) and prefer a strategy targeting the most at-risk patients.

# TUBERCULOSIS AND OTHER MYCOBACTERIA

## WEPEB038

### PLASMA INDOLEAMINE 2, 3 DIOXYGENASE ACTIVITY, A POTENTIAL BIOMARKER FOR TUBERCULOSIS

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**Background:** Tuberculosis (TB) is a global health challenge, especially in high HIV prevalence settings. To date, however, there is no validated biomarker for diagnosing TB in HIV infected patients. Indoleamine 2, 3 dioxygenase (IDO) is an immunoregulatory enzyme capable of modulating cell mediated immunity (CMI). IDO catalyses the breakdown of tryptophan (Trp) to its toxic metabolites collectively known as kynurenines (Kyn). Elevated IDO activity has been proposed as a prognostic biomarker for TB, however, there is no longitudinal data to assess the clinical significance of elevated IDO activity in HIV-TB co-infection. We investigated whether IDO activity, as measured by Kyn-to-Trp ratio, using UPLC-MS/MS can act as a biomarker for diagnosing TB in HIV infected patients who develop TB disease.
**Methods:** Kyn and Trp concentrations were measured simultaneously in plasma of 32 HIV infected patients who developed active TB during a longitudinal study and compared with 70 control subjects, age, sex and CD4 cell count matched, in the same HIV infected cohort who did not develop TB.
**Results:** IDO activity was significantly higher in TB patients than controls at the time of TB diagnosis
(P = 0.0001). At 6 months prior to TB diagnosis, IDO activity was significantly higher in those who developed TB than controls (P = 0.0001). Within 6 months of anti-TB treatment, IDO activity in TB patients declined to almost same levels as that of the controls. To evaluate diagnostic significance of IDO activity using a receiver operating characteristic (ROC) curve, we selected 0.70 as the optimal cut-off. At time of TB diagnosis using both laboratory confirmed and clinical TB as gold standard, IDO activity gave a diagnostic sensitivity of 100% and a specificity of 98.5% with Positive and Negative predictive values of 96.9% and 100% for detecting active TB cases.
**Conclusions:** Our results, demonstrate the plausibility of increased IDO activity as a biomarker of active TB in HIV positive patients. Further, IDO activity may be a useful biomarker for predicting progress to active TB disease within 6 months or monitoring response to TB treatment. Strengths of the study include inclusion of an HIV infected control group and a longitudinal study design.

## WEPEB039

### ASSESSMENT OF THE IMPLEMENTATION OF TB INTENSIFIED CASE FINDING (ICF) AMONG PEOPLE LIVING WITH HIV IN HIV CARE AND TREATMENT SETTINGS, NIGERIA

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**Background:** Tuberculosis (TB) is one of the most common causes of morbidity and mortality in people living with HIV (PLHIV). TB Intensified Case Finding (ICF) is a critical intervention for reducing TB mortality and ongoing TB transmission among PLHIV. We conducted an evaluation to characterize the implementation of various steps of the ICF cascade that consists of TB symptom screening, identification of PLHIV with presumptive TB, diagnostic evaluation for TB disease, diagnosis of TB disease, initiation of TB treatment and monitoring of each step of the cascade.
**Methods:** A probability-proportional-to-size sampling technique was used in the selection of 2,833 PLHIV ≥15yrs of age, not diagnosed with TB and retained in care as at end of September 2012 from 15 PEPFAR-supported HIV care and treatment facilities in Benue State, Nigeria. Patient charts and registers were retrospectively reviewed and data was abstracted on TB ICF cascade steps.
**Results:** Among the patients seen at the selected facilities during the study period, 2604 (91.9%), [95% CI: 86.5-98.5] were screened for TB at their last clinic visit. Of these, 60 (2.3%), [95% CI: 1.5-3.3.1] had a positive symptom screen and were classified as presumptive TB. 2540 (97.5%), [95% CI: 96.9-98.5] had a negative TB symptom screen, and the outcome of TB screening was not documented for 4 (0.15%) patients. Of the 60 presumptive TB cases, 26 (43.3%), [95% CI: 20.4-83.7] were evaluated for TB, 24 (40.0%), [95% CI: 16.4-79.7] were not evaluated, and data on10 (16.7%) patients were missing. Among patients evaluated for TB, 20 (76.9%), [95% CI: 58.6-100] were diagnosed with TB, 15 (75.0%), [95% CI: 72.4-100] were initiated on TB treatment, 2 (10.0%),
[95% CI: 0.0-27.6] were not, and data on 3 (15.0%) were missing.
**Conclusions:** Although TB screening was consistently conducted, the evaluation highlighted significant drop-offs in the ICF cascade in the evaluation of PLHIVs with presumptive TB and initiation of TB treatment for those with TB disease. Interventions that would strengthen referral, linkage and tracking of PLHIVs with presumptive TB should be implemented to ensure that greater number of PLHIVs with presumptive TB are evaluated for TB disease and all diagnosed cases initiated on treatment.

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## WEPEB040

### PREVALENCE OF TUBERCULOSIS AND HIV/AIDS CO-INFECTION AMONG HIV CLIENTS AT GLOBAL FUND SUPPORTED COMPREHENSIVE FACILITIES IN NIGERIA

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**Background:** Tuberculosis (TB) and HIV constitute major public health problems in Nigeria. The country has one of the largest burdens of both HIV and TB in the world. The prevalence of HIV among TB patients in Nigeria has been established to be 22% but the prevalence of TB among HIV clients in Nigeria has not been determined. This study was designed to determine the prevalence of TB among HIV clients in Nigeria.

**Methods:** Secondary analysis of data collected from the HIV/TB program in 241 Global Fund (GF) supported comprehensive facilities in Nigeria was done. From January 2013 to June 2015, 57,516 HIV clients were enrolled into care/treatment at the GF supported sites. Clients were screened symptomatically during clinic visit. Any clients that answered "yes" to at least one TB symptomatic questions was referred to the laboratory for TB test either by microscopy or genexpert. The TB co-infection among the HIV clients was the ratio of HIV clients with reactive tests to clients enrolled into treatment/care.

**Results:** In 2013, 1,622 out of the 19,527 HIV clients were diagnosed with TB and the co-infection rate was 8.31%. In 2014, 1,595 out of the 23,906 HIV clients were diagnosed with TB and the co-infection rate was 6.67%. In 2015, 1,075 out of 14,083 clients were diagnosed with TB and the co-infection rate was 7.6%. The overall co-infection rate 7.5% while the TB co-infection among HIV clients by the 6 geopolitical zones was North-West (5.1%), South-East (5.7%), North-East (5.9%), North-Central (6.8%), South-West (8.3%) and South-South (10.3).

**Conclusions:** The overall co-infection rate of TB among HIV clients was 7.5%. Screening of TB among HIV clients is of public health priority toward mitigating the spread of TB. There is the need to improve TB infection control at HIV setting to reduce TB co-infection.

## WEPEB041

### THE CHILDHOOD TUBERCULOSIS CARE CASCADE IN HIV-INFECTED AND UNINFECTED CHILDREN LIVING IN RURAL UGANDA AND KENYA

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**Background:** One of the first steps in achieving the World Health Organization's goal of Zero Childhood TB Deaths is to "know one's epidemic". Data on childhood TB in rural communities with generalized HIV epidemics are sparse. We sought to describe the incidence, case characteristics, and gaps in the childhood TB care cascade in rural Uganda and Kenya.

**Methods:** We retrospectively collected TB diagnosis and demographic data on children (age $\leq$15 years) and adults from the 2013 and 2014 TB treatment registries in 32 rural communities in Uganda and Kenya (N=334,512), that were participating in the SEARCH study (NCT:01864603). The SEARCH census data were used to calculate childhood TB incidence.

**Results:** In our study population the incidence of reported cases of childhood TB in Kenya was 20.9 and 10.5 per 100,000 in 2013 and 2014 respectively. In Uganda the incidence was 4.8 per 100,000 in 2013. 0 cases were reported in Uganda in 2014. From 2013 to 2014, children accounted for 13% (18/136) of all TB diagnoses in Kenya and 4% (5/121) of all TB diagnoses in Uganda. The proportion of overall TB burden found in children in Uganda is below the estimated proportion of 14-20% (Dodd et al. Lancet Global Health 2014). Childhood TB case characteristics in Uganda and Kenya were notable for 52% HIV infected, 43% under the age of five, 30% smear positive, and 47% with extra pulmonary TB. In Kenya, of the 18 reported childhood TB cases, 100% (18/18) were started on TB treatment, and 39% (7/18) had documentation of treatment completion. Age, gender, HIV status, and TB type did not predict odds of treatment completion. In Uganda, of the 5 reported childhood TB cases, 100% (5/5) were started on TB treatment, 80% (4/5) had documentation of treatment completion.

**Conclusions:** Over half of reported childhood TB cases are HIV infected. TB diagnosis in Uganda, treatment completion in Kenya, and reporting in both are weak links in the childhood TB care cascade in HIV infected and uninfected children. Analysis of programmatic TB surveillance data can identify local gaps in the TB care cascade and aid in targeting local interventions.

## WEPEB042

### ARE SMEAR-NEGATIVE, HIV-INFECTED, TB PATIENTS APPROPRIATE PARTICIPANTS FOR CLINICAL TRIALS OF NOVEL TB REGIMENS?

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**Background:** Clinical trials of novel anti-TB regimens assess treatment efficacy by measuring sputum culture conversion from positive to negative. Baseline positive sputum smears are used as a proxy for culture positivity and most trials of novel TB agents exclude smear negative patients. An unintended consequence of this is the exclusion of many HIV-infected patients from participation in such studies. Considering the high prevalence of HIV-TB co-infection in South Africa, we attempted to validate this practice by investigating the rates of baseline culture positivity and reduction in sputum bacillary load in HIV-infected, smear-positive or smear-negative adults with Xpert MTB/Rif-positive TB.

**Methods:** We prospectively recruited treatment-naive, smear-positive or smear-negative HIV-TB infected adults at two sites: Soweto and Cape Town. We assessed sputum bacillary load at baseline, and its decline on treatment, using: time to positive (TTP) in liquid culture (MGIT), colony forming units (CFU) on solid agar, and cycle threshold (Ct) on Xpert MTB/Rif. Sputum samples were collected to at least 56 days after initiation of TB treatment.

**Results:** We recruited 37 smear-positive and 40 smear-negative subjects with a median age of 35.8 years with no significant differences in age, CD4 count and gender ratio. A greater proportion of smear-positive than smear-negative individuals (61.1% v 38.9%) had cavities on chest x-rays. No smear-positive but 10/40 smear-negative patients were MGIT negative at baseline; the latter's median baseline Ct was 29.3 (IQR:26.8-31.1). At baseline, median TTP, log CFU, and Ct in smear-positive and smear-negative subjects, respectively were: 6 (IQR:45-8.0) v 13 days (IQR:10-14); 3.64 (IQR:1.53-4.88) v 2.48 (IQR:1.85-3.11); 18.0 (IQR:15.7-20.1) v 26.8 (IQR:25.3-29.1). By 14 days on TB treatment there were no differences between groups on these measures.

**Conclusions:** One quarter of smear-negative HIV-infected TB had baseline negative TB cultures on MGIT. However, after two weeks of TB treatment, all displayed similar trajectories of bacillary load decline. Our data support the case for including in clinical trials, HIV-infected TB patients, but to minimize early withdrawals of culture negative patients, we suggest including those whose Xpert MTB/Rif Ct is below 28.

## WEPEB043

### RAPID DIAGNOSIS, LINKAGE AND TREATMENT INITIATION OF PATIENTS WITH DRUG-RESISTANT TUBERCULOSIS IN SOUTH AFRICA: THE MILINC SOLUTION TO IMPROVE ACCESS TO CARE

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**Background:** Tuberculosis (TB) remains the leading cause of death in South Africa. Rapid diagnostic testing for TB with identification of rifampicin resistance is now standard of care. Despite this, linkage to care and subsequent treatment initiation lags and late presentation to care is noted as a prevailing reason for poor programmatic outcomes. We investigate a health system strengthening solution combining rapid diagnosis, laboratory interfaced m-Health smartphone application and linkage officer to shorten time from diagnosis to treatment initiation for drug resistant TB patients, 70% of which are co-infected with HIV.
**Methods:** We conducted a prospective observational cohort of persons presenting to primary health care clinics with symptoms of TB in peri-urban KwaZulu Natal, between June and November, 2015. Enrollment occurred by clinic staff into the mobile interface linkage to care (miLINC) application. A specimen bar code was placed on the sputum specimen bottle and was scanned directly into miLINC, creating an immediate direct patient-specimen match. The sputum specimen followed standard lab submission process and the results are transmitted from National Health Laboratory Service (NHLS) to miLINC. TB results are available immediately in miLINC for the clinic nurse, while linkage officers are simultaneously notified of rifampicin resistant patients for tracing and linkage.
**Results:** Three clinics enrolled 4,939 patients, 52.2% female. 3,887 (78.5%) had NHLS confirmed TB results; among the 1065 patients without results, the majority (56.5%) resulted from lab rejection. Among confirmed results, miLINC matched 2880 (74.1%); among unmatched, 86.6% was due to missing barcode data. All rejected specimens resulted in an immediate notification for repeat test. TB was identified in 292/2880 (9.9%) and rifampicin resistant TB in 38/292 (13%). 33/38 (87%) drug resistant TB patients were traced. The 5 missing included 3 deaths and 2 patients who could not be traced. Patients with drug-resistant TB were linked to care and initiated on drug resistant TB treatment with an average time of 2 days 23 hours.
**Conclusions:** The combined impact of rapid diagnosis coupled with miLINC resulted in linkage and initiation of drug-resistant TB treatment in < 3 days from diagnosis. m-Health is a feasible solution for linkage to care, even in resource challenged environments.

## WEPEB045

### INTERVENTION FOR PATIENTS INTERRUPTING RIFAMPICIN-RESISTANT TUBERCULOSIS TREATMENT FOR MORE THAN 2 WEEKS: AN INTERIM COMPARATIVE OUTCOME ANALYSIS FROM KHAYELITSHA, SOUTH AFRICA

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**Background:** Treatment for rifampicin-resistant tuberculosis (RR-TB) requires two years of treatment, often resulting in debilitating side effects. In South Africa, 30% of RR-TB treatment patients experience loss from treatment (LFT). We aimed to determine if a treatment interruption (TI) intervention could reduce LFT in the RR-TB cohort.
**Methods:** From September 2013, patients interrupting treatment for >2 weeks but < 2 months, where recall methods had failed, were identified by a lay counselor at clinic-level, who undertook the TI intervention. Structured support was provided at home to identify and overcome barriers to adherence and facilitate return to care. In this before-after study, we characterize outcomes of patients initiated on RR-TB treatment from September 2011 to March 2012 (comparison cohort) and September 2013 through March 2014 (intervention cohort) at seven Khayelitsha clinics. Interruption was identified from routinely recorded compliance records. Logistic regression analysis was used to calculate odds ratios, 95% confidence intervals and p-values for differences in 18 month treatment outcomes.
**Results:** Eighty two and 116 patients initiated RR-TB treatment in the comparison and intervention cohorts, respectively. HIV co-infection rates were similar (52 (63%) versus 82 (71%); p=0.28). There were 34 (41%) patients in the comparison cohort with interruptions identified compared with 30 (26%) in the intervention cohort (p=0.02); 26 (22%) were enrolled in the intervention. Among all patients, LFT at 18 months was higher in the comparison cohort than in the intervention cohort (p< 0.01). Before the intervention, the majority of interrupters experienced LFT (24, 73%), whereas only 9 (30%) experienced LFT after the intervention (p=0.0007) (Table 1).

| 18 month outcomes amongst interrupters: | Comparison Cohort N=33* | Intervention Cohort N=30 | Odds ratio (95% Confidence Interval), p-value |
|---|---|---|---|
| Still on treatment | 7 (21.2%) | 19 (63.3%) | 0.2 (0.07-0.6), 0.0025 |
| Treatment success | 1 (3.0%) | 0 (0.0%) | |
| LFT | 24 (72.7%) | 9 (30.0%) | 6.2 (2.1-18.3), 0.0007 |
| Death | 1 (3.0%) | 2 (6.7%) | 0.4 (0.0-3.6), 0.46 |

*[Table 1: Comparison of 18 month RR-TB treatment outcomes amongst interrupters in the comparison and intervention cohorts]*

Excluded *1 transferred out
**Conclusions:** While the risk of interruption appeared to be declining, the TI intervention is likely to have contributed to a significant reduction in the risk of LFT among patients experiencing treatment interruption. Allocating resources to intensify support for these high-risk patients is likely to reduce LFT amongst RR-TB patients.

## WEPEB046

### LINEZOLID FOR THE TREATMENT OF RIFAMPICIN-RESISTANT TB IN KHAYELITSHA, SOUTH AFRICA: STRATEGIES FOR IMPROVING ACCESS

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**Background:** Rifampicin-resistant TB (RR-TB) is a major source of mortality for HIV infected individuals South Africa, and treatment is successful in only half of those diagnosed and initiated on treatment. The use of new drugs— bedaquiline and delamanid—and repurposed drugs—linezolid (LZD) and clofazimine—have potential to improve outcomes. The cost of these medications, particularly LZD, has led to restricted use even in patients who might benefit. We have previously described improved outcomes for patients treated with LZD in Khayelitsha. Here we focus on strategies for reducing drug costs to improve access.
**Description:** A retrospective record review of patients receiving LZD through a programme supported by Médecins Sans Frontieres (MSF) combined with a descriptive analysis of drug costs over time was conducted.
**Lessons learned:** In total 128 patients in Khayelitsha were treated between 2011-2015. Between 2011 and early 2014, the average cost of LZD for MSF was nearly 65 USD (700 ZAR) per tablet, which translated into about 49,000 USD (520,000 ZAR) per two-year treatment course. In June 2014, MSF obtained permission from South Africa's Medicines Control Council to import a quality-assured generic at an 88% price reduction (8 USD, or ~85 ZAR) for use in Khayelitsha, under "Section 21" conditions. Section 21 allows for the import of non-registered medications for persons with serious diseases/diseases with public health implications. As a result of price reductions MSF procured LZD for 85 (66%) patients after June 2014 compared to 43 (34%) before June 2014. Nationally, LZD is not purchased on tender for TB in the public sector and costs remain high. Work is underway to support registration of generic forms of LZD in South Africa.
**Conclusions/Next steps:** Linezolid is important for improving outcomes among persons with RR-TB, however cost has hindered wider use. MSF employed a variety of strategies to eventually secure access to a more affordable, generic version of LZD in Khayelitsha. Wider use of Section 21 import waivers to obtain more affordable LZD, and fast-tracked registration of more quality assured suppliers in South Africa, could result in wider access nationwide and ensure that all patients with a clinical indication for LZD have access to this medication.

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## WEPEB047

### INCIDENCE AND RISK FACTORS OF POST ART TUBERCULOSIS IN ADULTS AND ADOLESCENTS ENROLLED IN INDIA'S NATIONAL AIDS CONTROL PROGRAMME, 2009-2014

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**Background:** Human Immunodeficiency Virus (HIV) and Tuberculosis (TB) co-infection is a major public health problem in India.Antiretroviral Treatment (ART) improves survival and quality of life of People Living with HIV (PLHIV). Reactivation or reinfection of TB after ART is not uncommon in PLHIV. Incidence of Post- ART TB is not clearly known.
This study objective was to estimate incidence of post ART TB and to identify risk factors for its development.
**Methods:** Retrospective Cohort study was undertaken using data from four ART centers of Gujarat state; of PLHIV aged ≥ 15 years and initiated on ART between January 1stand 31st December 2011. Occurrence of TB after initiation of ART was primary end point considered until 31st December 2014. We calculated cumulative probability of no post ART TB by Kaplan-Meier estimation and identified risk factors of post ART TB byadjusted odds ratio (AORs) using multiple logistic regression model.
**Results:** Of 1727 patients initiated on ART & followed up for median 40 months period (range: 0-49 months) follow-up period, 112 patients (6.5%) developed post ART TB. Total follow-up period was 4707 person years. Incidence rate of post ART TB was 3.4 per 100 person years. Mean time to 'No Post HAART TB' was 45.96 months (95% CI=45.46-46.46).PLHIV with mean age > 39 years (AOR 2.09, 95% CI 1.36-3.22, p-0.01) ; Males (AOR 1.68, 95% CI 1.07-2.64, p-0.03); those on Nevirapine regimen (AOR2.06,95% CI 1.32-3.23,p - 0.002) and had median weight ≤47 kgs (AOR 1.55,95% CI 1.03-2.36,p - 0.004) were more likely to develop Post ART TB.
**Conclusions:** Incidence of post ART TB in ART naïve PLHIV in India was 3.4 per 100 person years of follow up. PLHIV that are male, have low body weight, age nearing forty and started on Nevirapine based ART have higher risk of post ART TB. PLHIV imitated on Nevirapine based ART and those with low body weight at ART initiation may be prioritized for TB screening , initiation of INH prophylaxis may help reducing post ART TB incidence under programmatic conditions.

## WEPEB048

### LATENT TB INFECTION DIAGNOSTIC PERFORMANCE IN HIV-INFECTED WOMEN IS INFLUENCED BY PERIPARTUM STAGE

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**Background:** Maternal TB/HIV co-infection is associated with poor maternal and infant outcomes. Although HIV and pregnancy may affect latent TB infection (LTBI) diagnostic test performance, longitudinal studies of test performance in HIV-infected peripartum women in Africa are lacking.
**Methods:** In this prospective study, tuberculin skin tests (TST) and interferon gamma-release assays [QuantiFERON® (QFT)] were performed on HIV-infected Kenyan women during pregnancy and 6 weeks postpartum (excluding women QFT+/TST+ in pregnancy). We evaluated test agreement and characteristics associated with results.
**Results:** Between August 2014 and August 2015, we enrolled 100 women with median age 26 years (IQR 22-32), CD4 555 cells/µL (IQR 340-730) and gestational age 27 weeks (IQR 20-32). Most (88%) were on antiretroviral treatment (ART), including 37% initiated pre-pregnancy.
Among 96 pregnant women with QFT/TST results, prevalence of LTBI (QFT+ or TST+) was 37.0%, (95% CI: 27.4-46.6). More women were QFT+ than TST+ (34.4% vs. 13.5%, p=0.006); 10.4% were concordant positive and 49.0% concordant negative. Excluding 14 QFT indeterminate results, QFT/TST agreement was 56.9% (κ=0.13, 95%CI: -0.02-0.21). Among 78 women retested at 6 weeks postpartum, more women were QFT+ than TST+ (29.5% vs. 14.1%, p< 0.0001). Agreement was 80.3% (κ= 0.44 95% CI: 0.23-0.66), with 11.5% concordant positive and 68.0% concordant negative. Among women QFT+ at both time-points, most converted from TST- to TST+ (10/18). Most indeterminate QFT results in pregnancy became QFT+ postpartum (10/12). Three women without LTBI (QFT-/TST-) in pregnancy had postpartum test conversion (1 QFT+/TST+, 2 QFT+/TST-) for an incidence of 13.4/100 person-years.
LTBI in pregnancy was associated with older age (OR 1.1/year, 95% CI: 1.1-1.16, p=0.03) and pre-pregnancy ART (OR 4.6, 95% CI 1.9-11.2, p=0.001). Later gestational age was associated with lower likelihood of TST+ (OR 0.9/gestational week, 95% CI 0.8-0.9, p= 0.03). Postpartum LTBI was associated with household TB (OR 3.6, 95% CI: 1.1-11.3, p=0.05). Among women with serial positive QFTs, mean IFN-ɣ was higher postpartum (3.46 vs. 4.85 IU/mL, p=.007).
**Conclusions:** QFT was more sensitive than TST for LTBI detection among HIV-infected peripartum women. Reliance on TST would miss >50% of women who could benefit from isoniazid preventive therapy.

## WEPEB049

### NEW WHO ALGORITHM TO PREVENT TB MORTALITY IN SERIOUSLY ILL PATIENTS WITH HIV

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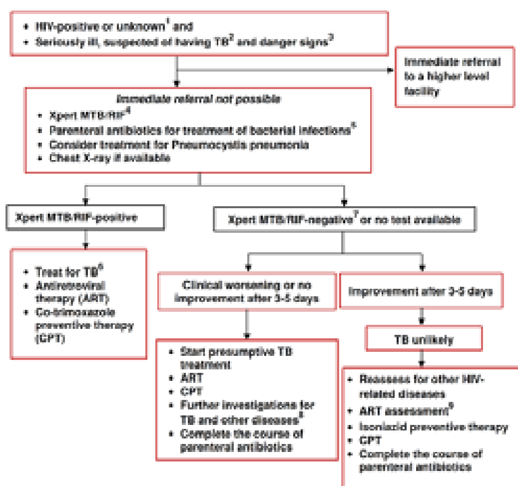
**Background:** Tuberculosis (TB) remains the most common cause of in-hospital death in people living with HIV (PLHIV), accounting for one third of all mortality. WHO updated the algorithm to prevent TB mortality among PLHIV who are seriously ill.
**Methods:** A systematic review was conducted to assess the role of presumptive TB treatment for PLHIV using eight electronic databases up to March 1, 2015. Randomized controlled trials (RCTs), single-arm trials and observational studies were considered. A systematic review of literature assessing the performance of lateral flow urine lipoarabinomannan assay (LF-LAM) was conducted using 11 electronic databases up to 2 February 2015. The quality of evidence was assessed using the GRADE system. The results were reviewed by a Guideline Development Group (GDG) consisting of international external experts.
**Results:** A systematic review of presumptive TB treatment identified 2563 citations and four ongoing trials. Although one RCT (REMEMBER) was identified, the study did not meet the operational definition of presumptive TB treatment (initiation of TB treatment for PLHIV in peripheral facilities based exclusively on clinical suspicion for seriously ill patients with respiratory distress based on the judgment of the clinician). The systematic review of LF-LAM identified increased sensitivity (56%) among inpatients with HIV having CD4 count≤100 cells/µl, with specificity at 90%. Due to limited evidence, the GDG made no new recommendation on presumptive TB treatment while noting that it should be provided for PLHIV who are seriously ill and presumed to have TB. The algorithm also conditionally promotes the use of LF-LAM for PLHIV who are seriously ill regardless of CD4 count.
**Conclusions:** The new WHO algorithm suggests provision of presumptive TB treatment for PLHIV who are seriously ill and presumed to have TB. Adoption of the new WHO algorithm is likely to minimize delay in TB treatment initiation and prevent early mortality among seriously ill PLHIV.




1 In all people with unknown HIV status, HIV testing should be performed according to national guidelines.
2 Suspicion of TB is defined by the presence of any one of the following symptoms:
- For adults and adults and adolescents living with HIV: current cough, fever, weight loss or night sweats.
- For children living with HIV: poor weight gain, fever, current cough, or history of contact with a TB case.
3 Danger signs include any one of the following: respiratory rate >30/min, temperature >39°C, heart rate >120/min and unable to walk unaided.
4 In patients suspected of having extrapulmonary TB (EPTB), extrapulmonary specimens should be obtained for Xpert MTB/RIF (cerebrospinal fluid, lymph nodes and other tissues. Xpert MTB/RIF has low sensitivity for pleural fluid and there is limited data for stool, urine or blood).
The urine lateral flow lipoarabinomannan (LF-LAM) assay may be used to assist in the diagnosis of active TB in seriously ill HIV positive adults and children, regardless of CD4 count.
If Xpert MTB/RIF is not available, conduct AFB microscopy. AFB-positive is defined as at least one positive and AFB-negative as two or more negative smears. Refer specimen for TB culture where feasible.
5 Antibiotics with broad spectrum antibacterial activity (except fluoroquinolones) should be used.
6 If Xpert MTB/RIF shows rifampicin resistance, treatment for MDR-TB should be initiated. If the patient is considered at low risk for rifampicin resistance, a second Xpert MTB/RIF test should be performed on a fresh specimen. Collect and refer a sample for culture and additional drug-susceptibility testing.
7 If Xpert MTB/RIF shows negative, the test can be repeated using a fresh specimen.
8 Further investigations for TB include chest x-ray, clinical assessment, a repeat Xpert MTB/RIF using a fresh specimen, and culture. If EPTB is suspected, extrapulmonary specimens should be obtained and sent for culture and abdominal ultrasound may be performed.
9 ART should be recommended to all adults, regardless of CD4 cell count or clinical stage.

*[Algorithm for the management of people with HIV who are seriously ill and suspected of having TB]*

## WEPEB050

### USE OF DETERMINE TB-LAM TEST IN HIV-POSITIVE ADULTS WITH LOW CD4 COUNT IN PROGRAMMATIC CONDITIONS

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**Background:** Determine TB-LAM is a new point-of-care test for diagnosis of tuberculosis (TB) in HIV-positive patients performed in urine. We assessed the diagnostic value of using LAM test in programmatic conditions.
**Description:** HIV-positive inpatients, 15 years old and above were prospectively recruited in Chiradzulu District Hospital regardless of their reason for admission and CD4 count. TB diagnosis was done through clinical assessment, sputum microscopy, Xpert MTB/RIF or chest X-ray. In addition LAM test was performed but results were not used for treatment decision.
Prior to using LAM test, training of laboratory technicians was carried out in one hour. LAM test was performed in the laboratory with no extra equipment or additional staff and with minimal supervision required.
**Lessons learned:** From August to December 2015, 190 patients were included in the study. Median CD4 count was 344 (IQR:166-469) cells/µl. In total, 189 (99.5%) patients provided a urine sample, 141 (74.2%) a sputum sample, and 133 (70.0%) had a chest X-ray. LAM results were available within 2 hours, microscopy and Xpert MTB/RIF within 2 days, and X-ray in average in 4 days. Agreement between two readers was 97.2% (kappa=0.96) for the interpretation of LAM result and 98.3% (kappa=0.96) for the test grade. In total, 56 (29.5%) had a LAM positive result, 53 (27.9%) an X-ray suggestive of TB, 13 (6.8%) a positive microscopy, and 15 (7.9%) a positive Xpert result. Forty-eight patients were started on TB treatment within 2 months. Of the 56 patients with a LAM positive result, 34 (60.0%) were not started on TB treatment using other diagnostic tools. Mortality at 2 months was 26.7%: 31.0% among those not on TB treatment and 16.7% among those on treatment. Mortality in LAM-positive patients was 28.6%: 35.7% among patients not on treatment and 21.4% among those on treatment.
**Conclusions/Next steps:** LAM test is easy to implement in programmatic conditions using a simple to obtain sample and providing quick results. In a context where there are difficulties to perform other diagnostic tests LAM may detect a non-negligible proportion of TB patients among very sick HIV-positive patients that otherwise would be missed.

## WEPEB051

### EVALUATING THE INCREMENTAL VALUE OF USING THE TB LAM TEST IN INTENSIFIED CASE FINDING FOR TB IN PEOPLE LIVING WITH HIV

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**Background:** The Swaziland National AIDS Programme and National Tuberculosis Control Programme have a joint goal of improving tuberculosis (TB) case detection in People Living with HIV (PLHIV). Urine TB lipoarabinomannan (LAM) test, which detects the LAM antigen, has potential of rapidly detecting TB and/or add value to the TB screening process. This Point-of-Care test has a potential of scaling up intensified case finding (ICF) including extra-pulmonary TB cases in PLHIV. To inform this we conducted a study on the feasibility and value of adding urine TB LAM test to the national screening algorithm.
**Methods:** PLHIV, aged ≥18, and not on TB treatment were consecutively recruited at three hospital-based ART clinics. All patients with presumed TB regardless of ART status were included. Sputum, urine and blood samples were collected for Xpert MTB/RIF and culture, determine LAM, and CD4 count respectively. Sputum induction was done for those unable to produce sputum. Sensitivity and specificity analyses were conducted using Stata 12.1. Logistic regression was conducted to identify significant determinants of true positive TB LAM.
**Results:** Of the 417 patients enrolled, sputum samples were obtained in 386 patients. The prevalence of TB was 10%. The overall sensitivity of TB LAM was 15.8% (95% confidence interval (CI): 6.0-31.3) increasing to 45% (95% CI: 16.7-76.6) for CD4 count < 100. The overall specificity was 96.3% (95% CI: 93.7-98.1). The overall sensitivity of Xpert MTB/RIF was 39.5% (95% CI: 24-56.6) and 63.6% (95% CI: 30.8-89.1) for CD4< 100. Among those unable to provide sputum spontaneously, the prevalence of TB was 12% and TB LAM sensitivity was 14.3% (95% CI: 0.4-57.90). True positive TB LAM was strongly associated with CD4 count< 100 [OR: 35.8, 95% CI: 3.5-358; p-value=0.003] and Pre-ART status [OR: 11.6, 95% CI: 2.2-60.5; p-value=0.004].
**Conclusions:** TB LAM may be used in a targeted approach to diagnose TB in patients who have very low CD4 counts (< 100 cells/ml) and more importantly in pre-ART. TB LAM may be used with added value for TB screening in presumptive TB cases who have dry cough. Xpert MTB/RIF diagnostic accuracy was less than expected and require further exploration.

## WEPEB052

### ENHANCING TB CASE FINDING AMONG HIV POSITIVE CHILDREN ATTENDING AN URBAN PAEDIATRIC AND ADOLESCENT HIV CLINIC IN UGANDA

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**Background:** In July 2013, the Uganda Ministry of Health introduced a revised TB screening tool adapted from WHO to intensify TB case finding in children, adolescents, and adults. The national recommendation is to screen all HIV infected patients for TB on each clinic visit and initiate Isoniazid Preventive Therapy (IPT) for those without TB while prioritizing children < 5 years with a history of TB contact. We examined the impact of the screening tool on the identification of presumptive TB, diagnosis of TB disease, and uptake of IPT among HIV infected children < 15 years.
**Methods:** We extracted data from an electronic medical record at the Baylor-Uganda clinic which is the largest paediatric and adolescent HIV clinic in Uganda. We analyzed individual patient data on TB symptom screening collected at the initial clinic visit before (April 2012 - March 2013: period 1) and after (April 2014 - March 2015: period 2) implementation of the screening tool. Children on TB treatment at the time of screening were excluded from the analysis. Data were compared using means and proportions.

**Results:** The proportion of children screened for TB increased from 83% (3673/4422) in period 1 to 95% (4167/4374) in period 2. (p < 0.05) We registered a seven fold increase in the proportion of children identified with presumptive TB in period 2 (1.6% (59) versus 10.9% (456)). The mean age for the children identified with presumptive TB was comparable for both periods (6.6 years (SD 5.0) versus 6.4 years (SD 4.0)). Majority of the children with presumptive TB in both periods were female (30 (62%) and 241 (51%) respectively). More children with presumptive TB were started on TB treatment during period 2 (51 confirmed and 88 clinically diagnosed TB) compared to period 1 (11 clinically diagnosed TB). More children were initiated on IPT during period 2 (3 versus 16 respectively).
**Conclusions:** The revised TB screening tool identified more children with presumptive TB and improved uptake of IPT. Its use should be scaled up in order to identify children with or at risk for TB.

## Other bacterial infections and parasitic infections (including malaria)

### WEPEB053

#### Latent *Toxoplasma* infection is associated with worse neurocognitive functioning in HIV-infected adults

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**Background:** HIV-associated neurocognitive disorders (HAND) are well-recognized complications of HIV-1 infection that can impede employment, activities of daily living, and ultimately survival. Antiretroviral therapy (ART) alone is often not sufficient to restore full cognitive functioning, suggesting that the cause of persisting neurocognitive impairment (NCI) may not be fully understood. Since latent *Toxoplasma* infection (LTI) may adversely impact brain function, we investigated its impact on neurocognitive impairment (NCI) in people living with HIV disease.
**Methods:** 263 HIV+ adults underwent comprehensive neurocognitive assessments and had anti-*Toxoplasma* Immunoglobulin G (anti-Toxo IgG) measured by qualitative and quantitative enzyme-linked immunosorbent assays.
**Results:** Participants were mostly middle-aged white men who were taking ART (70%). LTI was detected in 30 (11.4%) participants and was associated with a 67% increased relative risk of global NCI (57% LTI+ vs. 34% LTI-, p = 0.017) with delayed recall specifically affected (p < 0.01). In a logistic regression model of risk of NCI (overall p < 0.001), the probability of NCI increased with increasing CD4+ T-cell counts in LTI+ patients, whereas NCI was inversely related to CD4+ T-cell counts among those without LTI (LTI p = 0.021, CD4+ p = 0.001, and their interaction p = 0.019). A strong correlation between anti-Toxo IgG levels and global deficit scores (GDS) was also found. Biomarkers indicative of CNS inflammation did not differ between LTI+ and LTI- participants.
**Conclusions:** In this cross-sectional analysis of HIV-infected, predominately antiretroviral treated patients, LTI was associated with NCI especially in those with CD4 counts > 200. Higher levels of anti-Toxo IgG also correlated with risk of NCI. Longitudinal studies of patients before and after ART initiation could test our hypotheses that episodic cerebral inflammation is occurring in LTI and that immune reconstitution plays a role in the pathogenesis of cognitive impairment in patients with LTI and treated HIV infection. Interventional trials with existing or investigational drugs active against *Toxoplasma* would further strengthen our findings and could lead to new treatments for HAND in people living with LTI.

## Hepatitis (excluding hepatitis C)

### WEPEB055

#### Low prevalence of liver disease in treatment naïve HIV, HBV and HIV/HBV co-infected Tanzanians: a cross-sectional study

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**Background:** In sub-Saharan Africa, the burden of liver disease associated with HBV and HIV infection is largely unknown. We characterized liver disease using Aspartate Aminotransferase-to-Platelet Ratio Index (APRI) in patients with HIV, HBV, and HIV/HBV co-infection in Tanzania.
**Methods:** A cross sectional analysis of treatment naive HIV mono-infected (HIV+), HBV mono-infected (HBV+), and HIV/HBV co-infected (HIV+/HBV+) adults (≥18yrs) enrolled at Management and Development for Health (MDH) supported HIV and HBV treatment clinics in Dar es Salaam, was conducted. Risk factors associated with significant fibrosis (defined according to the WHO proposed low cut-off for significant fibrosis APRI≥0.5 (≥F2)) were investigated in bivariate analyses.
**Results:** 266 HIV+, 90 HBV+ and 29 HIV+/HBV+ patients were analyzed [females 221 (57.4%), median age 37.1 (IQR 14.3), BMI 21.8 (IQR 6.5)].
HBV+ patients were more likely to be male, younger, consume alcohol and have higher BMI's than HIV+ or HIV+/HBV+ patients. 61% HBV+ patients were classified as inactive carriers. HIV+/HBV+ patients were more likely to have HBV DNA levels ≥4.3 log10 IU/mL than HBV+ patients (45.0% vs. 15.2%; p< 0.01) and be HBeAg seropositive (31.3% vs. 8.2%; p< 0.01).
Median APRI was higher in HBV+ (0.36, IQR 0.14) and HIV+/HBV+ (0.31, IQR 0.38) patients compared to HIV+ patients (0.23, IQR 0.17) (p's< 0.05). A higher proportion of HIV+/HBV+ than HIV+ and HBV+ patients had APRI≥0.5 [HIV+/HBV+ (36.4%) vs. HIV+ (13.3%) vs. HBV+ (14.1%); p< 0.01]. In multivariate analyses, HIV/HBV co-infection (vs. HIV mono-infection) but not HIV or HBV mono-infection (vs. co-infection) was associated with APRI≥0.5 (OR 3.4, 95%CI 1.3, 9.2). Higher HIV RNA levels (OR 3.6, 95%CI 1.5, 8.3) and HBV DNA levels ≥4.3log10 IU/ml (OR 9.6, 95%CI 1.1, 61.0) were associated with APRI ≥0.5 in HIV+ and HBV+ patients, respectively.
**Conclusions:** Overall rates of significant fibrosis were low in this cohort of HIV, HBV and HIV/HBV co-infected Tanzanians. HIV/HBV co-infection was an independent risk factor for significant fibrosis compared to HIV and HBV mono-infection suggesting more aggressive monitoring of liver related complications in co-infected individuals is required. Further study is needed to determine the effects of HIV and HBV therapies on long-term liver disease progression in this setting.

### WEPEB056

#### Improved liver fibrosis scores in treated HBV/HIV co-infected patients in South Africa despite persistent immune dysregulation

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**Background:** HIV infection negatively impacts the natural progression of HBV infection. However, the effect of HBV on HIV progression is not completely understood. The aim of this study was to measure and evaluate the association between liver fibrosis and immunomarkers of activation and exhaustion in HIV and HBV co-infection.
**Methods:** Ethical approval was obtained to recruit 46 HBV/HIV co-infected; 47 HBV mono-infected and 39 HIV mono-infected age-matched participants from Tygerberg Hospital, Cape Town. All HIV-infected patients were on HAART for ≥3 months. Liver stiffness measurements were taken using the Fibroscan 402 (Echosens, Paris). Cell-based immunomarkers of activation and exhaustion were measured using multi-parameter flow cytometry of fresh whole blood. Soluble serum/plasma immune biomarkers were measured using ELISA and Luminex assays.
**Results:** There was increased expression of HLA-DR/CD38 and PD-1 on CD8 T lymphocytes in co-infected subjects compared to the other two groups (p<0.05). Soluble CD14 and Interferon-γ-Inducible Protein-10 (IP-10) was also significantly elevated in the plasma of co-infected patients. Co-infected subjects exhibited delayed immune recovery with lower CD4/CD8 T cell ratio; CD4 cell counts and more frequent HIV viremia (31% vs 15%) compared to HIV monoinfected participants (p<0.05). The HBV mono-infected group had the highest proportion of participants

with moderate/advanced liver fibrosis together with increased IL-1b, IL-1ra and basic-FGF compared to the other groups (p< 0.05).
**Conclusions:** There is persistent T-lymphocyte dysregulation and delayed immune recovery in HAART-experienced HBV/HIV co-infected patients. However this does not appear to be associated with severity of liver fibrosis in the South African setting. Moderate/advanced liver fibrosis in HBV-monoinfection may be indicative of inadequate access to screening and treatment of HBV.

## WEPEB057

### RESPONSE TO TRUVADA BASED CART IN HIV/HBV CO-INFECTED PATIENTS IN BOTSWANA

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**Background:** Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV) coinfection emerged as an important cause of morbidity and mortality. We determined the response to combination antiretroviral therapy (cART) in HIV/HBV coinfected versus HIV monoinfected patients initiating Truvada containing cART in Botswana.
**Methods:** A total of stored plasma samples from 300 participants enrolled in a longitudinal cART cohort were screened for Hepatitis B surface antigen (HBsAg), HBV e Antigen (HBeAg) from baseline to 24 months using serological assays. HBV DNA load was determined using Roche TaqMan RT-PCR. We assessed predictors of HBV status, HIV, HBV suppression using logistic regression techniques.
**Results:** Of 300 participants screened (9.3% [95% CI 6.3 - 13.2]), 28 were HBsAg positive and 5 (17.9%; 95% CI 6.1 - 36.9) were HBeAg positive. There was a reduced CD4+ T-cell gain (p = 0.002) but similar overall HIV viral load suppression in HIV/HBV coinfected compared to the HIV monoinfected (73.7% ;95% CI 71.1 - 76.4) for the HIV monoinfected versus (70.8% [95% CI 59.4 - 82.1]), p = 0.664. At 6 months, 10 out of 27 (37%; 95% CI (19.4-57.6)) had lost HBsAg whereas 3 of the HBeAg positive lost, HBeAg by 6 months while the other 2 remained HBeAg positive at 24 months. HBV viral load suppression increased with time on treatment 54% (95% CI: 33-74), 67% (95% CI: 46-87), and 75% (95% CI: 56-94) at 6, 12, and 24 months, respectively. There was a significant association between CD4+ T-cell count and HBV viral load suppression at 12 months (p = 0.039). Seventy-four percent of participants who had suppressed HIV also had suppressed HBV DNA level. HBV viral load was not associated with serum transaminases levels.
**Conclusions:** HIV/HBV coinfection resulted in a blunted immunological response to Truvada based cART in this cohort and about 25% of HBV infected individuals had detectable HBV DNA at 24 months. Screening for HBV before cART initiation and monitoring of HBV response could help in optimising therapy for HBV/HIV coinfected patients especially when switching to second line regimen which might not be as effective against HBV.

## WEPEB058

### PREDOMINANCE OF HEPATITIS B VIRUS GENOTYPE D IN HIV-1 SUBTYPE C CO-INFECTED PATIENTS WITH OCCULT HEPATITIS B IN BOTSWANA

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**Background:** Botswana is one of the countries in the world with high prevalence rates of HIV and Hepatitis B virus (HBV). Occult hepatitis B virus infections (OBI) is a major health problem especially in HIV infected patients. There are no data on prevalence and molecular characterization of OBI in Botswana. Here we determined the prevalence and molecular characterization of OBI in Botswana.
**Methods:** A total of 300 plasma samples from an HIV treatment cohort were screened for Hepatitis B surface Antigen (HBsAg) by ELISA and the HBsAg negative samples were screened for OBI using HBV viral load assay. Furthermore, genotyping of HBsAg and OBI positive samples was done using Big Dye sequencing chemistry and the HBV sequences were analysed for genotypes and escape mutations.
**Results:** The prevalence of chronic HBV (CHBV) was 9.3% [95% CI 6.3 - 13.2]) while 26.5% [95% CI 21.3 - 32.1]) of the HBsAg negatives had OBI. A total of 28 CHBV positive and 49 OBI positive samples were successfully genotyped. Amongst the CHBV, 24 out of 28 (85.7%) were predominantly genotype A whilst 36 out of 49 (73.5%) OBI positive samples were genotype D. Conversely 12 of them (24.5%) were genotype A and one sample had genotype E (2%). Amongst the OBI, there was a significant correlation between HBV plasma DNA levels of genotype A being higher with 67% having levels above 20IU/ml (IQR: 137.6(38.5,460.5) as compared to genotype D which had 22% having levels above 20 IU/ml (IQR: 44.8(26.2,138) (Fisher's exact=0.011). Furthermore, there was a higher number (17.9%) of escape mutations in CHBV samples than OBI (9.1%) samples, however the difference was not statistically significant (p=0.258).
**Conclusions:** The HBV genotypes found in this HBV/HIV coinfected cohort were A, D, and E. Genotype A predominated in the CHBV cases while genotype D was the predominant genotype in the OBI cases. There was no differential clustering of the HBV genotypes by CHBV or OBI status. Full genome sequencing and functional analysis of the mutations of the CHBV and OBI participants will help determine the mechanism responsible for OBI.

# HEPATITIS C

## WEPEB059

### LEDIPASIVR/SOFOSBUVIR FOR 6 WEEKS IN HIV-INFECTED PATIENTS WITH ACUTE HCV INFECTION

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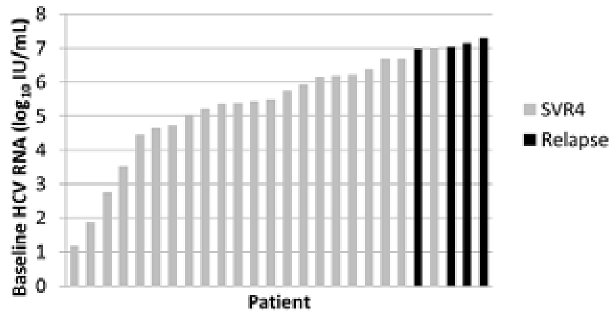
**Background:** There is no currently approved treatment for acute HCV infection. Guidelines recommend 24 weeks of interferon and ribavirin in HIV-coinfected individuals with acute HCV. Shorter duration all-oral therapy may offer a better-tolerated, more efficacious alternative. We evaluated the safety, tolerability and efficacy of 6 weeks ledipasvir (LDV)/sofosbuvir(SOF) fixed-dose combination in acute HCV genotype 1 or 4 infection in HIV-infected patients.
**Methods:** Patients with an acute HCV infection of < 24 weeks duration, per NEAT AHC guidelines were enrolled. Patients were required to either be receiving HIV antiretroviral (ARV) with HIV RNA < 200 copies/mL, or not on any HIV treatment with no plans to start. Enrollment of patients with active illicit drug use was permitted; acute opportunistic infections or HBV co-infection were excluded. Primary endpoint was sustained viral response defined as HCV-RNA < lower limit of detection 12 weeks after completion of therapy (SVR12).
**Results:** Twenty-six patients were enrolled. All were male, mostly Caucasian (92%), IL28B non-CC (54%), and receiving ARV therapy (96%). Median baseline HCV-RNA was 5.4 log10 IU/mL. Nineteen (73%) patients had HCV genotype 1a infection; 7 (27%) had genotype 4. All patients completed therapy. 22/26 (85%) achieved SVR4. Four (15%) patients relapsed. There was a strong relationship between baseline HCV RNA and treatment outcome (Figure). All patients (21/21) with baseline HCV RNA < 9 million IU/mL achieved SVR4. Treatment was well tolerated; 22/26 (85%) patients had an adverse event; the majority being mild or moderate. One patient had serious adverse event related to a motor vehicle accident and illicit drug use. No patients died or experienced HIV rebound. Post treatment week 12 data will be presented.
**Conclusions:** Six weeks LDV/SOF is effective and well tolerated in HIV-infected patients with acute HCV infection with baseline HCV RNA below 9 million. Acutely HCV-infected patients with higher viral load may require longer therapy..




[Figure: Baseline HCV RNA and Response for Individual Patients]

## WEPEB060

### RETREATMENT OF HCV/HIV CO-INFECTED PATIENTS WHO FAILED 12 WEEKS OF LDV/SOF

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**Background:** Ledipasvir/sofosbuvir (LDV/SOF) fixed-dose combination is highly effective and safe for genotype 1 HCV-infected patients with HIV co-infection. Of the 335 HCV/HIV coinfected patients enrolled in the ION-4 Phase 3 study, 3% relapsed (n=10) after 12 weeks of LDV/SOF treatment. These patients were eligible for a retreatment substudy that evaluated the efficacy and safety of LDV/SOF (90 mg/400 mg) plus weight-based RBV for 24 weeks.
**Methods:** Eligible patients were enrolled within 60 days from the time of confirmed virologic failure. NS5A and NS5B resistance associated variants (RAVs) were evaluated by deep sequencing prior to retreatment and at the time of virologic failure post-retreatment. The primary endpoint was SVR12.
**Results:** Nine of 10 patients were enrolled and completed treatment. All patients were black, IL28B non-CC, HIV suppressed on ARV regimens with a median baseline $CD4^+$ count of 785 cells/uL
(Q1, Q3 = 404, 971). The mean age was 57 years (range 35-65) and most were male (n=7), without cirrhosis (n=7), and had genotype 1a infection (n=7). The mean baseline HCV RNA was 6.2 log10 IU/mL (range 4.4-7.1). HIV ARV regimens included tenofovir+emtricitabine (TDF+FTC) with either efavirenz (n=7) or raltegravir (n=2). Prior to retreatment, 2 patients had no NS5A RAVs and 7 patients had high-level NS5A RAVs detected (see Table). The SOF-specific NS5B RAV S282T was not detected in any patients; 1 patient had L159F. Overall SVR12 rate was 89% (8/9): 1 patient relapsed. There were no treatment-emergent SAEs. Fatigue (n=6), cough (n=4), anemia (n=2) and arthralgia (n=2) were the most common adverse events. No significant lab abnormalities were observed and creatinine clearance was stable on treatment. No patient had confirmed HIV virologic rebound (HIV-1 RNA≥400 copies/mL).
**Conclusions:** Ledipasvir/sofosbuvir with ribavirin for 24 weeks was well tolerated and demonstrated that successful retreatment is possible in the majority of these genotype 1-infected, NS5A-experienced HCV/HIV co-infected patients.

| Genotype | NS5A RAVs | SVR12 |
|---|---|---|
| 1a | None | Yes |
| 1a | None | Yes |
| 1a | L31M (>99%), H58D (>99%) | Yes |
| 1a | Y93N (>99%) | Yes |
| 1a | L31M (>99%), Y93N (>99%) | Yes |
| 1a | Y93N (>99%) | Yes |
| 1a | L31M (>99%) | No |
| 1b | L31I (11.12%), Y93H (>99%) | Yes |
| 1b | L31V (>99%) | Yes |

*[Table: Baseline NS5A RAVs for 9 Patients Prior to Retreatment with LDV/SOF + RBV for 24 weeks and Virologic Outcome]*

## WEPEB061

### AIDS - DEFINING AND SERIOUS NON - AIDS - DEFINING EVENTS COMPLICATIONS IN HIV/HCV CO-INFECTED PACIENTS

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**Background:** Since many HIV-positive patients living with hepatitis C is elemental to know how both infections affect their quality of life and survival.
**Objective:** To evaluate complications related to AIDS and serious non-AIDS events (SNAEs) in HIV / HCV -coinfected patients compared to mono-HIV. Analyze its relationship with CD4, HIV viral load, HCV genotype and time coinfection and mortality and evolution of pregnancy in both groups.
**Methods:** A retrospective longitudinal observational analytic study was conducted, based on data from medical records of 111 HIV / HCV-coinfected patients compared with a control group of 111 HIV monoinfected, adjusted for sex, age and year of diagnosis of HIV, from the CAICI Institute of Rosario, diagnosed between 1985-2015.
**Results:** 33.3% of HIV / HCV coinfected and 23.4% of HIV monoinfected said at least one AIDS event. The average total number of AIDS events was higher in the first group (0.61 vs 0.36, p = 0.04), with a predominance of marker bacterial infections (OR: 2; 95% CI 1.11 to 3, 93) with a predominance of TB in coinfected group (p=0,01; $x^2$=6,06) (OR:4,5; 95% CI 1,2 to 16,4). SNAEs occurred in 10.2% of the coinfected and monoinfected 6.3%, but this difference was not significant (p = 0.29). However, the average of all events, either or not defining of AIDS, was higher in coinfected (0.75 vs 0.41;
p = 0.01), as mortality (OR 3.7, CI 95%: 1.01 to 13.69). CD4 count < 200 cells / mm3 had association with AIDS events in both groups (p < 0.01), but not with the SNAEs (p = 0.35). There was no significant difference in the time course of infections or HCV genotypes relationship with the presence of events. No vertical transmission of virus.
**Conclusions:** HIV / HCV co-infected patients had a higher total number of AIDS events, especially bacterial infections specially TB. Both the sum of events SNAEs as AIDS and mortality were higher in this group, which should be seen in the current strategies for management and treatment.

## WEPEB062

### HEPATITIS C PREVALENCE, VIRAL DIVERSITY AND SEVERITY OF LIVER DISEASE IN HIV PATIENTS IN PHNOM PENH, CAMBODIA

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**Background:** Little is known about the epidemiology of hepatitis C (HCV) in HIV patients in Cambodia. These data are critical for health resource planning, especially as efficacious and well-tolerated HCV antiviral treatments have become available. We document HCV prevalence and liver disease severity in one of the country's largest HIV cohorts.
**Methods:** All consenting adult HIV patients without HCV treatment antecedents and followed up in Sihanouk Hospital Center of Hope (Phnom Penh, Cambodia) are tested for HCV. Testing followed the CDC algorithm (Elecsys® Anti-HCV II immunoassay, followed by COBAS® AmpliPrep/COBAS® TaqMan® HCV Quantitative Test, v2.0, Roche Diagnostics). Liver fibrosis is evaluated by transient elastography (FibroScan®, Echosens) and genotype by Siemens Versant HCV Genotype 2.0 assay.
*(clinicaltrials.gov NCT02361541)*
**Results:** By 16 December 2015, 2534 of 3562 adults in the HIV cohort were enrolled. Median age was 43 years (IQR: 37-49), male/female ratio 0.77 and 98% were on antiretroviral therapy (median duration: 7 years). Key populations, including sex workers, men who have sex with men and injecting drug users were rare (N=14).
Hundred ninety-six (7.7%) patients tested positive for HCV antibodies; 86 (3.4%) were HCV-RNA positive, with viral load > 800.000 IU/ml in 62 and > 6 million IU/ml in 16 patients.
Co-infected patients were older (48 years, IQR: 43-53), male/female ratio was 0.65. Among sixty co-infected already evaluated for liver fibrosis, 31 (51.6%) had significant (liver stiffness ≥ 7.2 kPa) and 21 (35%) advanced liver fibrosis (≥ 9.5 kPa). Fourteen patients had measurements suggestive of cirrhosis. So far, genotype results are available for 40 patients. Nineteen (47.5%) had GT1 (1: 1a, 14: 1b, 4: not sub-typed), 1 GT2 (2.5%), 17 GT6 (42.5%) and 3 (7.5%) had an indeterminate result.

Two (2.3%) HCV/HIV co-infected tested positive for hepatitis B surface antigen (HbsAg), whilst HbsAg positivity was 11% among HIV mono-infected.
**Conclusions:** In this Cambodian HIV cohort with low additional risk profile, less than half of HCV antibody positive patients has an active HCV infection. The prevalence of chronic hepatitis C is 3.4%. Predominant genotypes are 1b and 6. A third of the HCV/HIV co-infected have advanced liver fibrosis and are in immediate need of HCV treatment.

## WEPEB063

### TELAPREVIR CONTAINING TRIPLE THERAPY IN ACUTE HCV CO-INFECTION: THE CHAT STUDY

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**Background:** No published randomised controlled data on the use of direct acting antivirals (DAA) in acute hepatitis C (AHC) coinfection exist. However, with the AHC epidemic still ongoing among HIV-positive men who have sex with men (MSM) these are urgently needed. Here we evaluate sustained virological response (SVR) rates after response guided telaprevir (TPV) containing triple therapy versus pegylated interferon and ribavirin (PR) alone.
**Methods:** The CHAT study is a randomised controlled trial of PR plus TPV versus PR alone in the response guided treatment of patients with AHC genotype (GT) 1 infection and HIV-1 co-infection in Germany and Great Britain. Eligible patients were randomised in a 1:1 ratio to PR (arm 1) or TPV + PR (arm 2). Fisher's exact, chi-square and Mann-Whitney U test were used for statistical analysis.
**Results:** All 34 patients were male, median age was 40 years. Main route of transmission was MSM (100%). 55% had an IL28B C/C GT. Median baseline HCV-RNA was 291.227 IU/mL and median CD4+ T cell count 676 cells/µL. 85% of all patients received cART, 100% had baseline suppressed HIV-RNA (< 40 copies/mL). Median ALT was 105 U/l. 15 patients were randomized to arm 1, 19 to arm 2.
Upon abstract submission SVR12 data on 31 patients were available. SVR12 was seen in 10/12 (83%) patients receiving PR alone and in 15/19 (79%) patients receiving TPV + PR. Of the 4 patients without SVR receiving TPV one experienced a viral breakthrough, 2 were non-responders; in one case HCV protease inhibitor associated mutations were selected under TPV (V36M, R155K). TPV containing treatment had to be stopped in one case of severe epidermolysis. Ribavirin dose reduction (44% vs. 0%), anemia (33% vs. 20%) and rash (67% vs. 20%) were more frequent in arm 2 vs. arm 1.
**Conclusions:** Although Telaprevir containing triple therapy offers the advantage of shortened treatment duration in acute HCV coinfection treatment is associated with additional toxicities while not leading to higher SVR rates. Therefore, with the AHC epidemic still ongoing published data on safety and efficacy of IFN-free DAA regimens for AHC are urgently needed.

## WEPEB064

### SOF/VEL FOR 12 WEEKS RESULTS IN HIGH SVR12 RATES IN SUBJECTS WITH NEGATIVE PREDICTORS OF RESPONSE TO TREATMENT: AN INTEGRATED ANALYSIS OF EFFICACY FROM THE ASTRAL-1, ASTRAL-2, AND ASTRAL-3 STUDIES

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**Background:** The once-daily fixed-dose combination tablet of sofosbuvir/velpatasvir (SOF/VEL) was evaluated for the treatment of genotype 1-6 HCV infection in three phase 3 studies in patients with and without compensated cirrhosis (ASTRAL-1, ASTRAL -2, ASTRAL -3). Overall SVR12 rates were > 95% across all HCV genotypes. This post-hoc analysis assesses efficacy in patients with traditional negative predictors of response.
**Methods:** This was a retrospective analysis of data from 1035 patients treated with SOF/VEL in the Phase 3 ASTRAL-1, ASTRAL -2, and ASTRAL -3 studies. Presence of cirrhosis was determined by histology, blood tests or transient elastography. Viral load and other clinical and laboratory assessments were determined prior to treatment with SOF/VEL. Prior treatment records were source verified and race was self-reported by the patient to the investigator.
**Results:** Overall, 21% of patients had cirrhosis, 74% had HCV RNA ≥ 800,000 IU/mL, 28% had prior treatment failure, 12% were ≥ 65 years old and 6% were black. Table 1 provides SVR12 rates by HCV genotype overall and for each patient subgroup. The overall SVR12 rate was 98% and was ≥96% among all subgroups. In general SVR12 rates were lower in patients with genotype 3 HCV infection compared with other HCV genotypes but were ≥90% across all subgroups.
**Conclusions:** The ASTRAL-1, ASTRAL -2, and ASTRAL -3 studies enrolled a diverse patient population that included a significant number of patients with historically negative predictors of response. There was little effect of these factors on the efficacy of treatment with SOF/VEL for 12 weeks in subjects with genotype 1-6 HCV infection.

| SVR12 | GT1 | GT2 | GT3 | GT4 | GT5 | GT6 | Overall |
|---|---|---|---|---|---|---|---|
| Overall | 98% (323/328) | 99% (237/238) | 95% (264/277) | 100% (116/116) | 97% (34/35) | 100% (41/41) | 100% (3/3) |
| Cirrhosis | 99% (72/73) | 100% (29/29) | 91% (73/80) | 100% (27/27) | 100% (5/5) | 100% (6/6) | 96% (212/220) |
| HCV RNA ≥ 800,000 | 98% (251/255) | 99% (185/186) | 94% (179/191) | 100% (74/74) | 100% (26/26) | 100% (31/31) | 98% (746/763) |
| Prior Treatment Failure | 99% (109/110) | 100% (44/44) | 90% (64/71) | 100% (52/52) | 100% (11/11) | 100% (3/3) | 97% (283/291) |
| Age> 65 | 100% (36/36) | 100% (53/53) | 100% (7/7) | 100% (11/11) | 100% (16/16) | (0/0) | 100% (123/123) |
| Black | 96% (24/25) | 95% (18/19) | 100% (3/3) | 100% (14/14) | (0/0) | (0/0) | 97% (59/61) |

*[Table 1. SVR in Patient Subgroups in ASTRAL1-3]*

## WEPEB065

### EFFECT OF THE TIMING OF HEPATITIS C VIRUS INFECTION, RELATIVE TO HIV SEROCONVERSION ON CD4 T CELL AND HIV RNA EVOLUTION AMONG HIV-POSITIVE MSM

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**Background:** An increase in hepatitis C virus (HCV) incidence among HIV-positive men who have sex with men (MSM) has been documented since 2000. Unlike most studies examining the effect of HIV/HCV-coinfection among individuals acquiring HCV before HIV, HIV precedes HCV infection for the majority of MSM. We aim to assess the effect of HCV infection and its timing, relative to HIV seroconversion, on CD4 T-cell count (CD4) and HIV RNA (VL) evolution among HIV-positive MSM.

**Methods:** We included MSM with well-estimated dates of HIV seroconversion (HIVsc) from 17 cohorts in the CASCADE Collaboration within EuroCoord. Each newly HCV-infected individual was matched to two HCV-negative ones. We also matched on country of the cohort in ART naïve, and on time since start cART use for MSM on cART. We modeled trends of CD4 and VL using random effects models with the time origin for each triad of individuals aligned on time since HIVsc at HCV infection of the HIV/HCV-coinfected one. We used restricted cubic splines for continuous variables. We included as co-variables: interval from HIV to HCV infection, age at HIVsc and, for those on cART, time since cART initiation.

**Results:** Of 6,325 ART-naïve MSM and 4,856 MSM on cART, 262 and 149 were/became HIV/HCV-coinfected, respectively. HCV infection had a borderline significant effect on VL evolution among ART-naïve MSM, but its effect was not statistically significant among MSM on cART (p=0.05 and p=0.93, respectively). HCV infection timing had no effect on VL evolution (p=0.07 ART-naïve & p=0.54 on cART). The effect of HCV-infection on the CD4 evolution following HCV was highly significant while ART-naïve and when on cART (both p< 0.001), but did not differ by HCV infection timing (p=0.45 and p=0.54, respectively). CD4 were temporarily lower during the first two years after HCV infection compared to HIV-monoinfected individuals, especially among MSM who seroconverted for HIV at older ages. Lower CD4 was more pronounced on cART.

**Conclusions:** Among HIV-positive MSM, CD4 are temporarily lower during the first two years after HCV seroconversion, irrespective of cART usage. However, we found no significant effect of the timing of HCV infection on the evolution of CD4 or VL.

## WEPEB066

### DAA VIRAL FAILURE AND SALVAGE THERAPY IN "REAL LIFE": IS RESISTANCE TESTING (RT) NEEDED?

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**Background:** There is scant information on "real life" virological failure (VF) of DAAs and how to design salvage regimens.

**Methods:** To describe VF of first line DAAs- therapies, the role of RT, and SVR after salvage therapy in 300 subjects (85% HIV/HCV-coinfected, N=255) attended at an Infectious Diseases Service of a tertiary center in Madrid, Spain.

**Results:** There were 26 VF (9%), 6% among non-HIV subjects (3/45) vs 9% among HIV/HCV-coinfected (23/255), p=0.6. 58% HCV-G1 (n=15), 38% HCV-G4 (n=10), only 1 HCV G3. 35% had received RBV (n=9), 58% 24w (n=15). 85% were cirrhotics (n=22), 65% non-CC IL28B (n=17), 69% prior non responders to peg-IFN/RBV (n=18, with TPV experience in 6-33%-). Rates of VF: SOF/DCV 10% (8/82), SMV/DCV 30% (7/23), SOF/SMV 33% (7/21), r/PRV/OMB/DSV 7% (2/28), SOF/LDV 1% (2/142). VF was due to relapse in 73% (n=19), viral breakthrough in 27% (n=7): 6/7 of SMV/DCV VF -despite RBV use in all- and in 1/8 subjects on SOF/DCV. VF was highest among HCV-G4 subjects (10/48, 21%) and lowest for HCV-G3 (1/35, 3%), and similar for both HCV-G1a (9/128, 7%) and HCV-G1b (6/88, 7%). Second line 24w DAA therapy has been started in 21/26 subjects with VF (81%): 6/8 of SOF/DCV VF (guided by NS3 RT in 5): r/PRV/OMB/DSV/RBV/SOF (n=1), r/PRV/OMB/DSV/RBV (n=1), SOF/SMV/RBV (n=4); 6/7 of SMV/DCV VF (no RT-guided): SOF/LDV (n=1), SOF/LDV/RBV (n=3), SOF/DCV/RBV (n=1), and SOF/SMV/DCV/RBV (n=1); 7/7 of SOF/SMV VF (no RT guided): SOF/LDV (n=1), SOF/LDV/RBV (N=6), 1/2 of r/PRV/OMB/DSV VF (no RT-guided) with SOF/LDV, and 1/2 of SOF/LDV VF (SOF/DCV/RBV in a patient with HCV-G3a, no RT). Complete data are available in 12/21 (57%), with SVR in all: SOF/LDV/RBV (n=7), SOF/LDV (n=1), SOF/SMV/RBV (n=2), SOF/DCV/RBV (n=1), and SOF/DCV/SMV/RBV (n=1).

**Conclusions:** "Real life" VF to first-line DAAs was 9%. SMV-based therapies showed the worst performance. The highest rate of VF was in HCV-G4 VF (21%). NS3 RT guided salvage therapy in 5/7 patients using an HCV-PI (SMV or r/PRV). The high rate of SVR of 24w SOF/LDV/RBV or SOF/DCV/RBV after DCV failure suggests the lack of usefulness of NS5A resistance testing if RBV and prolonged therapy are used.

## WEPEB067

### FREQUENT CLINICAL MONITORING PREDICTS HCV CURE AMONG PATIENTS WITH HIV/HCV CO-INFECTION

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**Background:** The Directly Acting Antiviral Agents (DAAs) have reported excellent HCV cure rates in many clinical trials. However data on HCV cure among HIV/HCV coinfected patients in the real world settings is limited. Hence this study was designed to evaluate the following objectives in the real world setting:

1. To study rates and predictors of HCV cure among HIV/HCV coinfected patients
2. To evaluate the association of frequent clinical monitoring with HCV cure.

**Methods:** This is a retrospective cohort study of adult HIV/HCV coinfected patients from 3 large outpatient settings in Miami, Florida, USA (the Miami Veterans Affairs hospital, a public hospital and a private academic hospital). Medical charts of individuals with HIV/HCV coinfection treated for HCV with DAAs between January 1 2014 and June 30 2015 were reviewed. Cure was defined as undetectable HCV viral load 12 weeks post HCV treatment. Adequate follow up was defined as attendance to clinic visit at week 4, week 6-8 and week 12 of treatment.

**Results:** Eighty four patients were evaluated 12 weeks post treatment.

The median age was 58 years (IQR 50-66), 74 (88%) were men and 42 (50%) were black.

Twenty patients (29%) had cirrhosis and 49 (58%) were HCV treatment experienced. Most commonly used regimen was Sofosbuvir/ledipasvir (33, 40%) followed by simeprevir/sofosbuvir (25, 30%). Cure was achieved in 70 (83.3%) while 10 (11.9%) relapsed and 2(2.3%) experienced virological breakthrough. Two patients (2.3%) did not complete treatment.

In multivariable analysis cure was associated with appropriate follow up clinic visits (OR=9.0, 95% CI=2.91-163, p=0.003) and use of an integrase based HIV regimen (OR=6.22, 95% CI 1.81-141, p=0.013). Age, race, genotype, presence of cirrhosis, prior HCV treatment, HCV regimen, HBV coinfection, week 4 response, CD4 counts and pre-treatment HCV RNA were not associated with cure.

**Conclusions:** Real world HCV cure rates with DAAs in HIV/ HCV coinfection are lower than those seen in clinical trials. Cure is associated with appropriate follow up clinic visits and the use of integrase inhibitors. Future studies should evaluate best antiretroviral regimens, predictors of adequate follow up visits and health care models that ensure adequate HIV/HCV care.

## WEPEB068

### PREVALENCE OF DIRECT ACTING ANTIVIRAL (DAA) HCV RESISTANCE ASSOCIATE VARIANTS (RAVS) IN THE US DEPARTMENT OF VETERANS AFFAIRS (VA)

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**Background:** To determine the prevalence of DAA RAVs in a convenience sample of specimens from patients being treated for HCV infection in VA
**Methods:** Plasma samples collected prior to or after HCV treatment failure were sent frozen overnight to the VA public health reference laboratory and stored frozen until analysis. HCV RNA was extracted from plasma; then RT-PCR amplified for the NS3, NS5A, and NS5B genes using genotype-specific primers. Sanger sequencing was performed on amplicons, and sequences were aligned to genotype-specific reference strains using Geneious software, and RAVs were called based on publically available information. Genes evaluated for each sample were based on physician orders, so not all 3 genes were tested in all samples. Data on HCV genotype, HCV treatment history, and HIV status was also collected. Baseline samples in patients experiencing DAA regimen failure were not available for comparison of preexisting mutations.
**Results:** 648 unique patient samples were received from 67 different VA medical centers from 2/1-2015-1/8/2016. 43 patients (6%) were HIV co-infected. Genotypes tested were: GT1a (389), GT1b (98), GT3a (132), GT2b (21), GT4a (6), GT2a (2). RAVs were found in 106/284 (43%), 129/310 (42%), and 21/305 (7%) of NS3, NS5A, and NS5B genes tested, respectively. Seventy-seven and 11 samples had RAVs in 2 and 3 genes. Among 225 treatment-naïve and 42 DAA-naive patients (only received pegylated-interferon/ribavirin, PEG-IFN, RBV), 28% had one or more RAVs. In patients who received DAA combinations as their first regimen, RAVs were detected in one or more genes after simeprevir/sofosbuvir (22/27, 81%), ledipasvir/sofosbuvir (LED/SOF) (85/114, 74%), and ombitasvir/paritaprevir/dasabuvir/ritonavir (27/31, 87%) regimens. And of those who failed LED/SOF as their first regimen, NS5A/NS5B RAVs included: Q30R/H/E (38), Y93H/C/N (35), L31M/V (25), and S282T (3). In treatment-experienced patients (PEG-IFN, RBV or other DAAs), who then received simeprevir/sofosbuvir or ledipasvir/sofosbuvir, 19/25 (76%) and 33/40 (83%), respectively had RAVs in one or more genes.
**Conclusions:** In this convenience sample of VA specimens tested for HCV RAVs, numerous patients were found to have preexisting or post treatment HCV RAVs after regimen failure. Genotypic resistance testing may be helpful to guide initial and subsequent DAA treatment regimens.

# HUMAN PAPILLOMAVIRUS

## WEPEB069

### PREVALENCE OF HUMAN PAPILLOMAVIRUS IN ZIMBABWEAN WOMEN PRESENTING FOR CERVICAL CANCER SCREENING: DOES HIV HAVE A SIGNIFICANT ASSOCIATION WITH THE BURDEN?

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**Background:** The burden of cervical and anal cancers remains high despite wide availability of antiretroviral therapy (ART), mainly as a result of persistent human papillomavirus (HPV) infections among HIV infected individuals. Recent availability of HPV vaccines provides an opportunity towards control of HPV burden. The objective of this study was to determine the prevalence of anal and vaginal HPV in Zimbabwean women reporting for routine cervical cancer screening by visual inspection with acetic acid (VIA).
**Methods:** This was a cross sectional study carried out at a tertiary hospital VIA clinic in Harare, Zimbabwe. Women ≥18 years were enrolled. HIV testing and counseling were offered. Participants provided a self-collected vaginal swab (VS) and a clinician collected anal swab (CCAS). Dacron swabs were used and stored in 500µl of guanidine thiocyanate. DNA was extracted using a standard chloroform/phenol method. For HPV detection and genotyping, 450 bp PGMY amplicons from the L1 region was sequenced using the MiSeq platform. A Chi$^2$ Fishers test was used to test for association of HPV and HIV.
**Results:** One hundred and forty four women aged 18-83 (median 38) were enrolled. All samples were positive for the beta globin gene, hence valid for analysis. Overall HPV prevalence was 72%(104/144) in VS and 48% (69/144) in CCAS. The odds of being HPV positive among the HIV infected were higher than in their HIV negative counterparts. Table 1 shows associations between HPV and HIV status. The most common high risk genotypes were; VS HPV 18(24%), 52(23%) & 16(21%) and CCAS HPVs 52(19%), 18(17%) and 16(16%).

| | CCAS p<0.001 [OR=4.8;CI(2.4-9.8)] | | VS p=0.005 [OR=2.9;CI(1.3-6.4)] | |
|---|---|---|---|---|
| | HPV Positive (n=69) | HPV Negative (n=74) | HPV Positive (n=104) | HPV Negative (n=40) |
| HIV Positive n(%) | 47 (67%) | 22 (33%) | 58 (83%) | 12 (17%) |
| HIV Negative n(%) | 22 (30%) | 52 (70%) | 46 (62%) | 28 (38%) |

*[Fishers test for association of HPV and HIV]*

**Conclusions:** HPV prevalence was very high in this cohort, with significantly higher burden in HIV infected women compared to HIV uninfected women. This data will assist Zimbabwean policy makers in upgrading cervical and anal cancer screening algorithms. We recommend that HPV DNA testing be used to reduce the incidence of cancer especially in HIV positives.

## WEPEB070

### CERVICAL CANCER RISK AND IMPACT OF PAP-BASED SCREENING IN WOMEN ON ANTIRETROVIRAL THERAPY IN JOHANNESBURG, SOUTH AFRICA

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**Background:** HIV infection increases the risk of developing invasive cervical cancer (ICC), but data on ICC burden and the impact of PAP based screening in HIV-positive women in sub-Saharan Africa is scarce. We assessed ICC risk and the impact of PAP based screening in HIV-positive women receiving combination antiretroviral therapy (ART) at Themba Lethu Clinic (TLC), an ART program in Johannesburg, South Africa.
**Methods:** We included HIV-positive women aged ≥18 years who participated in the TLC cohort and initiated ART after enrollment between 2004-2011. Cervical cancer cases were identified through a record linkage with the National Cancer Registry. We used Cox models to assess risk factors for developing ICC after ART initiation. The multivariable Cox model included age and World Health Organization (WHO) HIV/AIDS stage at ART initiation, ART regimen, and ART start before or from 2009 onwards, when systematic PAP based cervical cancer screening was introduced at TLC. We present incidence rates per 100,000 person-years (pys) and adjusted hazard ratios (aHR) with 95% confidence intervals (CI).
**Results:** We included 10,654 HIV-positive women who initiated ART at TLC; median CD4 cell count at ART initiation: 113 cells/µL (interquartile range [IQR] 46-184), median age at ART initiation: 35.0 years (IQR 29.8-41.8). The median follow-up time was 2.1 years (IQR 0.7-4.2). During 27,352 pys 136 women developed ICC for an overall incidence rate of 497/100,000 pys (95% CI 420-588). With the introduction of PAP based screening in 2009 the incidence rate per 100,000 pys decreased from 545 (95% CI 457-650) to 260 (95% CI 148-458) for an adjusted HR of 0.5 (95% CI 0.3-0.9). Additional risk factors identified were advanced HIV/AIDS stage at ART initiation (WHO stage 4 versus 1, aHR 2.0, 95% CI 1.2-3.3) and older age at ART initiation (≥36 versus 18-25 years, aHR 2.2, 95% CI 0.9-5.0).
**Conclusions:** Women who initiated ART after the introduction of a PAP based cervical cancer screening program in 2009 had a much lower risk of developing ICC than those who initiated ART before. However, ICC risk on ART remained high, and ICC prevention needs to be further improved.

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## OTHER SEXUALLY TRANSMITTED INFECTIONS

### WEPEB071

### PREVALENCE AND CORRELATES OF GENITAL INFECTIONS AMONG HIV-INFECTED ADULTS NEWLY ENROLLING IN HIV CARE IN WINDHOEK, NAMIBIA

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**Background:** Identifying and treating sexually transmitted infections (STI) among newly diagnosed HIV-infected individuals may benefit both public and individual health. There is a scarcity of information on routine STI screening in HIV care programs in sub-Saharan Africa. We assessed prevalence of genital infections and their correlates among newly diagnosed HIV-infected individuals entering HIV care services in Namibia.
**Methods:** HIV-infected adults newly enrolling in HIV care at two public health facilities in Windhoek, Namibia were recruited from June 2012 to April 2013. Behavioral and clinical data such as CD4 cell counts was collected from participants. Genital and/or blood specimens were tested for gonorrhea, chlamydia, trichomoniasis, mycoplasma genitalium, syphilis, bacterial vaginosis, and vulvovaginal candidiasis.
**Results:** Among 599 participants, 56% were females and 15% reported consistent use of condoms in the past 6 months. Bacterial vaginosis (37.2%), trichomoniasis (34.6%) and Chlamydia (14.6%) were the most common STI in women while 11.4% of men were diagnosed with mycoplasma genitalium. In comparison, prevalence of gonorrhea and syphilis was lower in both men and women. Correlates for trichomoniasis infection included being female (adjusted relative risk, [aRR], 6.6; 95% confidence interval [CI], 3.67-11.89), higher education (aRR, 0.64; 95% CI 0.4-1.0) and lower CD4 cell count (aRR, 1.67; 95% CI 1.1-2.5). Being female (aRR, 2.38; 95% CI 1.27-4.5), non-married (aRR, 2.29; (95% CI, 1.27-4.2) and having condom-less sex (aRR, 2.70; 95% CI, 1.05-6.96) were independently associated with chlamydial infection. Across all infections, after adjusting for sex, non-married participants were more likely to present with multiple STI
(aRR, 1.29, 95%CI, 1.06-1.59).
**Conclusions:** Women newly enrolling in HIV care in Namibia have disproportionately high rates of curable STI, especially trichomoniasis and Chlamydia, indicating that implementation of aggressive screening and treatment for genital infections may be useful to increase prevention and early detection of STI among persons living with HIV. Treating sexual partners, and promoting risk reduction strategies, including provision of condoms, may enhance secondary prevention efforts.

### WEPEB072

### HIGH LEVELS OF INFLAMMATORY CYTOKINES IN THE GENITAL TRACT OF WOMEN WITH BV ENGAGING IN VAGINAL DOUCHING: CROSS-SECTIONAL STUDY OF THE MIAMI WOMEN INTERAGENCY HIV STUDY (WIHS)

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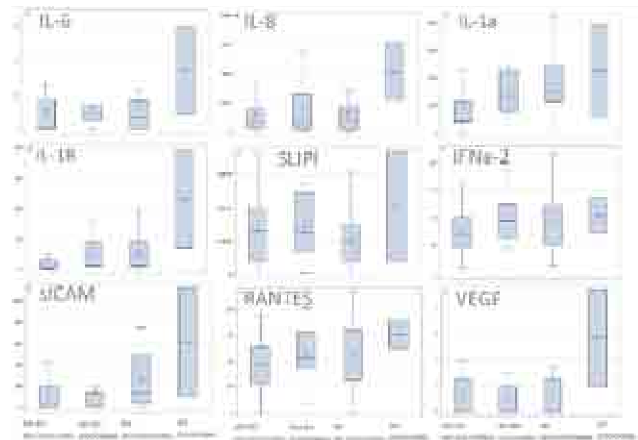
**Background:** High levels of inflammatory cytokines in the female genital tract are indicative of mucosal vulnerability and associated with an increased risk of HIV. Vaginal cleansing with commercially available douches is a major risk factor for developing bacterial vaginosis (BV) and both cleansing and BV are associated HIV acquisition.
This study evaluated inflammatory cytokines in the genital tract in women with BV who engage in vaginal douching to gain an understanding of the damaging effects of both BV and vaginal douching on the vaginal mucosa.
**Methods:** Cross sectional study of women enrolled in the Miami WIHS study. Reproductive aged women (n=72: 45 HIV+ and 27 HIV-) completed vaginal douching questionnaires. BV was assessed by Nugent score. Inflammatory cytokines (IL-6, IL-8, IL1a, IL1b, sICAM, IFNa2, RANTES, and VEGF) were measured in cervicovaginal lavages by multiplex analysis. SLIPI was measured by ELISA.
**Results:** Fourteen (19.4%) women engaged in vaginal douching, and 24 (33.3%) had BV. In univariate analysis, having BV, engaging in vaginal douching and having HIV infection were associated with increased inflammatory cytokines.

Comparison of IL-6, IL-8, IL1a, IL1b, and Slpi, sICAM, IFNa2, RANTES, and VEGF by HIV status, BV, and IVP (n = 72)

| | IL-6 Mean (SE) | IL-8 Mean (SE) | IL-1a Mean (SE) | IL-1b Mean (SE) | Slpi Mean (SE) | sICAM Mean (SE) | IFNa-2 Mean (SE) | RANTES Mean (SE) | VEGF Mean (SE) |
|---|---|---|---|---|---|---|---|---|---|
| **BV** | | | | | | | | | |
| No | 22.30 (0.70) | 1045.10 (4.72) | 2387.18 (7.06) | 50.20 (1.23) | 206188 (65.38) | 147.32 (1.77) | 84.60 (1.33) | 7.07 (0.38) | 215.44 (2.12) |
| Yes | 17.23 (0.87) | 1226.45 (7.17) | 3602.88 (12.24) | 86.41 (2.16) | 182466 (87.19) | 269.26 (3.47) | 95.89 (2.00) | 3.67 (0.28) | 226.16 (3.08) |
| p-value | <.0001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 |
| **Commercial Douche** | | | | | | | | | |
| No | 22.96 (0.65) | 1117.30 (4.43) | 2492.88 (6.56) | 57.16 (1.15) | 201132 (58.89) | 190.23 (1.83) | 85.15 (1.21) | 6.95 (0.35) | 213.92 (1.92) |
| Yes | 14.76 (11.42) | 1077.44 (8.77) | 3865.44 (16.87) | 115.02 (3.23) | 183041 (114.34) | 216.12 (3.93) | 101.67 (2.69) | 1.71 (0.38) | 243.55 (4.17) |
| p-value | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| **HIV Status** | | | | | | | | | |
| Uninfected | 33.72 (1.14) | 1104.88 (6.40) | 3021.52 (10.58) | 81.45 (2.02) | 192888 (84.11) | 155.78 (2.46) | 82.08 (1.74) | 11.15 (0.88) | 215.36 (2.82) |
| Infected | 12.48 (0.54) | 1112.36 (5.03) | 2663.72 (7.68) | 61.88 (1.36) | 201589 (66.93) | 218.17 (2.20) | 92.13 (1.43) | 2.89 (0.28) | 222.27 (2.22) |
| p-value | <0.001 | 0.345 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.089 |

Note. Univariable Poisson regression models were used for all comparisons.

*[Figure 1]*




*[Figure 2]*

**Conclusions:** This study shows for first time that BV and the use of vaginal douches have a combined impact in increasing female reproductive tract pro-inflammatory cytokines greater than BV or vaginal douches alone. Decreasing the damaging effects of BV and the use of vaginal douches could have a substantial effect on decreasing risk for HIV.

## HIV-ASSOCIATED NEUROCOGNITIVE DISORDER (HAND)

### WEPEB073

### EVALUATING A TABLET APP FOR LAY HEALTH WORKERS TO SCREEN FOR HAND IN SOUTH AFRICA

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**Background:** HIV-associated neurocognitive disorder (HAND) remains prevalent among people living with HIV and negatively impacts activities of daily living. Routine screening for HAND rarely occurs, especially in settings, such as South Africa, with limited resources and a shortage of skilled health personnel. Current HAND screening tools, which require additional equipment (e.g., stopwatch, pencils, and paper forms) and skilled personnel to administer, score and interpret, are difficult to use in South African clinical settings.
NeuroScreen, an Android tablet app, was developed as an alternative screening tool for HAND. It takes approximately 20 minutes to complete, is highly automated with standardized instructions, does not require additional equipment, and can be administered by lay health workers.
This study examined the sensitivity and specificity of NeuroScreen to detect neurocognitive impairment within HAND in a South African clinical setting when administered by lay health workers.
**Methods:** Sixty-four isiXhosa-speaking South African, HIV+ adults were administered NeuroScreen by a lay health worker. Immediately afterwards, participants completed a full neuropsychological evaluation, administered by a trained research psychometrist, consisting of well-established paper-and-pencil tests. Locally normed Z-scores were computed for all tests in the full battery and were used to calculate a global deficit score (GDS). A Receiver Operating Characteristic (ROC) curve was computed with the NeuroScreen composite Z-score and the GDS cut-score of 0.5 or higher (indicating at least mild impairment) as the state variable.

**Results:** Participants were 31.89 years old (*SD*=6.22), 80% female, and 81% not having graduated from high school. Using the GDS cut-score, 48% of the sample had impairment. The area under the curve for NeuroScreen was 76%. The NeuroScreen composite Z score of ≤ -.09 maximized sensitivity and specificity at 74%, and 79%, respectively, and yielded a positive predictive value of 77%, and negative predictive value of 76%. NeuroScreen misclassified 15 participants - 7 false positives and 8 false negatives.
**Conclusions:** Preliminary analyses suggest that NeuroScreen has clinically useful test characteristics when administered by lay health workers and may be a useful screening tool in South African clinical settings. Further research is needed to evaluate these test characteristics in larger samples, specific HAND types, and implementation in resource-limited clinics.

## WEPEB074

### AN IMBALANCE BETWEEN MATRIX METALLOPROTEINASES AND ENDOGENOUS TISSUE INHIBITORS OF METALLOPROTEINASES CONTRIBUTES TO HIV-1-ASSOCIATED CO-MORBIDITIES

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**Background:** Combined antiretroviral therapy (cART) has profoundly reduced traditional HIV-1-associated morbidity and mortality. However, HIV-1-associated co-morbidities are increasingly being seen and importantly influence patient management. For example, the prevalence of HIV-1-associated neurocognitive disorders (HAND) and HIV-1-associated cardiovascular diseases (HCVD) remains high despite widespread use of cART. While the mechanisms have not been fully understood, growing evidence suggests that an imbalance between matrix metalloproteinases (MMPs) and endogenous tissue inhibitors of MMPs (TIMPs) contributes to both HAND and HCVD.
**Methods:** Enzyme immunoassay and zymography assay were used to determine plasma level and proteolytic activity of MMPs from 10 healthy donors (HD), 43 HIV-1 patients who were cART-native ($ART^-$), and 16 HIV-1 patients with a stable virologic suppression by cART ($ART^+$). Plasma levels of TIMPs, inflammatory cytokines, microbial translocation, and the markers of monocyte/macrophage activation were also determined in these subjects.
**Results:** We found that plasma level and proteolytic activity of MMPs, specifically MMP-2 and MMP-9, were significantly increased in HIV-1 patients when compared with that in healthy individuals. TIMP-2, one of the four TIMPs, was profoundly down-regulated in HIV-1 patients, and the down-regulated TIMP-2 found in blood from HIV-1 patients was strongly correlated with elevated proteolytic activity of MMPs. The alternations of MMPs and TIMP-2 in HIV-1 patient were not affected by cART, indicating that cART extends the lifespan of HIV-1 patients but does not completely recover tissue-remodeling functions. We also found that the ratio of MMPs/TIMP-2 was correlated with elevated plasma levels of sCD14, sCD163, and inflammatory cytokines such as TNF-α and IL-6, suggesting that the imbalance of MMPs/TIMP-2 revealed in HIV-1 patients is related to monocyte/macrophage activation, inflammation and microbial translocation. Importantly, the imbalance of MMPs/TIMP-2 was more profound in HIV-1 patients with severe HAND or HCVD when compared with those without HAND or HCVD.
**Conclusions:** The imbalance of MMPs/TIMP-2 occurred in HIV-1 patients, which plays a key role in the pathogenesis of HIV-1-associated co-morbidities.

## WEPEB075

### NEUROCOGNITIVE PERFORMANCE AND NORMATIVE COMPARISON DATA IN HIV+ AND HIV- INDIVIDUALS IN RAKAI, UGANDA

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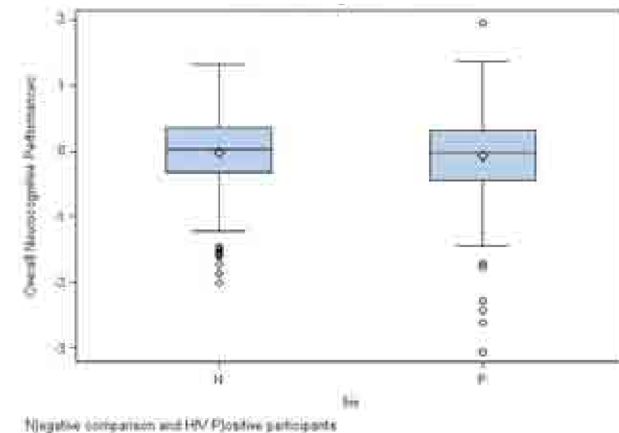
**Background:** Neurocognitive impairment remains prevalent despite ART, and the CNS is an important potential latent reservoir and compartment for HIV. Many resource limited settings (RLS) do not have the training or resources to assess neurological and neuropsychological (NP) function in participants with HIV. We enrolled site specific HIV- participants to create normative data, and applied to HIV+ participants.
**Methods:** 400 HIV- and 390 HIV+ ART naïve participants in the Rakai Community Cohort Study underwent standardized neuropsychological assessments. Participants were stratified by 2 (gender) x 3 (education ) x 2 (age) matrix for deriving the normative comparison data. Education cutoffs were < 4, 4 to 6 , and >7 years; while age cutoffs were < 36 and > 35 years. All participants were administered a neuropsychological battery that assessed attention, fluency, learning, memory, gross motor, fine motor, speed of processing and executive functioning.
**Results:** We enrolled 400 HIV- participants (190 females) with a mean age of 35. years (SD 8.1) and mean of 5.74 years of education (SD 3.5); and 390 HIV+ participants (185 females) with a mean age of 35.5 years (SD 8.5) and mean of 5.2 years of education (SD 3.4). The mean CD4 cell count was 262 (SD 171) for the HIV+. At baseline, there was no significant difference in overall neurocognitive performance in these well matched HIV- (total z score M -0.02, SD .55) and HIV+ (M -0.07, SD .62). Similar results were found for the domains of functioning.



*[Overall Neurocognitive Performance in HIV- and HIV+]*

**Conclusions:** No substantial neurocognitive differences were found between the HIV- and HIV+ participants. The importance of regional specific normative comparison data is well known, but often the resources are not available to collect this necessary data. This normative comparison database will serve as a resource for both clinicians and researchers for assessing neurocognitive performance and brain functioning for years to come.

## WEPEB076

### ADHERENCE TO ANTIRETROVIRAL THERAPY AND NEUROCOGNITIVE IMPAIRMENT IN SOUTH AFRICA

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**Background:** Despite improvement in antiretroviral treatment (ART), neurocognitive impairment remains prevalent among people living with HIV (PLWH). It is generally thought that neuroinflammation, rather than high viral load, may be responsible for neurocognitive impairment in HIV, and that early ART minimizes neuroinflammation. For ART to be optimally effective high adherence (>90%) is required. Non-adherence may result in neurocognitive impairment, as well as poor health outcomes, decreased activities of daily living. This study examined the relationship between ART adherence and neuropsychological functioning among HIV+ South Africans for their first 6-months on ART.
**Methods:** One-hundred and two, isiXhosa-speaking, HIV+ Black South African adults initiating ART and who were enrolled in an ongoing ART adherence intervention trial monitoring ART adherence were administered a comprehensive neuropsychological test battery 12 months post-ART initiation. Locally normed Z-scores were computed for all tests in the battery and were used to calculate a global deficit score (GDS) where 0.5 or higher indicated at least mild impairment. Adherence was continuously measured using an electronic monitoring device (WisePill). One-year post-ART initiation viral load test results were abstracted from medical charts. Multiple linear regression examined the relationship between adherence and GDS.
**Results:** Participants were 33 years old (*SD*=7.5 years), and 81% female; most (80%) had not graduated from high school. Using the cut-score, 55% of the sample were classified as neuropsychologically impaired. Mean adherence for the first 6-months post-ART initiation was 64% (*SD*=31%). Of the 73 viral load test results available from medical charts, only 3% (*n*=2) had detectable virus. A multiple linear regres-

sion was calculated to predict GDS based on first 6-months adherence, gender, age, and education. A significant regression equation was found ($F(4,97)=8.52$, $p< .000$) with an $R^2$ of .26. Six-month adherence, age, and education were significant predictors of GDS, such that worse GDS was predicted by worse adherence ($B=-.27$, $p=.003$), older age ($B=.21$, $p=.045$), and lower education ($B=-.36$, $p=.000$).
**Conclusions:** These findings provide some preliminary evidence that early non-adherence may be related to worse neuropsychological functioning at one-year post-ART initiation in mostly virally suppressed HIV+ South Africans. Future research needs to examine this relationship in a larger sample.

## WEPEB077

### NEUROCOGNITIVE ASSESSMENT IN NIGERIA: THE ICON COHORT

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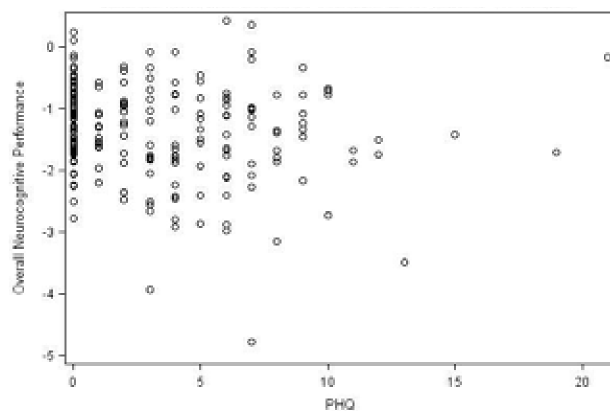
**Background:** Neurocognitive impairment remains prevalent despite antiretroviral therapy (ART), and is particularly concerning in resource limited settings (RLS) where access to ART is limited. Most RLS do not have the training or resources to assess neurological and neuropsychological function in participants with HIV. We trained psychometricians to conduct neurocognitive evaluations in Ibadan Nigeria, in order characterize HIV associated Neurocognitive Disorders locally.
**Methods:** We enrolled HIV+ participants presenting for care at the HIV Clinic, UCH, Ibadan in the longitudinal Ibadan Cohort of NeuroAIDS (ICON) study. Participants were administered a neurocognitive battery that assessed total neurocognitive functioning, and the domains of fluency, attention, learning, memory, fine motor, speed of processing and executive functioning. African specific norms were utilized where available to create normalized z scores. Depression was assessed using a PHQ 9 questionnaire.
**Results:** 208 HIV+ participants were enrolled in ICON. 149 were female (72%); mean age was 37.5 years (SD 9.4); and mean educational level was 12.97 years (SD 3.1). The total z score (positive scores reflect better performance) was -1.36 (SD 0.81). Mean domain (SD) scores were fluency -1.18 (1.04), attention -2.45 (2.49), learning -1.05(1.35), memory -.73 (1.25), fine motor -.42 (.99), speed of processing -1.98 (.88), executive functioning -2.25 (1.07). Using a -1.5 total z cutoff, 42% were neurocognitively impaired. There was a significant correlation between the International HIV Dementia scale and overall neurocognitive functioning (r= .30, p< .0001) and each of the domains (p< .01). Poorer neurocognitive performance was associated with increased depressive symptoms (r = -0.14, p< .05).




*[Increased Depression with Poorer Neurocognitive Performance]*

**Conclusions:** Neurocognitive impairment was common and was associated with depressive symptoms, although regional African norms were utilized where possible. Collection of site-specific normative data from HIV seronegative participants is being undertaken to provide a more comprehensive and valid assessment.

# NEUROLOGIC DISORDERS (EXCLUDING HAND)

## WEPEB078

### INCIDENCE OF NEUROLOGICAL DISORDERS AMONG HIV-INFECTED INDIVIDUALS WITH UNIVERSAL HEALTH CARE IN TAIWAN, 2000 THROUGH 2010

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**Background:** Although the introduction of highly active antiretroviral therapy (HAART) has improved the survival of people living with HIV in Western countries, neurological disorders remain a significant burden for HIV-positive people. The study aims to determine the incidence and factors associated with neurological disorders in a large Taiwanese cohort of HIV-infected persons with free access to HAART.
**Methods:** We conducted a population-based cohort study using the Taiwan National Health Insurance Research Database and identified 13,316 HIV-positive persons from 2000 through 2010. We used direct standardization to calculate age- and sex-adjusted incidence rates based on the 2000 World Health Organization world standard population. Factors associated with neurological disorders were analyzed using a Cox proportional hazards model.
**Results:** The standardized incidence of neurological disorders among HIV-infected persons increased from 22.16 per 1,000 person-years in 2000 to 25.23 per 1,000 person-years in 2010. Cognitive disorders increased significantly from 0.36 per 1,000 person-years in 2001 to 7.44 per 1,000 person-years in 2010 (trend test P < .001). The rate of neurological disorders increased with age (adjusted hazard ratios [AHR] for age 35-44 years: 1.31, 95% CI 1.08- 1.59, 45-54 years: 1.34, 95% CI 1.04-1.74, 55-64 years: 2.36, 95% CI 1.67- 3.33, ≥ 65 years: 2.68, 95% CI: 1.75-4.12, compared with age ≤ 24 years), hypertension (AHR 1.60, 95% CI 1.27- 2.00), substance abuse (AHR 1.72, 95% CI: 1.41- 2.10), opportunistic infection (AHR 1.99, 95% CI: 1.66- 2.39), and syphilis (AHR 1.53, 95% CI: 1.32- 1.77). The incidence of neurological disorders was negatively associated with adherence to HAART (adherence ≥ 90%: AHR 0.19, 95% CI: 0.15- 0.23).
**Conclusions:** The rising incidence of cognitive disorders among HIV-positive persons highlights the need to identify the causal factors of these co-infections. Receiving HAART with adherence ≥ 90% contributes to a reduced risk of neurological disorders.

## WEPEB079

### EPILEPSY PREVALENCE IN HIV-INFECTED CHILDREN AGED 0 - 16 YEARS IN TWO ANTIRETROVIRAL TREATMENT CLINICS IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

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**Background:** Neurologically symptomatic HIV-positive children present with a wide range of clinical pathologies. Among these, epilepsy is of key concern owing to its potential life-long impacts. Few studies in developing regions have investigated the prevalence and aetiology of epilepsy in HIV-infected children as a key population. We describe the prevalence of epilepsy, associated neurological disabilities, immunological status, clinical stage and history of CNS infection at epilepsy diagnosis in HIV- infected children receiving antiretroviral treatment (ART) in the Eastern Cape Province of South Africa.
**Methods:** We conducted a retrospective study (2004 - 2014) at two major referral sites for HIV-infected children diagnosed with epilepsy aged 0-16 years. Eligible subjects were extrapolated from the EMBRACE Paediatric Cohort using the Paediatric ART Data Management Tool (PADMT). Fixed data fields were interrogated for exposures to antiepileptic drugs including sodium valproate, carbamazepine, lamotrigine, phenobarbitone and clonazepam coupled with laboratory measures (CD4 and viral load) and WHO stageing. Unstructured “comments” fields were searched for the terms: epilepsy, seizures, fits and szs, as well as abbreviated versions of common antiepilpetic drug names (eg AED, CBZ). Eligible subject folders were then retrieved to validate the digital data.

**Results:** Of the 2137 children aged 0 -16 enrolled, 53 were diagnosed with epilepsy (2.48%) of which 50 (2.34%) had comprehensive medical records available. 26 were male (52.0%) and the median age at epilepsy diagnosis was 50 months. The median CD4 count was 591 cells/mm3 and the mean viral load was 4.9 log copies/ml. WHO clinical stage was available in the record for 46 of the sample, with 3, 6, 26 and 11 graded at stages 1, 2, 3 and 4, respectively. 40% had a history of CNS infection prior to epilepsy diagnosis and 30% were diagnosed with cerebral palsy.
**Conclusions:** In this descriptive study we found a prevalence of epilepsy of 2.48%, most of which was diagnosed in children with advanced HIV disease. Our findings support the use of earlier initiation of ART in HIV-infected children to reduce HIV-related neurological manifestations like epilepsy. It also reveals the effectiveness of accessing cohort-level data using novel technologies that allow for interrogation of clinical data.

## Depression and other psychiatric manifestations

### WEPEB080

#### The emergence of methamphetamine abuse among HIV-infected Vietnamese patients attending outpatient clinics: implications for HIV care and prevention

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**Background:** Methamphetamine (MET) abuse may co-occur with mental illnesses and their combination can complicate the management of medical conditions such as antiretroviral therapy (ART). This study examines the associations between recent MET use and psychiatric disorders among men attending HIV outpatient clinics in Hanoi, Vietnam.
**Methods:** HIV-infected men with a history of opioid injection released from drug detention centers were invited to participate in a study during 2013-2015 evaluating access and utilization of ART. Participants underwent an interview and urine drug testing. Anxiety and depressive symptoms were measured by Beck Anxiety Inventory and Center of Epidemiologic Studies Depression Scale (CES-D). Multiple logistic regression model was used to identify factors associated with recent MET use at baseline visit.
**Results:** Among 372 participants (mean age, 36 years old), 38% tested positive to morphine and 11% positive to MET, indicating recent use. In bivariate analyses, MET-positive participants were more likely to reside in urban areas (p=0.02), to have more depressive symptoms (p< 0.001), and to have slightly more anxiety symptoms (p=0.09). There were no significant differences in age, employment status, or income. In a multivariable model controlling for duration of drugs injecting, recent heroin use, and baseline CD4 count, recent MET use was significantly associated with depressive symptoms (adjusted odds ratio [AOR]=1.6 for 10-point increase in CES-D score, p< 0.001) and reporting to have 2 or more female sexual partners in the previous 3 months (AOR=2.5, p=0.03).
**Conclusions:** Recent methamphetamine use is prevalent among current and former opioid users in Vietnam and has a clinical impact. The study findings may be useful to guide efforts to improve HIV care through screening for and addressing MET abuse and related psychiatric disorders along with HIV treatment efforts.

### WEPEB081

#### Increasing access to antidepressant treatment for HIV+ antiretroviral therapy (ART) patients in Haiti through measurement based care (MBC): safety and preliminary efficacy

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**Background:** Depression is highly prevalent among people living with HIV (PLWH) and associated with HIV risk behavior, poor adherence to ART, and higher AIDS-related mortality. In resource-limited settings like Haiti, there is little or no available mental health treatment. Improving access to mental health care for PLWH is critical to the long-term success of global HIV treatment efforts. MBC was developed to improve access to depression treatment among PLWH. It is an evidence-based, task-shifting intervention where non-physicians known as Depression Care Managers (DCM) use depression treatment algorithms to advise prescribing clinicians in antidepressant treatment. Originally developed in the US, we adapted MBC for Haitian lay health workers and pilot-tested it in Port-au-Prince, Haiti.
**Methods:** HIV+ patients beginning ART received depression screening with a Haitian Creole Patient Health Questionnaire (PHQ-9). Those scoring 10 or higher received a confirmatory test for major depressive disorder (MDD). Those diagnosed with MDD were randomly assigned to MBC (regular telephone and in-person assessment of depression symptoms and algorithm-based adjustment of antidepressant (fluoxetine) dosing) or enhanced usual care (training of HIV doctors in depression care, alerting them to the participant's MDD diagnosis and PHQ9, and adding fluoxetine to the clinic formulary).
**Results:** Between May and December 2015, 482 patients were screened; 21% had confirmed MDD. Pilot participants numbered 78; 43 were assigned to MBC and 35 were assigned to enhanced usual care. Participants were 61% female. Age ranged from 20 to 60 (median 36) years. MBC and comparison groups did not differ significantly at baseline; median PHQ-9 at **baseline** was 14 (IQR=11-16.5) for the MBC group and 14 (IQR=12-16.5) for the comparison group. At 3-month follow up, the MBC group had significantly reduced depression symptoms (median PHQ9=4.0, IQR=1.5-8) compared to the comparison group (median PHQ9= 10.0, IQR=2-18) p =0.036. No study-related adverse events or serious side effects from antidepressant use were observed.
**Conclusions:** MBC resulted in a significant reduction in depression symptom severity among HIV+ patients with MDD in Haiti. The measurement, monitoring and support offered by MBC can serve to improve treatment outcomes, reduce needless suffering, and increase access to depression treatment in resource-limited settings.

### WEPEB082

#### Prevalence, recurrence and incidence of current depression among people living with HIV in Ontario, Canada: results from the Ontario HIV Treatment Network Cohort Study

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**Background:** Current studies of depression among people living with HIV focus on describing its point prevalence. Given the fluctuating nature of depression and its profound impacts on clinical and quality-of-life outcomes, this study aimed to examine the prevalence, recurrence and incidence of current depression longitudinally and systematically among HIV-positive patients in Ontario, Canada.
**Methods:** We conducted a prospective cohort study using linked data from the Ontario HIV Treatment Network Cohort Study and administrative health databases between October 1, 2007 and December 31, 2012. Current depression was identified using the Centre for Epidemiologic Studies Depression Scale or the Kessler Psychological Distress Scale, first at baseline and again during follow-up interviews.

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The three outcomes were characterised by participants' social demographics, housing-related conditions, and health status.
**Results:** Of the 3816 HIV-positive participants with HIV care, the point prevalence of depression was estimated at 28%. Current depression was especially prevalent among participants who were younger, female, earning a low income, and having difficulty with housing-related expenses or not feeling a sense of neighbourhood belonging. Of the 801 participants who were identified with depression at baseline and had at least two-year follow-up data, 51% had a recurrent episode; the first recurrent rate was 13.8 per 100 person-years. The cumulative incidence of 1393 depression-free participants was 17%, and the incident rate was 4.4 per 100 person-years. During follow-up, participants who had history of depression (adjusted hazard ratio [aHR]: 1.3, 95% Confidence Intervals [CI]: 1.06-1.6) or felt worried about their housing situation (aHR:1.7, CI:1.3-2.2) were more likely to have elevated recurrence rate. Participants who were younger, were self-reported as gay, lesbian or bisexual (aHR:1.8, CI:1.2-2.8), or who had difficulty in affording housing-related expenses (aHR:1.5, CI:1.01-2.2) were more likely to have higher rate of incident depression whereas those who felt better control in their housing situation (aHR:0.6, CI:0.4-0.9) were protected from developing incident cases.
**Conclusions:** Depression is prevalent and likely to recur among HIV-positive patients. Our results reinforce the importance of effective delivery of mental health care in the context of HIV treatment and demonstrate the need for long-term support and routine management of depression, particularly for individuals at high risk.

## WEPEB083

### DEPRESSING SCREENING AS A TOOL FOR IMPROVING CLINICAL CARE OF YOUTH WITH HIV

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**Background:** Youth represent a substantial number of new and existing HIV cases. It is well established that depressive symptoms are common among people with HIV, and there is some indication that such symptoms are more prevalent among youth compared to adults. The purpose of this study was to assess the utility of a depression screener to improve clinical care of youth with HIV.
**Methods:** A pediatric and adolescent infectious diseases program in the US conducted depression screeners with youth ages 11-25. Measures included the Patient Health Questionnaire-Adolescent (PHQ-A) and the Patient Health Questionnaire-9 (PHQ-9; Kroenke & Spitzer, 2002). Data were analyzed based on an archival review of 98 cases.
**Results:** The majority of the sample was African American (69%) heterosexual (65%) females (56%) between the ages of 18-24 (80%). Most were perinatally infected (60%). Initial findings suggest that 42% of the sample was at risk for mild to severe depression. The following symptoms were endorsed frequently: fatigue (50+%), trouble sleeping (50%), feeling bad about self (30%), and feelings of hopelessness (40%).
**Conclusions:** The clinical implications of these findings include the need for universal psychoeducation about depression, specific behavioral strategies for high-risk groups, and comprehensive biopsychosocial assessments in clinical settings for youth with HIV. To increase the quality of life and functioning of youth with HIV, further research in the area of mental health is needed.

# MALIGNANCIES (INCLUDING KAPOSI SARCOMA, LYMPHOMA, AND NON-AIDS MALIGNANCIES)

## WEPEB084

### SEROPREVALENCE AND VIRAL QUANTIFICATION OF KAPOSI SARCOMA ASSOCIATED HERPES VIRUS (KSHV) IN A HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTED ADULT SOUTH AFRICAN COHORT

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**Background:** Kaposi Sarcoma-associated Herpes virus (KSHV) is etiologically implicated in Kaposi's Sarcoma (KS). Serological studies of KSHV have not been well documented in the South African population, yet KS has become an increasingly prominent HIV associated malignancy. This study investigates the seroprevalence and KSHV viral load in an adult South African cohort.
**Methods:** Cross-sectional data was analyzed from 140 patients attending an urban research clinic site, Durban 2013. The cohort was divided into 70 HIV infected and 70 HIV uninfected individuals. Antibodies against latent (Orf73) and lytic (K8.1) KSHV antigens were detected on serum from all participants. Those reactive against either antigen were considered seropositive. Subjects simultaneously reactive for K8.1 and Orf73 were analyzed for KSHV DNA, extracted from saliva and quantified using primers for the K6 gene region.
**Results:** Demographic characteristics of the 140 participants regarding gender and age were similar. Seventy five subjects (54%) tested positive for KSHV with 46 (33%) reactive to K8.1, 52 (37%) reactive to Orf73 and 29 (21%) reactive to both. Fifty percent of HIV infected subjects were seropositive for K8.1, and 46% for Orf73. In the HIV negative group 16% tested seropositive for K8.1 and 29% for Orf73. The HIV positive subjects demonstrated a significantly higher percentage KSHV seropositivity (70% vs. 37%; p = 0.0001). Subjects reactive to both antigens were analyzed for KSHV DNA. This was detected on 13 of the 24 HIV infected specimens tested (mean VL of $3x10^{10}$ KSHV copies per $10^6$ cells). Viremia was detected in 3 of the 5 HIV uninfected specimens (mean VL of $6x10^3$ KSHV copies per $10^6$ cells). The VL variance between the two groups was significant (p< 0.0001) with a higher VL burden in the HIV infected group.
**Conclusions:** KSHV seroprevalence is high in adults attending an urban HCT clinic. HIV positive individuals are more likely to be KSHV seropositive. It is also suggestive that HIV positive individual are more likely to have a higher KSHV viral load.

## WEPEB085

### BEYOND CERVICAL CANCER: GYNECOLOGICAL MALIGNANCIES AND TREATMENT IN HIV+ WOMEN

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**Background:** As life expectancy of HIV+ women increases, there is increasing need to understand gynecologic malignancies beyond cervical cancer. There are no recent reports on the care of HIV+ women with these cancers nor HIV-specific guidelines. Thus, here we describe gynecological malignancies in HIV+ women and evaluate care and adherence to general treatment guidelines.
**Methods:** Johns Hopkins and University of Maryland clinic records and billing codes were used to identify all gynecologic cancer cases from 2000-2015. Chart reviews were conducted to obtain demographic, HIV, and cancer-related information. Abstraction of cancer treatment modalities allowed determination of adherence to NCCN-guidelines for each cancer type. Descriptive statistics were calculated to describe the patient population, cancer characteristics, and provision of treatment.
**Results:** Over the 15 year period, 47 gynecologic malignancies were identified in HIV+ women. The median age at diagnosis was 45 (IQR: 36-51), 89% of women were black, 60% were smokers, and 32% reported alcohol use. A roughly equal percentage of cervical cancers were identified (49%) compared to all other types com-

bined (11% endometrial; 13% ovarian; 28% vaginal/vulvar). Women with vaginal/vulvar cancers were similar in age and CD4 count to women with cervical cancer but women with endometrial and ovarian cancers tended to be older and have higher CD4 counts at diagnosis. Treatment according to NCCN-guidelines was similar across cancer types: 96% of the 23 cervical cases; 85% of the 13 vaginal/vulvar cases although two stage I patients received no treatment; 100% of the 5 endometrial cases (all stage I); and 5/6 ovarian cases although only 1/5 late stage (III/IV) cases received ideal treatment (chemotherapy+surgery).

| Cancer Type | Distribution | Median Age (IQR) | Median CD4 count (IQR) | NCCN treatment |
|---|---|---|---|---|
| Cervical | 23 (49%) | 45 (33-47) | 224 (116-419) | 22 (96%) |
| Endometrial | 5 (11%) | 54 (44-68) | 578 (294-1195) | 5 (100%) |
| Ovarian | 6 (13%) | 50 (44-52) | 544 (309-779) | 5 (83%) |
| Vaginal/vulvar | 13 (28%) | 44 (38-50) | 298 (173-554) | 11 (85%) |

*[Characteristics of cancer cases and treatment]*

**Conclusions:** Most HIV+ women were treated according to NCCN-guidelines. However, over a third of women with cervical/vaginal/vulvar cancer did not to receive radiation-sensitizing chemotherapy, and women with late stage ovarian cancer tended to receive less than ideal treatment. Data on outcomes following cancer treatment in HIV+ women as compared to the general population are being collected to inform the need for specialized management in this population.

## WEPEB086

### CANCER TREATMENT IN ELDERLY INDIVIDUALS WITH HIV INFECTION IN THE UNITED STATES

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**Background:** HIV+ individuals are at increased risk for many cancers, and with an increasing life expectancy due to widespread HAART, this is a growing problem for older adults. Previous studies also suggest that HIV+ individuals may be less likely to receive treatment for cancer. The extent to which rates or specific types of cancer treatment may differ between elderly HIV+ and HIV- individuals is unknown.
**Methods:** Using SEER-Medicare linked data, we explored differences in cancer treatment by HIV status in Americans aged 66-99 years and diagnosed with non-Hodgkin lymphoma, melanoma, or anal, bladder, breast, colorectal, kidney, liver, lung, or prostate cancer from 1991-2009. HIV+ was identified as the presence of ≥2 Medicare claims with ICD9 diagnosis codes 042, 043, 044 or V08 at least 30 days apart. Medicare claims were searched for cancer-specific surgery, chemotherapy, radiation, hormone/biologic therapy, and/or transplant.
**Results:** HIV+ cancer cases (n=617) were significantly younger than HIV- cases (n=875,082; median age: 71 vs. 75 years, respectively). Overall, HIV+ cases were less likely to receive cancer-type-specific treatment within 6 months of diagnosis compared to HIV- cases (70% vs. 75%, respectively; p< 0.01) and this difference was even more apparent in individuals ≤70 years (68% treated in HIV+ vs. 82% in HIV-). Median time to treatment was also slightly, but significantly, longer for HIV+ (34 vs. 31 days for HIV-). However, after taking into account differences by gender, race, year, socioeconomic status, comorbidities, and type and stage of cancer, there was no significant effect of HIV on receipt of treatment, regardless of age. Of note, advanced stage at diagnosis had the strongest independent (negative) association with receipt of treatment.
**Conclusions:** Differences in cancer treatment between HIV+ and HIV- individuals in the elderly American population are likely mediated through difference in personal, medical, or cancer-specific characteristics, which will be explored through advanced analytical techniques. Our findings highlight the complex interplay between age, multiple comorbidities, and cancer-specific differences by HIV, making it clear that a better understanding of factors impacting the cancer care continuum are needed.

# FAT ACCUMULATION AND LIPODYSTROPHY

## WEPEB087

### CORRELATION OF ADIPOCYTOKINE LEVELS IN DIFFERENT TYPES OF LIPODYSTROPHY IN HIV/AIDS PATIENTS

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**Background:** Combination antiretroviral therapy (cART) can induce metabolic complications including lipodystrophy, dyslipidemia, and insulin resistance in HIV-infected patients. Adipokines may play important role in these alterations, especially in lipodystrophy. The aim of this study was to evaluate the relationship between serum levels of adipocytokines in four different categories of fat distribution: lipoatrophy (LA), lipohypertrophy (LH), mixed fat redistribution (MFR) and no-lipodystrophy in HIV-infected patients.
**Methods:** Cross-sectional study of 66 HIV-infected adults. Levels of adiponectin, resistin, leptin, interleukins (IL-1α, IL-1 β, IL-2, IL-4, IL-6, IL-8, IL-10), plasminogen-activator-inhibitor-1 (PAI-1), C-peptide, cystatin-C, tumor necrosis factor alpha (TNF-α), vascular-endothelial-growth-factor (VEGF), epidermal-growth-factor (EGF), interferon-gamma (IFN-γ) and monocyte-chemoattractant-protein-1 (MCP-1) were measured. Differences between groups were tested using t-test and Mann-Whitney test, and analysis of covariance to examine relationship between adiponectin and leptin and lypodystrophy categories adjusted for confounding variables.
**Results:** The lipodystrophy was observed in 29 (44%) patients, while 15 (52%) of them had LA, 4 (14%) had LH and 10 (34%) patients had MFR. LH patients had higher levels of adiponectin (p=0.011), leptin (p=0.039), cystatin-C (p=0.001), IL-6 (p=0.065), and lower levels of IL-4 (p=0.052). LA patients had lower levels of IL-4 (p=0.043), IL-10 (p=0.031) and IL-1α (p=0.051). Correlation of adiponectin with lipodystrophy remains statistically significant in the subgroup of patients with lipohypertrophy after adjustment for age, BMI, cystatin-C, PAI-1, IFN-γ (p=0.001).
**Conclusions:** Adiponectin was shown to be important marker in fat disturbances in patients undergoing cART and directly associated with lipohypertrophy, and could be the possible target for new therapeutic strategies in HIV/AIDS patients.

# CARDIOVASCULAR DISEASE

## WEPEB088

### CHANGES IN PLATELET AGGREGATION AND COAGULATION MARKERS IN HIV-1 INFECTED INDIVIDUALS SWITCHING TO OR FROM ABACAVIR: FIRST RESULTS FROM THE TENOFOVIR ABACAVIR PLATELET ACTIVATION STUDY (TAPAS)

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**Background:** Some studies have reported an association between abacavir and an increased risk of cardiovascular events. TAPAS aimed to determine changes in platelet aggregation, functional coagulation and markers of coagulation after switching to or from abacavir as part of combination antiretroviral therapy (cART).
**Methods:** TAPAS is an investigator initiated, open labeled, cross over study. Participants receiving cART containing abacavir/lamivudine switched treatment to a regimen containing tenofovir/emtricitabin (AT group) and vice versa (TA group). The third cART drug remained unchanged. Blood samples were drawn before switching and 85-90 days after therapy change. Platelet aggregation was analysed by impedance aggregometry with the following agonists: Adenosinediphosphate (ADP), arachidonic acid (ASPI), thrombin receptor agonist peptide (TRAP) and ristocetin in high (RISTOhi) and low (RISTOlow) concentrations. Functional coagulation was assessed by thromboelastography (TEG) using the variables reaction time, angle, maximal amplitude, time to maximal amplitude, lysis after 30 minutes, and clot lysis time. Further, platelet count, coagulation factors II-VII-X (CF), fibrinogen and anti-thrombin III (AT3) were measured.

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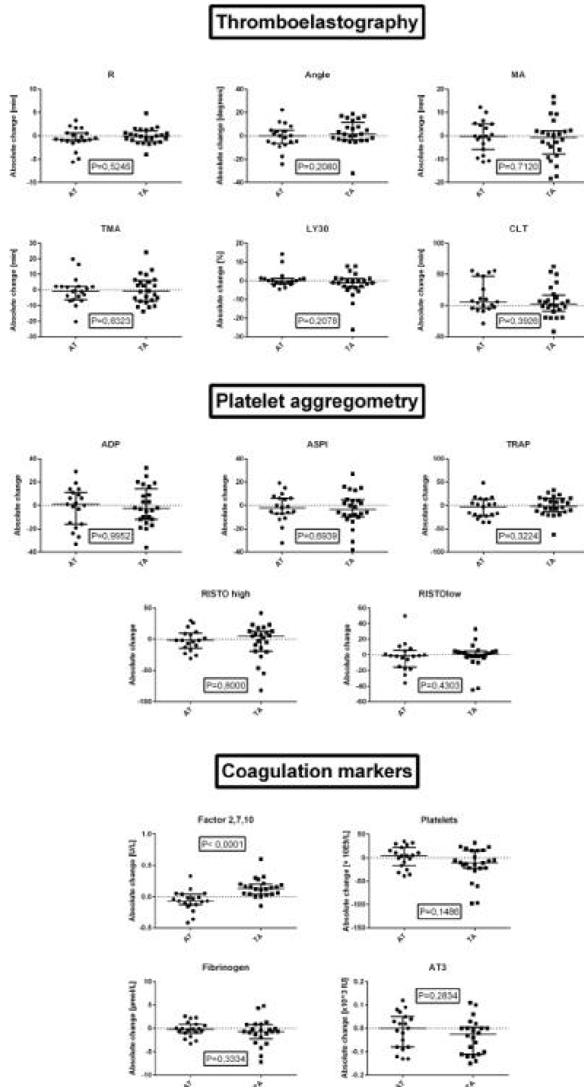
**Results:** We included 55 male individuals of whom 19 and 24 completed the study in the AT and the TA group, respectively.
The platelet aggregometry showed no differences between the groups in absolute change in platelet reactivity with either of the examined agonists.
Likewise, TEG showed no differences between the groups in absolute change in any of the given variables.
Changes in platelet counts, fibrinogen levels and AT3 levels were also similar between groups. In the TA group, CF increased median 0.13 units/L
(IQR 0.04-0.20), whereas a decrease of median -0.07 units/L (IQR -0.13 - -0.04) was observed in the AT group (P< 0.0001).
**Conclusions:** Switching between abacavir and tenofovir based cART regimens did not alter platelet reactivity, however, switching from tenofovir to abacavir resulted in an increase in coagulation factors II-VII-X. It remains unclear whether these changes have any clinical significance.




*[Absolute changes in coagulation/fibrinolysis markers]*

## BONE DISEASE (INCLUDING ISSUES RELATED TO VITAMIN D)

### WEPEB089

### VITAMIN D STATUS AT THERAPY INITIATION AND CD4+ T CELL COUNT RECOVERY IN HIV-INFECTED MEN IN THE MULTICENTER AIDS COHORT STUDY

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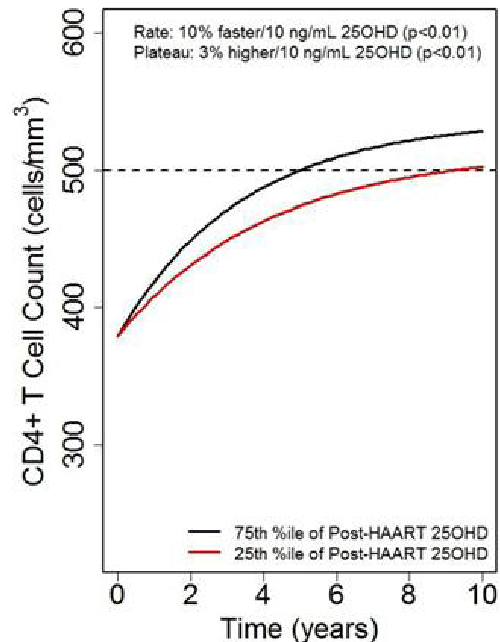
**Background:** There is substantial heterogeneity in both the rate of increase and plateau of CD4+ T cell count (CD4) in response to effective therapy (HAART) initiation. Since vitamin D can have immunoregulatory function, we investigated whether higher serum levels of 25 hydroxyvitamin D (25OHD) were associated with improved CD4 recovery following HAART initiation in HIV-infected men who have sex with men (MSM).
**Methods:** 25OHD level was measured following HAART initiation in 636 HIV-infected MSM with at least one post-HAART CD4 measurement. Anchoring at HAART start, CD4 over time was modeled using an exponential decay nonlinear mixed effects model with three random effects for the intercept, rate of increase and plateau. We assessed the effect of higher seasonally-adjusted post-HAART 25OHD levels on the rate of increase and plateau of CD4, controlling for age, pre-HAART CD4 nadir, and race.
**Results:** At HAART initiation, the median age was 42.3 years, the median pre-HAART CD4 nadir was 260 cells/ml, and 25.8% of men were of black race. The median post-HAART 25OHD level was 22.6 ng/ml (interquartile range [IQR]: 16.1, 29.9; 56.4 nmol/L) assessed at median time of 2.2 years (IQR: 1.7, 2.4) after initiation. The overall predicted median CD4 plateau was 523 cells/mm$^3$ (IQR: 343, 751) and the median time to CD4 plateau was 11.3 years. A higher post-HAART 25OHD level was significantly associated with both the rate of CD4 increase and plateau, with a 10% faster rate (p< 0.01) and a 3% higher plateau (p< 0.01) per 10 ng/ml (25 nmol/L) 25OHD. The Figure shows the expected difference in CD4 rebound comparing the 75%ile of 25OHD level in the cohort to the 25%ile.




*[Adjusted effect of higher 25OHD levels on CD4+ T cell count rebound following HAART initiation]*

**Conclusions:** Vitamin D levels may modestly augment the extent of quantitative CD4 increase following HAART initiation. Interventional trials are needed to determine whether supplementation at HAART initiation provides consequential clinical benefits.

## WEPEB090

### HIGH BACKGROUND OSTEOPENIA AND VITAMIN D DEFICIENCY PREVALENCE MAY ATTENUATE THE RELATIVE CONTRIBUTION OF HIV TO OSTEOPOROSIS IN ASIAN POPULATIONS

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**Background:** Low bone mineral density (BMD) is 3-4 times more prevalent in HIV-positive cohorts compared to HIV-negative controls. HIV-associated osteoporosis is a major concern in an aging Asian society such as Singapore, where new HIV diagnosis is often made in an older cohort or in patients with advanced stages of immunodeficiency. There is paucity of data on HIV-associated osteoporosis in Singapore and in other neighbouring Asian cohorts.
**Methods:** We conducted a cross-sectional study in the National University Hospital to examine prevalence and relevant risk factors for HIV-associated osteoporosis. BMD was measured by dual-energy x-ray absorptiometry (DXA) and normalized to a published Singapore reference range. Serum 25-hydroxy vitamin D was measured by electrochemiluminescence immunoassay. An age-matched control group was included. Statistical methods used included Student t-test, chi-squared test, Fisher's Exact Test and multiple logistic regression as appropriate.
**Results:** 104 HIV-positive patients and 52 HIV-negative volunteers were included. The prevalence of osteopenia and osteoporosis in the HIV-positive cohort was 51.9% and 11.5% respectively. Low BMD was significantly associated with low body mass index [BMI in normal vs low BMD, mean±SD: (spine) 24.2 ± 4.7 vs 21.8 ± 3.5, p=0.016; (hip) 24.4 ± 5.09 vs 22.6 ± 3.76, p=0.039]. There was no association between the traditional risk factors for low BMD and HIV clinical status with osteopenia/ osteoporosis the use of tenofovir. Surprisingly, 54% of the age-matched healthy volunteers had low BMD. A high proportion of subjects in both the HIV-positive and healthy volunteer groups had insufficient dietary intake of calcium. 70.2% of the HIV-positive cohort (versus 67.3% in the healthy volunteer group) were 25-hydroxy vitamin D deficient (< 30ug/L).
**Conclusions:** The observed prevalence of low BMD in our Singaporean HIV cohort was similar to those in the US, Europe as well as Taiwan and Japan. Surprisingly, we did not observe any difference in prevalence of low BMD between the HIV-positive versus healthy groups. We postulate that the high background prevalence of low BMD and vitamin deficiency in the Singapore population may have attenuated the relative contribution of HIV and its treatment on the pathogenesis of osteoporosis.

## WEPEB091

### CONTRIBUTION OF T CELLS TO RANKL/OPG IMBALANCE AND BONE LOSS IN HIV INFECTION

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**Background:** HIV infection is associated with high rates of osteoporosis and bone fracture, which cause significant morbidity and mortality. Osteoporosis results from an imbalance in osteoclastic bone resorption relative to osteoblastic bone formation, leading to net bone loss. Osteoclast formation is regulated primarily by the ratio of the key osteoclastogenic cytokine, receptor activator of nuclear factor-κB ligand (RANKL), to that of its physiological inhibitor, osteoprotegerin (OPG). We previously reported that HIV infection leads to a decline in B cell OPG and an increase in RANKL that correlates significantly with loss of bone mineral density (BMD). Although normal human primary CD4+ T cells can synthesize OPG *in vitro*, and activated T cells are an established source of RANKL *in vivo*, the contribution of T cells to RANKL/OPG imbalance in HIV infection has not been previously studied.
**Methods:** The study population comprised men and women $\geq$ 30 $\leq$ 50 years of age, 58 HIV-uninfected (48.3% Male and 82.5% Black) and 62 antiretroviral therapy-naive HIV-infected (69.4% Male and 88.7% Black). Baseline CD4 count 149 (66,235) [Mean (Q1, Q3)]. PBMC were analyzed for expression of intracellular T cell RANKL and OPG, and T cell proliferation (Ki-67 expression) and activation (CD27 and CD69 expression) were quantified by flow cytometry.
**Results:** Here we show a significant (p=0.0005) decline in the percentage of OPG-producing T cells in HIV-infected individuals, and a strong trend toward increased T cell RANKL production (P = 0.07). We also found significant associations between the ratio of RANKL/OPG and T cell activation (CD69 expression) in CD4+ (r = 0.32, P = 0.0008) and CD8+ (r = 0.37, P < 0.0001) T cells.
**Conclusions:** Although B cells are the dominant source of basal OPG, we demonstrate for the first time that T cells also significantly contribute to OPG levels, and this T cell OPG production is reduced in HIV infection. We further show that the expanded proportion of activated T cells in HIV-infected patients produced more RANKL, leading to an increased RANKL/OPG ratio. These changes create conditions favorable for, and may contribute to, enhanced bone loss in HIV infection.

# RENAL DISEASE

## WEPEB092

### PREVALENCE OF ABNORMAL BASELINE LABORATORY TESTS AMONG HIV INFECTED PREGNANT WOMEN INITIATED ON OPTION B+ BETWEEN OCTOBER 2012 AND OCTOBER 2015 AT MULAGO HOSPITAL, KAMPALA, UGANDA

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**Background:** WHO recommends 'Option B+'; initiating lifelong Antiretroviral Therapy (ART) among all HIV-infected pregnant women. Baseline laboratory investigations are recommended to determine baseline function and preexisting morbidities that may require dose adjustments or an alternative to recommended first line regimen of TDF/3TCF/EFV. We describe the prevalence of anemia and abnormal renal and liver function among women eligible for OPTION B+ at Mulago National Referral Hospital in Kampala in Uganda to inform optimal baseline monitoring and clinical management.
**Methods:** We reviewed medical records for all pregnant women newly initiated on ART over a three year period to 31st October 2015 and identified those with laboratory results. Complete blood count (CBC), liver and renal function tests were done as routine baseline tests. The DAIDS toxicity tables were used to define abnormal levels for hemoglobin (HB) and serum Alanine Transaminase (ALT). The Cockcroft-Gault formula was used to determine serum creatinine clearance (SCC) with normal serum creatinine clearance defined as ≥90ml/min.
**Results:** There were 2219 HIV-infected women who newly initiated ART during pregnancy. However of these, 2174 had HB results, 1799 had ALT results and 1724 had weight, age and creatinine to allow calculation of creatinine clearance.

| DAIDS Grades of toxicities | | Normal n (%) | Grade 1 (Mild) n(%) | Grade 2 (Moderate) n(%) | Grade 3 (Severe) n (%) | Grade 4 (Life threatening) n(%) |
|---|---|---|---|---|---|---|
| Hemoglobin | Range | >10g/dl | 8.5 - 10g/dl | 7.5 - 8.4g/dl | 7.4 - 6.5g/dl | <6.5g/dl |
| N = 2174 | | 1962 (90.3%) | 162 (7.5%) | 27 (1.2%) | 6 (0.3%) | 17 (0.8%) |
| ALT | Range | < 1.25xULN | 1.25-2.5xULN | 2.5 - 5xULN | 5-10xULN | > 10 ULN |
| N = 1799 | | 1771(98.4%) | 23 (1.4%) | 4 (0.2%) | 1 (0.1%) | 0 (0%) |

*[Table 1: DAIDS toxicity grades for HB and ALT]*

| Renal function | Normal ≥90mls/min | Slightly reduced SCC (60 - 89 mls/min) | Moderately reduced SCC (59 - 30 mls/min) | Severely reduced SCC (29 - 15 mls/min) | Renal failure < 15 mls / min |
|---|---|---|---|---|---|
| Baseline creatinine clearance | 1610 (93.4%) | 101 (5.9%) | 8 (0.5%) | 4 (0.2%) | 1 (0.1%) |

*[Table 2: Creatinine clearance categories for 1724 pregnant women initiated on Option B+]*

**Conclusions:** The prevalence of anemia was common at ~10%. However morbidities that would require dose modifications or use of alternative regimens to the recommended TDF/3TC/EFV were uncommon; with 0.8% prevalence of at least moderate renal function impairment and 0.1% of grade 3 ALT with liver dysfunction. The high prevalence of anemia supports the use of AZT-sparing regimens as the first line regimen accompanied by ongoing management of anemia during pregnancy. This data suggests that baseline renal function should be considered as a routine to allow for timely switch to a renal sparing regimen or identifying those patients who require ongoing monitoring.

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## WEPEB093

### IS URINARY NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN A PREDICTIVE MARKER OF KIDNEY DYSFUNCTION IN HIV-INFECTED PATIENTS?

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**Background:** Loss of kidney function is common in HIV-infection; early predictive markers of this condition are needed. Urinary Neutrophil Gelatinase-Associated Lipocalin (uNGAL), is a marker of tubular damage successfully employed in assessing acute kidney injury. Our study investigates if variation of uNGAL could be predictive of kidney function loss over time in HIV-patients.
**Methods:** Prospective observational study, mean follow up 192 weeks, patients from San Gerardo Hospital in Monza, Italy. Inclusion criteria: HIV infection, baseline eGRF >60 ml/min. Exclusion criteria: Diabetes, Hypertension, Dyslipidemia, pre-existing proteinuria. Urinary albumine to creatinine ratio (A/C), together with uNGAL and its standardized value (Std-uNGAL: uNGAl/uCreatinine) were determined at baseline and after 48 weeks. Plasma creatinine was measured regularly until 192 weeks. Wilcoxon signed-rank test was used to compare the within patients variation. For eGFR, a repeated measures analysis of variance was applied in order to evaluate differences at baseline, week 48 and week 192. Spearman correlation coefficient was considered to evaluate potential associations between urinary and renal function markers.
**Results:** Characteristics in **Table1**. 89 patients enrolled; Median uNGAL (and its standardized values) significantly increased during follow up (from 10.3 ng/ml [6.5-15.2] at baseline to 18.1 ng/ml [10.2-32.8] at w48, p< 0.001), while urinary A/C ratio did not show significant variation. After 192 weeks eGFR showed a significant worsening from baseline (median values of about 106, 96, 88 ml/min, at baseline, week 48 and week 192, respectively).
No association was found between uNGAL levels and clinical characteristics of patients. No significant associations were found between baseline uNGAL and between uNGAL variations among 48 weeks and eGFR values at 192 weeks.

| Age (years) | 45 (41-48) |
|---|---|
| Males | 79 (88.8) |
| AIDS (CDC stage C) | 22 (24.7) |
| CD4 (absolute number/µL) | 442 (299-617) |
| Fasting glucose (mg/dl) | 86 (81-95) |
| Triglycerides (mg/dl) | 139 (111-227) |
| Total CH (mg/dl) | 172 (150-196) |
| ART treated | 77 (86.5) |
| TDF treatment | 37 (41.6) |
| Smoking | 40 (44.9) |

*[Table 1.Demographic characteristics at baseline (Median,Q1-Q3 or N°(%)]*

**Conclusions:** uNGAL is not likely to be a predictive marker of eGFR decline over time in HIV positive individuals without classical risk factors for CKD. Intrinsic features of this marker make it probably unsuitable for monitoring chronic kidney disorders.

# ENDOCRINE AND METABOLIC ISSUES (INCLUDING DIABETES, HYPERLIPIDEMIA)

## WEPEB094

### ASSOCIATION OF MARKERS OF GUT MICROBIAL TRANSLOCATION AND INFLAMMATION WITH INSULIN RESISTANCE IN HIV-INFECTED PERSONS

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**Background:** Greater insulin resistance has been reported in HIV-infected persons in the modern HAART era, but the causes are unclear. Microbial translocation resulting from the destruction of gut lymphoid tissue early in HIV infection is thought to be a driver of immune activation and inflammation in HIV-infected adults. Gut microbial translocation (associated with obesity) is also thought to alter glucose metabolism. We hypothesized that markers of microbial translocation, monocyte activation, and inflammation would be independently associated with insulin resistance in HIV-infected adults.
**Methods:** Cryopreserved blood specimens collected from 502 HIV+ and 272 HIV- participants of the Study of Visceral adiposity, HIV, and HCV: Biologic Mediators of Steatosis (VAHH) and the hepatic steatosis and fibrosis substudies of the Women's Interagency HIV Study (WIHS) were tested for intestinal fatty acid binding protein (i-FABP), a marker of gut barrier integrity; soluble (s) CD14 and CD163, both markers of monocyte activation, and interleukin 6 (IL-6), an inflammatory cytokine. The association of these markers with insulin resistance estimated by the Homeostasis Model Assessment (HOMA-IR) was evaluated in a cross-sectional analysis using multivariable linear regression after controlling for traditional and HIV-related factors.
**Results:** HIV-infected participants had higher levels of i-FABP (median 871 vs. 541 pg/ml; p< 0.001), sCD14 (1.64 vs. 1.44 ng/ml; p< 0.001), CD163 (549 vs. 409 ng/ml; p=0.013) and IL-6 (1.0 vs. 0.86 pg/ml; p< 0.001) levels compared with controls, but little difference in HOMA-IR values (1.48 vs. 1.49; p=0.60). In controls, i-FABP, sCD14, CD163, and IL-6 showed little association with HOMA-IR in unadjusted or adjusted analysis. By contrast, in HIV-infected adults, higher CD163 levels (per doubling) were associated with 34% greater HOMA-IR (95% CI: 23%-45%). After multivariable adjustment, CD163 remained associated with 35% greater HOMA-IR (95%CI: 7%-69%). There was little association of i-FABP, sCD14, and IL-6 with HOMA-in unadjusted or adjusted analysis.
**Conclusions:** In HIV-infected adults, higher CD163 levels were independently associated with greater insulin resistance, but other markers of gut epithelial integrity, monocyte activation or systemic inflammation showed little association. Whether higher CD163 levels are a result of gut microbial translocation or a consequence of an alternate pathway needs study in prospective studies of HIV-infected adults.

## WEPEB095

### NARINGIN REVERSES HIV-1 PROTEASE INHIBITORS-ASSOCIATED PANCREATIC BETA-CELL DYSFUNCTION *IN VITRO*

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**Background:** Chronic exposure to HIV-1 Protease Inhibitors (PIs) has been associated with pancreatic β-cell dysfunction and impairment of insulin secretion. PIs have been suggested to induce β-cell dysfunction through increasing oxidative stress leading to impaired insulin secretion. The study investigated whether naringin, a naturally occurring antioxidant, could reverse PIs-induced β-cell dysfunction by reducing oxidative stress.
**Methods:** RIN-5F cells were exposed to nelfinavir (10 µM), saquinavir (10 µM), atazanavir (20 µM) 24 hr with or without glibenclamide (10 µM) in the presence of varying glucose concentrations (11-25 mM) then harvested and subjected to biochemical assays for the measurement of insulin levels, lipid peroxidation, ATP generation, Glutathione levels (GSH), Superoxide dismutase (SOD) and caspase-3 and -9 activities. Cells were further exposed to naringin (0-50 µM) in the presence of 11 mM glucose for 24 hr then subjected to insulin ELISA for insulin secretion determination. To investigate the role of PIs relative to naringin on RIN-5F cells, the cells were exposed to nelfinavir (10 µM), saquinavir (10 µM) and atazanavir (20 µM) with or without naringin (10 µM) also in the presence of 11 mM for 24 hr and similarly subjected to biochemical assays.

**Results:** PIs significantly ($p < 0.05$) reduced insulin secretion and ATP production, increased lipid peroxidation, SOD and caspase-3 and -9 activities and also reduced GSH in a glucose dependent manner. These effects were reversed by glibenclamide. Naringin (0-50 µM) caused dose-dependent increased in insulin secretion and also reduced lipid peroxidation, SOD, caspase-3 and -9 activities, increased GSH and ATP levels in cells that were exposed to PIs.
**Conclusions:** Naringin ameliorated PIs-induced impairment of β-cell dysfunction by reducing oxidative stress.

# HEPATIC COMPLICATIONS

## WEPEB096

### IMPACT OF ANTIRETROVIRAL THERAPY ON LIVER STIFFNESS AMONG ZAMBIAN ADULTS WITH HIV-HBV CO-INFECTION AND HIV MONO-INFECTION

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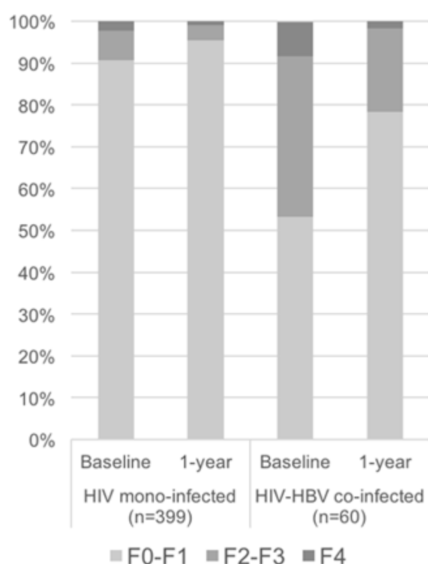
**Background:** We assessed hepatic elastography change during 1-year of antiretroviral therapy (ART) among HIV-infected patients with and without viral hepatitis B (HBV) in Zambia.
**Methods:** HIV-infected ART-eligible adults in Lusaka were enrolled in a cohort with baseline screening for HBV and hepatitis C co-infection, measurement of CD4+ count, and alanine transaminase (ALT). Liver stiffness was measured using transient elastography at ART initiation and 1-year. Using established thresholds and stratified by HBV status, we categorized liver stiffness by Metavir fibrosis stages. We described the distribution of liver disease over time and modeled the predictors of a reduction in liver disease by 1+ stage using multivariable regression.
**Results:** Among 799 patients enrolled, 41 (5.1%) died, 18 (2.2%) withdrew/transferred to another facility, and 49 (6.1%) were lost during the first year of follow-up. Of 691 in care at 1-year, 459 (399 HIV mono-infected and 60 HIV-HBV co-infected) had serial elastography and were analyzed. Median age was 34 years (interquartile range [IQR], 30-41), 53% were women, median CD4 was 240 cells/mm$^3$ (IQR, 128-347), and 449 (97.2%) overall and all HIV-HBV patients received efavirenz+tenofovir+emtricitabine. No hepatitis C was found. At baseline, 2.3% of mono-infected and 8.3% of co-infected patients had liver stiffness consistent with cirrhosis. Among those with baseline F2+ measurements, stiffness reduced by 1+ stage in most HIV and HIV-HBV patients (Figure). Patients with WHO stage 3/4 (adjusted odds ratio [AOR], 1.84, 95% confidence interval [CI], 0.93-3.65), 50+ year-olds (AOR 5.32, 95%CI, 1.66-17.08), HBV patients (AOR 5.23, 95%CI, 2.51-10.90), and those with elevated baseline ALT (AOR, 3.04; 95%CI, 1.47-6.30) were more likely to have a 1-stage improvement.




*[Change in hepatic stiffness among HIV and HIV-HBV patients in Zambia over 1-year of ART]*

**Conclusions:** Hepatic stiffness decreased in both HIV and HIV-HBV during the first year of ART in Zambia, particularly in those with older age and blood markers of liver inflammation, supporting liver monitoring and prioritization of tenofovir-containing ART for HIV-HBV patients.

## WEPEB097

### NON-INVASIVE SERUM MARKERS SUGGEST BENEFIT FOR EARLY ART INITIATION ON LIVER FIBROSIS PROGRESSION WITHIN THE START STUDY

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**Background:** Liver disease remains a major cause of morbidity in HIV infected individuals globally. The role of ART in limiting or contributing to liver fibrosis is unclear. The Strategic Timing of Antiretroviral Treatment (START) study presents an ideal opportunity to examine the effect of early or delayed ART on changes in parameters of liver health in this population.
**Methods:** Liver fibrosis was assessed using annual biomarkers by two non-invasive algorithms: the APRI and FIB-4 scores. All START participants with both serum markers available were included. Significant fibrosis ($F\geq 2$) was determined by an APRI score >0.5 or FIB-4>1.45. Prevalence and predictors of fibrosis were determined.
**Results:** 4582 participants were included (n=2274 immediate ART, n=2308 deferred). 3.7% and 2.8% were hepatitis C and B co-infected respectively. Median FIB-4 score was 0.79 (IQR 0.58, 1.07) and median APRI was 0.27 (0.21, 0.37). Significant fibrosis was present at BL in 10.8% of participants by FIB-4 and 10.4% by APRI; 15.6% of participants had significant fibrosis by either test but only 5.6% by both tests. From adjusted models, predictors of significant fibrosis using FIB-4 were older age, male gender, black race, lower BMI, hepatitis co-infection, lower CD4 count, lower albumin, lower cholesterol, and history of liver disease, whereas for APRI older age, black race, high income country, hepatitis co-infection, lower CD4, higher bilirubin, lower LDL, and history of liver disease. In those with F0-1 at BL over 10,466 person years of follow-up, significant fibrosis using FIB-4 developed in 10.8% of participants (8.2% immediate arm, 13.5% deferred arm, p< 0.001), and by APRI in 14.8% of participants (13.3% immediate ARM, 16.3% deferred arm, p=0.006).
**Conclusions:** Noninvasive markers indicating the presence of liver fibrosis were present at BL in approximately 10% of START participants. Although correlation between markers was not consistent, age, black race, hepatitis co-infection, lower CD4 and liver disease history were associated with both markers as predictors of fibrosis. Scores indicating the development of significant fibrosis were observed in 10-15% of participants over follow-up and more frequently in the deferred arm. Immediate ART initiation may reduce the incidence of liver fibrosis progression in HIV positive people with CD4>500.

## WEPEB098

### MPREVALENCE AND COFACTORS OF NONALCOHOLIC FATTY LIVER DISEASE DIAGNOSED BY TRANSIENT ELASTOGRAPHY WITH CONTROLLED ATTENUATION PARAMETER IN HIV MONO-INFECTION

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**Background:** Nonalcoholic fatty liver disease (NAFLD) is the most common liver disease in North America and a leading indication to liver transplantation. Due to chronic use of antiretrovirals, frequent metabolic comorbidities and chronic inflammation, HIV+ persons are at very high risk for NAFLD. Nevertheless, data on NAFLD in HIV mono-infection are scarce.
**Methods:** This was a prospective cohort study of HIV mono-infected adults without significant alcohol intake or coinfection with hepatitis B or C. We investigated the prevalence and cofactors of NAFLD and liver fibrosis by transient elastography (TE) and associated controlled attenuation parameter (CAP). Any grade (involving >10% of hepatocytes), significant (>30%) and severe (>60%) NAFLD were defined as

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CAP≥232, ≥260 and ≥292 dB/m, respectively. Significant liver fibrosis and cirrhosis were defined as TE measurement ≥8 and ≥13 kPa, respectively. Cofactors of NAFLD and liver fibrosis were determined using logistic regression analysis. Models were adjusted for age, gender, duration of HIV infection, hypertension, use of protease inhibitors, CD4 count, ALT, HDL cholesterol, triglycerides.
**Results:** 300 consecutive patients (mean age 50 years, 77% men; mean CD4 570, 90% on antiretrovirals) were included. CAP identified any grade, significant and severe NAFLD in 55.3%, 33.7% and 16.3% of cases, respectively. Significant liver fibrosis and cirrhosis were found in 10% and 2.3% of cases, respectively. Multivariate analysis results are reported in Table 1. After adjustments, predictor of any grade NAFLD was BMI >25 kg/m$^2$, and predictors of significant liver fibrosis were BMI > 25 kg/m$^2$ and diabetes, whereas black ethnicity was found to be protective.

| | Any grade NAFLD | Significant liver fibrosis |
|---|---|---|
| | (CAP ≥ 232 dB/m) | (TE ≥ 8kPa) |
| *Variable* | *Adjusted OR (95% CI)* | |
| Black non Hispanic ethnicity | - | 0.042 (0.00-0.50)* |
| BMI > 25 kg/m2 | 1.29 (1.16-1.43)** | 1.16 (1.02-1.33)* |
| Diabetes | - | 6.30 (1.43-27.85)* |
| CAP ≥ 232 dB/m | - | 1.02 (1.00-1.03)* |
| TE ≥ 8 kPa | 1.28 (1.04-1.58)* | - |

*[Table 1. *p< 0.05; **p< 0.001]*

**Conclusions:** NAFLD diagnosed by TE with CAP is frequent in HIV mono-infected persons, particularly in those with obesity. Significant liver fibrosis is also a frequent occurrence, especially in those with obesity and diabetes. Screening for NAFLD and liver fibrosis with non-invasive methods should be implemented in this population with the ultimate aim of establishing early interventions and preventing long-term complications of liver disease.

## WEPEB099

### FIRST WORLD REPORT OF HIV-POSITIVE LIVER DONATION TO AN HIV-POSITIVE RECIPIENT: SHORT-TERM OUTCOME

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**Background:** In most countries, transplantation of organs from HIV-positive donors is illegal in order to prevent HIV transmission to the recipient. Since 2007, the Swiss Transplantation Law allows organ transplantation from an HIV-positive donor to an HIV-positive recipient independent of previous anti-HIV therapies. We report the first liver transplantation from an antiretroviral treatment (ART)-experienced HIV-positive deceased donor to an ART-experienced HIV-infected recipient in Switzerland.
**Methods:** A 53-year-old Caucasian male, diagnosed HIV-positive in 1986 (CDC, stage B3) and successfully treated since 1992 with an anti-HIV regimen (the latest being a combination of rilpivirine/tenofovir/emtricitabine for HIV and HBV infections), received an HIV-positive liver transplant (CMV D+, R -) from a donor after brain death in October 2015. The donor was HIV-infected since 1989 (CDC, stage C3) treated with dolutegravir, tenofovir and emtricitabine with undetectable viremia (HIV-RNA < 20 copies) despite multiple nucleoside retrotranscriptase inhibitor resistance mutations including M41L, E44D, T69S M184V, L210W and T215Y. He had provided written explicit consent for organ donation and died of a cerebellar haemorrhage.
**Results:** The liver graft showed immediate function, and no medical or surgical complications occurred. The immunosuppressive regimen associated tacrolimus and mycophenolate mofetil. The patient was discharged on Day 22 post-transplant. The recipient's antiretroviral therapy was modified at the time of transplant by adding raltegravir and enfuvirtide to his ongoing regimen of rilpivirine/tenofovir/emtricitabine. This regimen covered the resistance mutation pattern of the donor and recipient. Raltegravir and enfuvirtide had no interactions with immunosuppressive drugs, and target plasma levels of tacrolimus were achieved at a dose similar to that used in HIV-negative transplant recipients. No rejection episodes occurred. Plasma HIV-RNA remained undetectable throughout the four-month follow-up.
**Conclusions:** We report here the first liver transplantation from an ART-experienced HIV+ donor to an ART-experienced HIV + recipient. Despite resistance mutations in both the donor and recipient's viruses the HIV-infection remained controlled. This encouraging observation should lead policy makers to lift the restriction limiting the transplantation of organs from ART-experienced HIV positive donors towards HIV-positive recipients.

## WEPEB100

### LIVER TOLERANCE OF INTEGRASE INHIBITORS-CONTAINING ANTIRETROVIRAL THERAPY IN FRANKFURT HIV COHORT

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**Background:** Liver toxicity is important in the selection of antiretroviral therapy and post marketing data of patients on dolutegravir-containing regimes are scarce.
**Methods:** Data from the HIV clinical cohorts at Goethe University Frankfurt, Germany was evaluated for liver enzyme elevations in patients, who initiated dolutegravir (DTG, n=81), elvitegravir (EVG, n=11) or raltegravir (RAL, n=104)-containing regimens prior to November, 1st, 2015. 31 patients were HCV-coinfected. Study visits were at baseline, week 4, 12, 36 and 52. Statistics were done with non-parametrical tests (Wilcoxon-matched-pairs-test, Mann-Whitney-test, Kruskal-Wallis-test, Page's-L-test, Friedman-test, Van-Elteren-test). P-values < 0.05 were considered as significant.
**Results:** Median Baseline ALT levels were 30.5 IU/ml (range 10-181) in the DTG group, 35 IU/ml (r:15-134) in the EVG group, and 28 IU/ml (r:8-210) in the RAL group (p>0.1). We observed a significant increase in ALT-levels in the DTG-group (Median change 2 IU/ml (r:39-198), p=0.045) between baseline and week 4. ALT-levels declined significantly (p=0.001) consecutively and there was no difference between baseline levels and at 52 weeks (Median 23 (12-93), p>0.1). No significant change in ALT values was observed in the RAL or EVG group (p>0.1) during all study timepoints up to week 52. Median Baseline GGT levels were 34 (r:10-206) in the DTG group, 31 (r:11-219) in the EVG group, and 35 (r:10-740) in the RAL group (p>0.1); during the course, there was a significant decrease observed for DTG and RAL-groups (p=0.001, p>0.001), and a not significant decreasing trend for EVG-group (p=0.095). Compared to baseline, GGT-levels were significantly different after 52 weeks on therapy for DTG and RAL groups: median values = 26 (r:14-128; DTG group; p=0.036), 19 (r:10-320; EVG group; p>0.1), and 28 (r:9-264; RAL group; p=0.013). No significant difference in liver enzyme-levels between HCV-coinfected and HIV-monoinfected patients was observed (p>0.1) in any of the three treatment groups during 52 weeks of therapy.
**Conclusions:** The liver tolerability seems to be well on Integrase inhibitors-containing therapies. Patients on dolutegravir are at an increased hazard of developing elevated ALT levels at week 4, that alleviated thereafter up to week 52.

# AGEING IN PERSONS WITH HIV (INCLUDING FRAILTY)

## WEPEB101

### DIFFERENCES IN HEALTH-RELATED QUALITY OF LIFE HIGHLIGHT THE DIFFERENT EMPHASES OF 3 FRAILTY INSTRUMENTS IN OLDER AUSTRALIAN MEN LIVING WITH HIV

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**Background:** As the Australian HIV population ages, there is increasing recognition of the need to identify frailty, a condition of physical and psycho-social vulnerability. The prevalence of frailty in the Australian HIV population is unknown. Thus, the aim of this study was to compare three different frailty instruments and to measure health-related quality of life (HRQOL), in order to better characterise the utility of each tool in people living with HIV (PLHIV).
**Methods:** HIV+ men aged over 50-years, on ART for >6 months were enrolled between March and November 2015 in a Melbourne HIV referral centre. Frailty was assessed using the Frailty Phenotype (FP), the Frailty Index (FI), and the Edmonton Frail Scale (EFS). Participants were assessed on standard quality of life scales (RAND 36-Item Health Survey 1.0/SF-36). The distribution of frail subjects in relation to physical and mental component scores were visualised.

**Results:** Ninety three study participants were evaluated: median age 60 years; 95% Caucasian, 92% had undetectable viral load. Using the FP, 11% were frail, 53% prefrail and 37% robust. Median FI score was 0.11, with 23% frail, 77% non-frail. Using the EFS, 12% were frail, 88% non-frail. All frailty instruments correlated with all subscales and components of HRQOL. The FP was skewed towards low physical component summary scores (PCS), but high mental component summary scores (MCS). The FI identified an equal number of participants who had high PCS but low MCS, and vice versa. Only the EFS identified frail participants who had equally-matched PCS and MCS.
**Conclusions:** This the first reported prevalence of frailty in Australian PLHIV. The FP conceptualises frailty in more physical terms, the FI frames frailty in varied terms, and the EFS describes a frailty that has a balanced impact on both physical and mental components quality of life, and is designed to be clinically implemented. Regardless of frailty instrument, frailty is associated with poor HRQOL. Each instrument is significantly different, however, consensus on the definition of frailty is required to adequately manage older PLHIV with chronic disease.

## WEPEB102

### FRAILTY IN MIDDLE-AGED AND OLDER HIV-INFECTED INDIVIDUALS IN CHINA

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**Background:** Increasing evidence suggests that HIV infection is associated with early occurrence of frailty. We determined the prevalence and predictors of frailty in a sample of middle-aged and older HIV-infected individuals in China.
**Methods:** This study was conducted in Taizhou prefecture, Zhejiang province, China. 345 HIV-infected participants over 40 years from the National Observational HIV Cohort were consecutively enrolled between June 2014 and May 2015, and compared with 345 age-, gender- and education- frequency-matched HIV-uninfected individuals. Frailty was assessed by the Onen modified version of Fried criteria (weight loss, low physical activity, exhaustion, weak grip strength, and slow walking time). Presence of at least three out of five criteria was defined as frailty and presence of 1-2 was defined as prefrailty. Multivariable ordinal logistic regression was used to investigate the factors associated with prefrailty/frailty.
**Results:** HIV-infected individuals were more likely to be frail (6.1% vs. 0.6%) and prefrail (28.1% vs. 11.9%) than uninfected individuals (*P* trend < 0.01), and this association remained statistically significantly after adjustment for confounding variables (OR=2.26; 95% CI: 1.43-3.56). Within the HIV-infected group, older age (OR=1.36 per 10 years increase; 95% CI:1.03-1.78), current BMI < 18.5 kg/m$^2$ (vs. 18.5-24.9 kg/m$^2$) (OR=2.46; 95% CI: 1.09-5.59), more depressive symptoms (OR=1.28; 95%CI:1.20-1.35), having one or more comorbidities (OR=3.03; 1.71-5.35), longer duration since HIV diagnosis (OR=1.13 per 1 year increase; 95% CI:1.02-1.24), and having HIV-associated neurocognitive disorder using the International HIV Dementia Scale (OR=1.92; 95% CI:1.12-3.30) were independently associated with higher risk of prefrailty/frailty whereas current BMI ≥ 25 kg/m$^2$ (OR=0.44; 95% CI:0.21-0.92) and regular exercise (OR=0.53; 95% CI:0.28-0.99) were associated with lower risk of prefrailty/frailty.
**Conclusions:** HIV infection is associated with prefrailty/frailty in middle-aged and older HIV-infected individuals. Our findings suggest that longer duration of HIV infection increases the risk of frailty, but being overweight/obesity provides protective effect against frailty for HIV-infected individuals.

## WEPEB103

### HIGH PREVALENCE OF GERIATRIC SYNDROMES IN YOUNG TREATED HIV-INFECTED INDIVIDUALS

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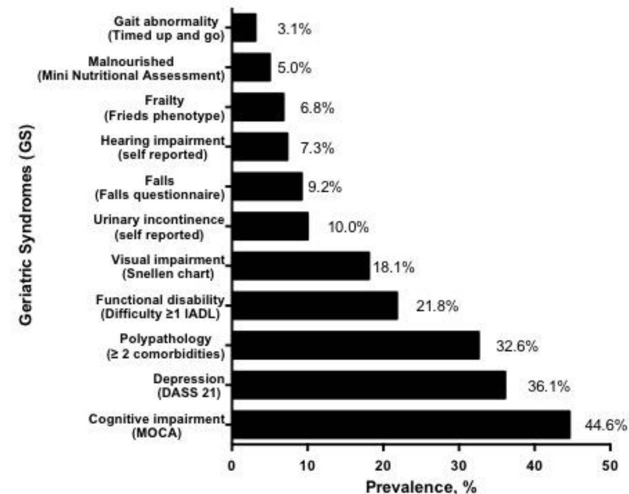
**Background:** Geriatric syndromes (GS) represent multiple conditions which reflect the declining function of individuals and are associated with poor health outcomes. Though GS are generally assessed in the elderly, determinants of GS including substance abuse, social isolation, multi-morbidity and chronic inflammation are prevalent even in young adults living with HIV. Here, we characterised the prevalence and risk factors associated with GS in a cohort of ART-treated HIV-infected individuals with a diverse age-range.
**Methods:** Participants were selected among HIV-infected individuals attending the University Malaya Medical Centre, Malaysia. All participants were aged >25 years, had undetectable HIV RNA for at least 12 months and no acute illness at recruitment. Participants answered validated questionnaires and performed biochemical screening and physical examinations at a research clinic where a range of GS were assessed. Both clinical and socio-behavioural factors were explored using multivariate analysis to determine risk factors associated with GS expressed as a composite outcome (total score=11).
**Results:** We analysed 257 individuals with a median(IQR) age of 43 (37-50) years, 81% male, 72% Chinese, median(IQR) CD4 T-cell count and duration on ART were 536 (394-736) cells/ml and 5 (3-10) years, respectively. The prevalence of GS are as shown below.




*[Prevalence of geriatric syndromes (GS) among ART-treated HIV infected individuals]*

GS was evident even in young participants with 46% reporting two or more GS among 24-40 years, 64% among 41-55 years, 68% among 56-70 years, 100% among >71 years. Increasing GS correlated with increased risk of mortality (VACS index, p< 0.001), poorer quality of life scores (p< 0.001) and increased healthcare visits (past 12 months), (p< 0.001). In multivariate analysis, risk factors associated with increasing GS included increasing age (p< 0.001), history of AIDS-defining illness (p=0.034), low physical activity (p=0.034) and social isolation (p=0.028).
**Conclusions:** We found a high prevalence of GS in young HIV-infected individuals in our setting with both socio-behavioural and clinical factors contributing to its presence.

# IMMUNE RECONSTITUTION DISORDERS / IMMUNE RECONSTITUTION INFLAMMATORY SYNDROME (IRIS)

## WEPEB104

### IRON TRANSPORT BIOMARKERS ARE ASSOCIATED WITH HIV-ASSOCIATED IMMUNE ACTIVATION AND IMMUNE RECONSTITUTION ON ANTIRETROVIRAL THERAPY

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**Background:** Persistent immune activation, despite antiretroviral therapy (ART), and the CD4 nadir may contribute to HIV-associated complications, including neurocognitive impairment, cardiovascular and kidney disease. We hypothesized that HIV-induced changes in iron transport may affect viral replication, immune activation, and CD4 recovery in HIV-infected individuals and examined associations of biomarkers of iron transport and iron stores with immune activation and immune recovery on ART.

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**Methods:** We measured iron-related biomarkers (transferrin, ferritin, transferrin receptor, haptoglobin, and *beta*-2-microglobulin), iron stores (ferritin-transferrin-receptor index) and immune activation (CD40 ligand, CD40L) using validated commercial assays in plasma collected at enrollment (baseline) and again at a median of 48 weeks on-study in 60 HIV-infected adults from the Case Center for AIDS Research (CFAR) database who underwent regular follow-up and comprehensive data collection. Fifty-two participants were ART-näive at enrollment; 8 had begun ART within the previous year. Iron-biomarker associations with changes in CD4, CD4/CD8 ratio, and CD40L were evaluated by multivariable regression, adjusting for potential confounders.
**Results:** All study participants (median age 38, 18% female, median CD4 at baseline 304/mm$^3$, estimated duration of HIV infection 57 weeks), including 52 who first initiated ART on-study, had a median rise in CD40L of 348 pg/mL and in CD4 of 165 cells/mm$^3$. Ferritin (r=-0.49, p< 0.01), *beta*-2-microglobulin (r=-0.40, p< 0.01) and haptoglobin (r=-0.25, p=0.05) at baseline negatively correlated with CD4, and with VL and CD4 nadir (both p< 0.05). Although haptoglobin levels at baseline were positively associated with CD40L before and after adjustment for age and VL (β=3.4, p< 0.01), higher pre-ART haptoglobin predicted greater decline in CD40L 20-66 weeks after first initiating ART (adjusted β =-3.46, p=0.01). Lower baseline ferritin predicted CD4>500 cells/mm$^3$ post-ART (adjusted β=-0.003, p=0.03), and lower transferrin-receptor index (more replete iron status) was associated with higher CD4/CD8 ratio (adjusted β=-0.037, p=0.01) on ART.
**Conclusions:** Iron transport is associated with immune activation (CD40L) pre-ART and with change in CD40L within 20-66 weeks after first initiating ART. Lower pre-ART ferritin and higher iron stores during ART independently predicted better immune recovery in this sample. Iron status and iron transport in HIV-infected adults initiating treatment may contribute to long-term HIV outcomes.

## OTHER ADVERSE REACTIONS AND COMPLICATIONS OF ART

### WEPEB105

### THE ASSOCIATION OF HIV/HAART WITH CLINICAL AND BIOCHEMICAL INDICES IN AFRICAN WOMEN WITH PREECLAMPSIA

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**Background:** HIV/AIDS and pre-eclampsia contribute significantly to morbidity and mortality worldwide. However, the relationship between pre-eclampsia, HIV and HAART has not been adequately studied and remains controversial. Our objective was to determine whether the clinical and biochemical changes associated with pre-eclampsia are significantly altered in the presence of HIV infection and treatment with HAART.
**Methods:** Ninety eight women (45 HIV infected pre-eclamptic women on HAART, 53 uninfected pre-eclamptic women) were recruited and followed until delivery at a large South African hospital. A control group (45 normotensive HIV infected, 50 normotensive uninfected) was also recruited for comparison. Demographic data, clinical features, laboratory parameters and maternal and fetal outcomes were analysed.
**Results:** There were no significant differences in the clinical features and laboratory indices between the groups, except for gamma glutamyl transferase which was significantly elevated in the HIV/HAART group (*p*=0.001). Perinatal and maternal complications were similar and there were no maternal deaths. Obesity was prevalent in both groups.
**Conclusions:** The clinical features, laboratory indices, and complications among HIV infected pre-eclamptic women on HAART is similar to uninfected pre-eclamptic women. Current guidelines remain appropriate, however serial hepatic function tests are necessary. The prevention of obesity is also necessary to reduce long term cardiovascular complications associated with these conditions.

### WEPEB106

### TENOFOVIR ASSOCIATED RENAL DYSFUNCTION IN AFRICAN HIV PATIENTS ON RITONAVIR BOOSTED PROTEASE INHIBITOR REGIMEN: A RETROSPECTIVE MULTICENTER STUDY

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**Background:** Tenofovir disoproxil fumarate (TDF) and ritonavir boosted protease inhibitors (PI/r) are frequently used together as standard second-line therapy in Africa. TDF may cause renal toxicity, especially when given with a PI/r in second-line therapy. We aimed to determine whether a TDF plus PI/r regimen was associated with greater decline in renal function compared to non-TDF and PI/r among African patients on second-line therapy.
**Methods:** We performed a retrospectivecohort study in patients randomized to the PI/r plus nucleoside reverse transcriptase inhibitors (NRTIs) arm of the Europe-Africa Research Network for Evaluation of Second-line Therapy (EARNEST) trial. The NRTIs (2 to 3) were clinician-selected without use of resistance testing. Exposure was defined as use of a TDF-containing NRTI regimen; the comparison group was those on a non-TDF regimen (all given with lopinavir/ritonavir). The primary outcome of interest wasrenal dysfunction defined ascreatinine clearance (Cockcroft Gault formula) < 60ml/min/1.73m$^2$ or a 25% decline in creatinine clearance from baseline (if baseline < 60ml/min/1.73m$^2$) occurring up to 144 weeks of follow-up. Univariate and multivariate generalized estimating equations and Cox proportional hazards regression analysis were used tothe model cumulative creatinine clearance changesover time and the association between exposure and outcome after adjusting for age and comorbidities. The cumulative incidence of renal dysfunction was calculated using life table methods.
**Results:** There were 270 exposed and 52 unexposed participants by week 144.Mean eGFRdeclined for both TDF and non-TDF groups from second-line initiation to week 144 (-13.8ml/min/1.73m$^2$ vs. -13.6 ml/min/1.73m$^2$p=0.97). Incidence rate of renal dysfunction was 28.0(95% CI 18.8 to 41.8) per1000 person-years for exposed participants and 24.2 (95% CI 10.7 to 58.1) per 1000 person-years for non-exposed. Unadjusted HR for TDF vs non-TDF was 1.16 (95% CI 0.44 to 3.04 p=0.76). After adjusting for age, infectious and non infectious co-morbidities, the HR for association between exposure and outcome was 1.30 (95% CI 0.48 to 3.49 p=0.52).
**Conclusions:** No clinically or statistically significant effect of TDF+PI/r vs non-TDF+PI/r regimenon renal dysfunction was observed.

## OTHER NON-COMMUNICABLE DISEASES (INCLUDING SCREENING)

### WEPEB107

### PREVALENCE AND CHARACTERISTICS OF THE OVERLAPPING EPIDEMICS OF HIV AND NON-COMMUNICABLE DISEASES (NCDS) IN RURAL KWAZULU NATAL, SOUTH AFRICA

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**Background:** Sub-Saharan African countries face dual epidemics of HIV and chronic non-communicable diseases (NCDs). HIV is a risk factor for cardiovascular disease and is associated with depression, potentially driving a triple burden of chronic diseases (HIV, NCDs and mental illness). However, the community prevalence of NCDs and mental illness is not well-characterized in high HIV prevalence settings, such as in South Africa.
**Methods:** We conducted a home based HIV counselling and testing study in rural and peri-urban settlements in Vulindlela, KwaZulu Natal, South Africa between November 2011 and June 2012. 545 contiguous households were approached and all adults over the age of 18 were offered an HIV test. Follow-up visits were conducted in January 2015 to all consented households to conduct depression, obesity, blood glucose, cholesterol and blood pressure screening using point-of-care tests. The Patient Health Questionnaire (PHQ-9) was used to screen for depression. Logistic regression was use to compare the outcomes of obesity, hypertension, hypercholesterolemia, diabetes, and depression by HIV status and demographic variables.

**Results:** Thirty months after an initial visit, 587 (46%) of 1272 participants were located and screened. Two thirds were female (69%) and 33% were HIV positive. Prevalence of NCDs were high; 71% were overweight (BMI 25 to 29.9) or obese (BMI >= 30), 38% with glucose > 5.8mmol/L, 33% with stage 1 or 2 elevated blood pressures (define stage 1 & stage 2 BPs), low density cholesterol > 5.2mmol/L (46%) and 37% depression (PHQ >= 10). Controlling for age, gender, socio-economic status and education, HIV negative individuals were nearly twice as likely to both have hypertension (RR 0.598, p < 0.05) and elevated glucose (RR 0.566, p < 0.01). Depression, elevated body mass index and cholesterol did not vary significantly by HIV status.
**Conclusions:** In this community-based sample of adults in KwaZulu-Natal, HIV and NCDs were prevalent; approximately one-third had HIV, hypertension, diabetes or depression and two-thirds were overweight or obese. Hypertension and elevated glucose were more common in HIV negative persons than HIV positive persons. Community HIV testing programs provide an opportunity for early detection and linkage to care for NCDs and HIV.

## WEPEB108

### OCULAR CONDITIONS ARE MORE COMMON AMONG HIV-INFECTED INDIVIDUALS USING ART FOR AN EXTENDED PERIOD OF TIME

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**Background:** HIV infection may directly and indirectly affect the eye. Infectious ocular disease associated with low CD4 count prior to antiretroviral therapy (ART) is relatively well documented, but limited data exist on occurrence of ocular conditions in HIV-infected patients using ART for extended period of time.
**Methods:** We recruited 342 adult participants visiting healthcare facilities in rural South Africa for HIV-related services, i.e. HIV test, pre-ART care, ART initiation or collection. We assessed occurrence of ocular conditions in four groups of individuals: HIV-uninfected (n=105), HIV-infected but not on ART (n=16), HIV-infected on ART < 12 months (n=56) and HIV-infected on ART >12 months (n=165). Demographic and clinical data were collected and full ophthalmic examination including fundoscopy was conducted. Occurrence of ocular conditions was compared between these four groups; age-adjusted odds ratio (OR) was calculated.
**Results:** HIV-infected individuals reported eye complaints more often (OR=1.9; 95% CI: 1.1-3.2, P=0.020) than those without HIV-infection and were more likely to have an ocular condition on examination (OR=3.1; 1.7-7.7; P< 0.001). Conditions affecting the external eye, anterior chamber or posterior chamber, but not the neuro-ophthalmic segment, were significantly more common among HIV-infected individuals (Table 1).

| | HIV infected on ART | No HIV infection | OR (95% CI) | P-value |
|---|---|---|---|---|
| External Eye | 40 (17%) | 7 (7%) | 2.8 (1.6-6.6) | 0.015 |
| Anterior Chamber | 79 (33%) | 18 (17%) | 6.5 (0.8-50) | 0.07 |
| Posterior Chamber | 58 (24%) | 10 (10%) | 3.1 (1.5-6.4) | 0.001 |
| Neuro-ophthalmic | 8 (8%) | 25 (11%) | ns | |

*[Table 1]*

Clinically detectable cataract was significantly more common in HIV-infected individuals on ART (52% vs. 16%; OR=4.3; 95% CI: 1.9-9.5, P< 0.001) than those without HIV-infection, especially among individuals using ART for more than 3 years (57%). Participants using ART for more than 3 years were more likely to have posterior eye segment conditions than those on ART for less than < 12 months (13 vs. 30%; OR=2.6; 1.0-5.0; P=0.047); in particular HIV retinopathy (1.4 vs. 10%).
**Conclusions:** Ocular conditions are more common among HIV-infected individuals on ART; the posterior segment is particularly affected in those using ART for extended period of time. Regular eye screening including fundoscopy may be indicated to prevent visual impairment in these individuals.

## WEPEB109

### PREVALENCE AND CLINICAL PHENOTYPE OF ASTHMA IN HIV-INFECTED ADULTS ON ART

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**Background:** Little is known about the prevalence and clinical phenotype of asthma in the HIV-infected population. Here, we estimated asthma prevalence in HIV-infected persons and describe the asthma phenotype in an HIV-infected cohort at Duke University Medical Center (DUMC).
**Methods:** Using electronic health record-based algorithms, we estimated asthma prevalence at DUMC, Durham, North Carolina. Additionally, we enrolled 29 HIV-infected asthmatic subjects on ART and 33 HIV-uninfected asthmatic controls for clinical phenotyping. Study participants were ≥18 years old, < 10 pack year history of smoking, no history of respiratory infection/antibiotic use in last 30 days, no underlying illness with altered lung function, and no use of systemic steroids in the last two weeks. Clinical phenotyping included asthma questionnaires (ACQ, SNOT22), FeNO, spirometry, methacholine challenge, and Phadiatop testing for atopic status.
**Results:** Asthma prevalence ranged from 5.2%-12.5% in HIV-infected and 4.0%-6.8% in HIV-uninfected persons. 29 HIV-infected and 33 HIV-uninfected asthmatics were enrolled for phenotyping. Demographics were similar except for more HIV-uninfected females and more HIV-infected persons with a smoking history. More HIV-uninfected asthmatics were receiving asthma treatment with combination inhaled corticosteroids/long-acting beta agonists. No significant differences in Phadiatop testing or the SNOT22 survey were seen. Although airway physiology (% predicted FEV1, FEV1/FVC% ratio, methacholine PC20, and FeNO) was similar between groups, the median asthma control questionnaire (ACQ) score was higher among HIV-infected asthmatics indicating inadequately-controlled asthma.

| Characteristics | HIV-infected (n=29) | HIV-uninfected (n=33) | Total (n=62) | p-value |
|---|---|---|---|---|
| Age(yrs; median) | 43.9 | 42.8 | 43.5 | 0.7765 |
| Female | 10/29 (34.5%) | 28/32 (87.5) | 38/61 (62.3%) | <0.001 |
| African-American | 22/29 (75.9%) | 23/32 (71.9%) | 45/61 (73.8%) | 0.881 |
| Smoker ever | 13/29 (44.8%) | 7/32 (21.9%) | 20/61 (32.8%) | 0.057 |

*[Demographics of HIV-infected asthmatics]*

| Asthma characteristics | HIV-infected (n=29) | HIV-uninfected (n=33) | Total (n=62) | p-value |
|---|---|---|---|---|
| FEV1 (% predicted); median | 88 | 85 | 87 | 0.7281 |
| FEV1/FVC%; median | 0.79 | 0.76 | 0.77 | 0.9386 |
| Methacholine PC20; median | 0.44 | 0.34 | 0.39 | 0.534 |
| FeNO (avg ppb); median | 22.25 | 19.5 | 20 | 0.7515 |
| Phadiotop positive | 23/28 (82.1%) | 22/30 (73.3%) | 45/58 (77.6%) | 0.421 |
| ACQ score; median | 1.57 | 1.14 | 1.43 | 0.2013 |
| SNOT22 score; median | 24.5 | 16 | 22 | 0.8145 |
| Taking ICS/LABA | 5 (17%) | 13 (39%) | 18 (29%) | |

*[Clinical phenotype of HIV-infected asthmatics]*

**Conclusions:** Asthma is more prevalent in HIV-infected than HIV-uninfected persons followed at DUMC. Although there were no differences in airway physiology between our two groups, HIV-infected asthmatics appear to have worse asthma control as depicted by an ACQ of 1.6. However, gender and use of asthma medications may have altered our clinical profiles. Further evaluation is needed to explain these differences.

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## WEPEB110

### COOKING FUEL AND RESPIRATORY SYMPTOMS AMONG PEOPLE LIVING WITH HIV IN RURAL UGANDA

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**Background:** Household air pollution from biomass fuels is a leading cause of chronic respiratory disease in resource-limited settings. HIV infection is independently associated with chronic respiratory symptoms, but little is known about relationships between household air pollution and respiratory symptoms among people with HIV.
**Methods:** We analyzed data from the Uganda AIDS Rural Treatment Outcomes Study, a longitudinal cohort of HIV infected persons taking antiretroviral therapy. Participants completed quarterly study visits for CD4 count and viral load, and sociodemographics and physical health questionnaires. Primary outcomes included
1) cough or dyspnea in the last 30 days and
2) chronic cough (>4 weeks).
Primary exposure was cooking fuel type, and was categorized as charcoal or firewood, which accounted for 99% of study visits. Logistic regression models were fit using generalized estimating equations to detect associations between the respiratory symptoms and cooking fuel type. Separate models were used for men and women, as women typically do the majority of cooking.
**Results:** 734 participants (70% female) contributed 2,759 study visits (median 20/participant) from 2005 - 2014. At enrollment, median age was 34, 13% of women and 48% of men had ever smoked tobacco, and 55% of women and 67% of men reported firewood as their primary cooking fuel. Respiratory symptoms were common, with cough or dyspnea reported at 28% (927) and chronic cough reported at 10% (313) of visits. In models adjusted for age, smoking, occupation, household asset ownership index, CD4 count and viral load, cooking with firewood was associated with increased odds of chronic cough among women (AOR 1.41, CI 1.00 - 1.99, p 0.047), compared to cooking with charcoal. No association was seen between respiratory symptoms and cooking fuel type among men.

| | Cough or dyspnea in the last 30 days (n = 2,759 visits total) | Cough of at least 4 weeks' duration (n = 2,732 visits total) |
|---|---|---|
| Primary cooking fuel firewood vs. charcoal | | |
| Men | 1.36 (0.87, 2.10) | 0.87 (0.47 - 1.62) |
| Women | 1.09 (0.86, 1.38) | 1.41 (1.00 - 1.99) |
| p for interaction | 0.35 | 0.21 |

*[Adjusted odds ratios (95% CI) of respiratory symptoms among HIV-infected Ugandans cooking with firewood]*

**Conclusions:** Cooking with firewood as compared to charcoal is independently associated with chronic cough in HIV-infected women in rural Uganda. These results signal a need to pursue further investigations to elucidate the public health implications of relationships between HIV infection, sex, biomass fuel exposure, and chronic lung disease.

## WEPEB111

### IMMUNOPHENOTYPIC CHARACTERIZATION OF HIV-INFECTED ADULTS WITH ASTHMA

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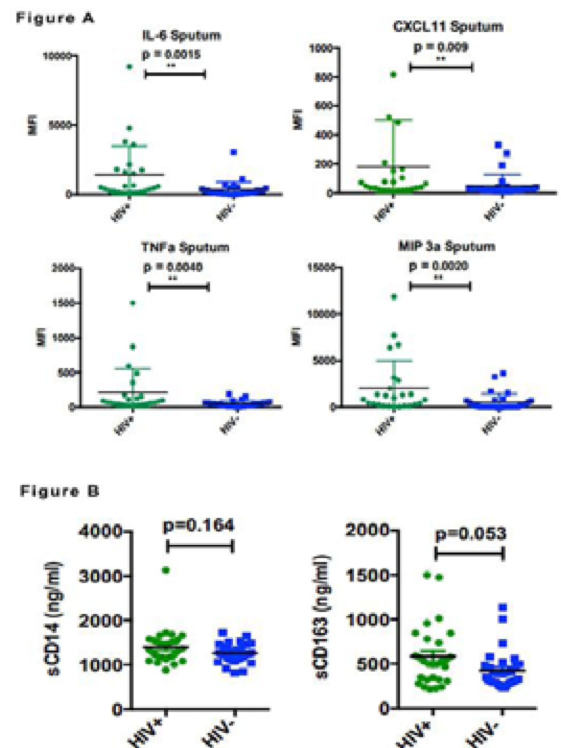
**Background:** While HIV-infected persons are known to have accelerated rates of emphysema/COPD, the clinical and immune phenotype in HIV-infected asthmatics has not been well described. Given asthma management is complicated by disease heterogeneity, we performed prospective immunophenotyping of HIV-infected asthmatics on ART to elucidate possible immune mechanisms driving asthma in this population.
**Methods:** HIV-infected and uninfected non-smoking asthmatics were recruited at Duke University Medical Center, Durham, North Carolina. Participants underwent clinical and immunological phenotyping, including FeNO, spirometry, DLCO, methacholine challenge, Phadiatop assays, and induced sputum and plasma sampling for multiplexed cytokine analyses.
**Results:** 29 HIV-infected and 33 HIV-uninfected asthmatic participants were enrolled. Other than more males and greater smoking history among HIV-infected participants, no significant differences in pulmonary measurements or Phadiatop positivity were noted. HIV-infected asthmatics demonstrated an atopic, eosinophilic phenotype not dependent on canonical Th2 cytokines (IL-4, IL-5, and IL-13), whereas HIV-uninfected asthmatics demonstrated a neutrophilic-predominant phenotype. HIV-infected asthmatics had significantly higher levels of 8-isoprostanes, a reliable noninvasive biomarker of oxidative stress in asthma, suggesting airway inflammation.

| Sputum Characteristics, median (IQR) | HIV-infected (n=29) | HIV-uninfected (n=33) | Total (n=62) | p-value |
|---|---|---|---|---|
| % Eosinophils | 5.77 (1.28, 8.61) | 1.64 (0, 3.65) | 2.69 (0.46, 7.87) | 0.03 |
| % Neutrophils | 33.98 (12.83, 58.63) | 55.84 (37.04, 74.47) | 47.44 (18.67, 68.27) | 0.03 |
| 8-Isoprostanes (pg/mL) | 25.64 (13.18, 44.84) | 11.24 (7.33, 26.73) | 18.37 (9.97, 31.03) | 0.003 |
| Nitrite & Nitrate (nM) | 22.58 (12.79, 26.64) | 18.81 (8.67, 24.48) | 20.40 (10.31, 26.64) | 0.48 |

*[Cellular and inflammatory characteristics of induced sputum in HIV-infected asthmatics]*

HIV-infected asthmatics demonstrated higher sputum IL-6 and TNF-α, both potently produced by lung macrophages. CXCL11, a T cell chemoattractant, and macrophage inflammatory protein (MIP-3α), a macrophage cytokine elevated in BAL of asthmatics, were also higher in sputum of HIV-infected asthmatics. Plasma sCD163, a marker of macrophage activation, was elevated in the HIV-infected group.




*[Fig A) Multiplexed cytokine analysis of HIV-infected and uninfected asthmatic sputum. B) Plasma sCD14 & sCD163 in HIV-infected/uninfected asthmatics]*

**Conclusions:** Although a similar asthma clinical phenotype was present in both groups, HIV-infected asthmatics demonstrate an esoinophilic phenotype with elevated sputum IL-6 and peripheral and lung compartment cytokines indicative of chronic macrophage activation. These data suggest that a common asthma clinical phenotype can emerge from distinctly different immunologic pathways, with HIV infection prominently modulating one such pathway.

## PHARMACOKINETICS AND OUTCOMES OF ART IN WOMEN DURING AND AFTER PREGNANCY

### WEPEB112

### PRE-CONCEPTION SUPPORT FOR COUPLES LIVING WITH HIV: A STRATEGY TO REDUCE MOTHER TO CHILD HIV TRANSMISSION (MTCT) AT SENKATANA ANTIRETROVIRAL THERAPY (ART) CLINIC IN MASERU, LESOTHO

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**Background:** Senkatana is an ART clinic with more than 4000 women on treatment, of which, 50% are young adults requiring reproductive health services. Sexual and reproductive health services(SRH) are an integral part of comprehensive HIV services, yet many clinics do not offer integrated reproductive health and HIV services. In 2012, EGPAF introduced integrated SRH into HIV service delivery to reduce MTCT.
**Description:** As part of routine HIV services, counseling on reproductive health services was provided to all HIV infected young adults, including discussions on the desire to have children and contraception. Preconception care included: health education on intended and safer pregnancy, safer sex, ART adherence counselling, and couples counselling. Couples that desired to have children had close Viral load monitoring to ensure suppression. standard Antenatal, postnatal, early infant diagnosis (EID) and child welfare services were provided.
**Lessons learned:** From October 2012-September 2015 there were 230 pregnancies and 116 deliveries. The mean age of mothers was 30.65 years and mean duration of treatment was 2.9 years. Mean gestational age at enrollment to antenatal care was 18.81 weeks. Mean CD4 at time of conception was 507; 95% were on first line regimens, while 5% were on second line. Viral loads were undetectable in 88% of cases. Table 1 below shows DNA-PCR and HIV antibody results at different time point for the infants born into this program.

| Infant age | Number of HIV tests (DNA PCR or rapid tests) | HIV-negative infants | HIV-positive infants | Total |
|---|---|---|---|---|
| 6-8 weeks | 105 | 105 | 0 | 105 |
| 14 weeks | 87 | 87 | 0 | 87 |
| 9 months | 59* | 59 | 0 | 59 |
| 18 months | 7** | 7 | 0 | 7 |

*[Results of Early Infant Diagnosis of infants born at Senkatana Centre program]*

*59 children had rapid test at 9 months of which 4 tested HIV-positive but were subsequently HIV-negative on DNA PCR **All 7 children were tested by rapid test.
**Conclusions/Next steps:** Integration of HIV treatment program and reproductive health is essential for meeting the reproductive health needs of families affected by HIV. These results further support the importance of lifelong ART for women of reproductive age in the prevention of MTCT. This approach will be scaled up while sustaining the current activities at the center.

## OTHER ISSUES RELATED TO PREGNANCY

### WEPEB113

### LOW BIRTH WEIGHT PREDICTS POST-PARTUM DETERIORATION IN VIROLOGIC CONTROL AMONG HIV-1 INFECTED WOMEN IN BRONX, NY, USA

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**Background:** The prevalence of low birth weight < 2500g (LBW) is higher among HIV-infected infants than in HIV-exposed, uninfected newborns. HIV-exposed uninfected infants are still more likely to weigh < 2500g than HIV-unexposed infants. We studied the relationship between LBW, maternal HIV-viremia and CD4 count at the first prenatal visit, at delivery and at one year post-partum in our high seroprevalance inner city urban population.
**Methods:** We reviewed all deliveries of women living with HIV who received care at our hospital from 2000 to 2015. We recorded maternal VL, CD4 count, years since diagnosis, antiretroviral treatment, demographics and social history. These categorical variables were assessed using regression analysis and Pearson's Chi-Square test.
**Results:** Of 183 HIV-infected pregnant women, 63% were Black, 36% Hispanic and 1% White. The majority (58%) delivered by cesarean. 57% had been diagnosed within 5 years of pregnancy, 18% had been infected for more than 10 years, 7.1% were perinatally infected, and 3.3% had < 1500g infants. In early pregnancy, 16% had CD4 < 200 and 42% had VL >=1000. By delivery, 13% had low CD4 < 200 and 15% had VL >=1000. 42% of perinatally infected women had LBW (p=0.02). One in six (16%, 95% CI 11-23%) newborns weighed < 2500g. 82.8% of LBW were delivered prematurely (p=0.001), with correlation to low CD4 at birth (7.7%, p=0.003).
At one year, CD4 and VL were available for 132 (72%) women. CD4 < 200 was found in 11%, while the % of women with VL >=1000 more than doubled to 36%. Multivariate regression analysis showed a significant association of LBW and years since HIV diagnosis (p = 0.04), VL at first visit and 1 year postpartum (p=0.001; $R^2$ = 0.752).
**Conclusions:** LBW was significantly associated with years since HIV diagnosis, maternal immunodeficiency (CD4< 200) and suboptimal control of HIV disease at the first prenatal visit. Additionally, LBW was a risk factor for loss of maternal viral suppression during the first postpartum year. We suggest that maternal and fetal immune responses to suboptimally controlled maternal HIV disease may play an important role in fetal growth and preterm delivery of HIV-exposed uninfected infants.

### WEPEB114

### ACCEPTABILITY OF SHORT MESSAGING SERVICE (SMS) USE AMONGST TUBERCULOSIS (TB) AND TB-HIV CO-INFECTED PARTICIPANTS IN THE IMPROVING RETREATMENT SUCCESS (IMPRESS) STUDY

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**Background:** The use of mobile technology in resource-limited settings is rapidly increasing and cellphone based interventions have great potential for use in healthcare. SMS technology was implemented within the IMPRESS Study, to assess acceptability and feasibility amongst clinical trial participants in Durban, South Africa.
**Methods:** From May 2014 to October 2015, all participants that consented to participate had their cellphone numbers captured on the Communicate® system and SMS campaigns were generated in the form of appointment reminders, missed appointment SMS, motivational SMS, and pharmacokinetic visit instructions. Patients were interviewed at enrolment and at each follow up visit to assess acceptability.
**Results:** Uptake of mobile technology use in the study was high; of the 195 participants that enrolled in the IMPRESS Study, 181 (92.8%) consented to receive SMS of whom 131 (72.4%) were TB-HIV co-infected. Reasons for refusal (n=14; 7.7%) included not having a cellphone (n=2), sharing cellphone (n=2), didn't use SMS's frequently (n=2), didn't need SMS reminders (n=3), illiterate (n=1), no reason (n=4). Thus far, 2 patients have opted out (no longer needs reminders; didn't want child to read SMS) and 78.8% had a Zulu language preference. Thirteen (6.1%) of the participants enrolled reported shared cellphone use and 56 (28.4%) had cellphone number changes. Only 78 (43.1%) participants had access to a cellphone with internet capabilities and 63 (34.8%) participants reported internet use. Participants found the SMS's useful (98.3%), easy to read and understand (100%) and were willing to receive information related to their condition or dosing instructions by SMS (96.7%). Approximately 10% thought there was a potential for discrimination, stigma or social harm by receiving SMS's.
**Conclusions:** The preliminary findings suggest that the use of mobile technology in a format accessible on all basic cellphone types, such as SMS, is an acceptable and feasible intervention to employ amongst TB patients. Potential social harms that may result in inadvertent disclosure of disease status, although not reported, are a concern for SMS receivers. Ongoing verification of cellphone numbers is crucial to ensure successful SMS delivery. For future application system design should be compatible with both basic and smartphones.

## WEPEB115

### THE ANTIRETROVIRAL PREGNANCY REGISTRY: 25 YEARS OF MONITORING FOR BIRTH DEFECTS

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**Background:** Antiretrovirals (ARVs) have been effective in reducing vertical transmission of HIV. The Antiretroviral Pregnancy Registry (APR) has monitored prenatal ARV use for an early signal of teratogenicity for 25 years.
**Methods:** APR is an ongoing international, voluntary, prospective exposure-registration cohort study, overseen by an independent Advisory Committee. Birth defect prevalence and risk for major birth defects are estimated and compared to internal and external comparator groups. Statistical inference is based on exact methods for binomial proportions. Sufficient numbers of 1st trimester exposures have been monitored to allow detection of at least 1.5-fold increase in risk of overall birth defects for nine ARVs and a two-fold increase for six.
**Results:** Of the 17618 evaluable prospectively enrolled pregnancies through July 2015, there were 16699 live births (LB) with prenatal ARV exposure at any time during pregnancy and 473 birth defects for overall prevalence of 2.8 defects/100 live births (95% confidence interval (CI): 2.6, 3.1). Among 7738 1st trimester exposures to ARVs, 221 birth defects were reported, with a prevalence of 2.9% (95% CI: 2.5, 3.3). Among 8959 2nd/3rd trimester exposures to ARVs, there were 250 birth defects, with a prevalence of 2.8% (95% CI: 2.4, 3.2). Prevalence Ratio comparing 1st vs 2nd/3rd trimester exposures was 1.02 (95% CI: 0.86, 1.22).
**Conclusions:** To date the overall birth defect prevalence in APR has not been significantly different from two population based surveillance systems: 2.72/100 live births reported in the Metropolitan Atlanta Congenital Defects Program (MACDP, Centers for Disease Control and Prevention); and 4.17/100 LB from the Texas Birth Defects Registry (TBDR, Texas Department of State Health Services); or the APR internal comparator of 2nd/3rd trimester exposures. For didanosine and nelfinavir a modest, statistically significant increase in prevalence is noted when compared to MACDP but not TBDR. The APR independent Advisory Committee concludes “The Antiretroviral Pregnancy Registry finds no apparent increases in frequency of specific defects with first trimester exposures and no pattern to suggest a common cause; however, potential limitations of registries should be recognized”.

## WEPEB116

### ASSESSMENT OF SERUM ADIPOKINES LEVELS IN HIV ASSOCIATED PRE-ECLAMPSIA

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**Background:** South Africa is currently faced with high incidences of HIV, pre-eclampsia and obesity in pregnancy complications. The aetiology of pre-eclampsia remains unknown, however, adipokines have been postulated to play a role in its pathogenesis. Concurrently, HIV and obesity, have been reported to be associated with dysregulation and elevated levels of adipokines and inflammatory cytokines. Therefore, the aim of this study was to determine the level of adipokines viz., C-peptide, gastric inhibitory polypeptide (GIP), glucagon like peptide (GLP)-1, plasminogen activator inhibitory (PAI) 1, visfatin in HIV associated pre-eclampsia.
**Methods:** Patients were recruited from a regional hospital in KwaZulu-Natal (BE256/12). The study population was divided into non-pregnant (n=90), normotensive (n=121), early (n=32; EOPE) and late onset (n=58; LOPE) pre-eclamptic groups. These groups were further stratified according to their HIV status, and all had body mass index (BMI) recorded. Serum adipokine levels were quantified by the Bioplex luminex immunoassay.
**Results:** We observed a significant difference in C-peptide, GIP and GLP-1 in the non-pregnant versus the normotensive, and normotensive versus the LOPE group ($p < 0.05$). Visfatin varied between the LOPE versus the non-pregnant group (p=0.0014) and GIP between the normotensive versus EOPE groups (p=0.0239). Furthermore, a significant difference was observed between HIV positive and negative groups for, GIP (p=0.00065); GLP-1 (p=0.03) and visfatin (p=0.0108) irrespective of non-pregnant and type of pregnancy. We also observed high levels of the adipokines in the HIV positive compared to the HIV negative group.
**Conclusions:** This study concludes that C-peptide, GIP, GLP-1, PAI-1 and visfatin were significantly deregulated hence they may have predictor test value in pre-eclampsia diagnosis at an early stage. This is the first study to report adipokine dysregulation in the triad of HIV infection, pre-eclampsia and obesity.

## WEPEB117

### COMPARED TO SHORT COURSE ZIDOVUDINE, DOES TRIPLE ANTIRETROVIRAL THERAPY IMPROVE ANTIBODY TRANSFER ACROSS THE PLACENTA?

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**Background:** Highly active anti-retroviral (ARV) therapy given during pregnancy improves a woman's immunological profile. However, impact on antibody transfer to the foetus is unknown.
**Methods:** Human immunodeficiency virus (HIV) type 1 infected pregnant women in Nairobi and Mombasa, Kenya, with CD4 counts between 200 - 500 were randomized at 32 weeks gestation to short course zidovudine (AZT) or triple ARV (AZT/Lamivudine(3TC)/Kaletra(Lopinavir/Ritonavir)) for prevention of mother to child HIV-1 transmission (PMTCT). Levels of antibodies against measles virus, *Streptococcus pneumoniae* and rotavirus were measured at enrollment, and delivery. The two arms of the study were compared to determine effect of short course and triple ARVs on levels of maternal pathogen-specific antibodies and amounts transferred to the baby through cord blood.
**Results:** Overall, 141 women were randomized to triple ARV and 148 to short course AZT; cord blood was available only for the Nairobi site (n=20 in triple ARV arm and n=22 in short course AZT arm). Socio-demographic and clinical characteristics were similar between arms. Antibody levels to measles, S. *pneumoniae* and rotavirus were comparable at enrolment and delivery between arms. However, there were lower measles and pneumococcal antibody levels at delivery while rotavirus antibody levels at delivery were comparable to those at enrolment. There was a trend for women on triple ARV to transfer higher levels of measles antibody compared to transfer in the AZT arm.

| | Enrolment | | | Delivery | | |
|---|---|---|---|---|---|---|
| | Triple ARV (median (IQR)) | Short-course AZT (median (IQR)) | p-value | Triple ARV (median (IQR)) | Short-course AZT (median (IQR)) | p-value |
| Measles IgG (mIU/mL) | 2349 (1096-5897) | 2592 (1159-5343) | 0.3 | 1614 (676-4462) | 1858 (644-4340) | 0.9 |
| Pneumococcal IgG (mg/mL) | 45 (26-78) | 50 (28-80) | 0.9 | 36.5 (20-67) | 39 (18-65.5) | 0.8 |
| Rotavirus IgG (U/mL) | 10584 (6140-18313) | 10707 (6476-17745) | 0.8 | 10632 (5930-20784) | 9382 (6119-18139) | 0.5 |

*[Antibody levels at enrolment and delivery by treatment arm]*

Cord blood measles antibody was 5440 mIU/mL (IQR 873, 6959) vs 1943 mIU/mL (IQR 1018, 4999) and rotavirus antibody was 14226 U/mL (IQR 9435, 20792) vs 7555 U/mL (IQR 4381, 22029), p=0.1 for both. Levels of pneumococcal antibody in cord blood were similar between the two arms, 29 g/mL (IQR 11, 102) vs 29 g/mL (IQR 12, 58), p=0.6.
**Conclusions:** Transfer of measles and rotavirus antibodies was more efficient among women randomized to triple ARV compared to those on short course AZT. Initiation of triple ARV early in pregnancy could result in improved passive antibody transfer to the foetus.

## WEPEB118

### DEPRESSION, RETENTION IN CARE, AND UPTAKE OF PMTCT SERVICE IN KINSHASA, THE DEMOCRATIC REPUBLIC OF CONGO: A PROSPECTIVE COHORT

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**Background:** Depression may play an important role in observed high rates of Loss-to-follow-up (LTFU) along the prevention of mother-to-child HIV transmission (PMTCT) cascade in sub-Saharan Africa. We do not know of any study that has explicitly examined the association between Depression and LTFU in PMTCT settings. The aim of this study was to assess the association between prenatal depression and
1) LTFU or
2) Uptake of PMTCT services (attended all scheduled clinic visits and accepted available services).
**Methods:** Between April 2013 and August 2014, as part of a randomized control trial to evaluate the effect of providing a small, and increasing, cash incentive conditional on attending scheduled clinic visits and accepting offered PMTCT services on retention in and uptake of PMTCT services, newly-diagnosed HIV-infected women, ≤32 weeks pregnant, registering for antenatal care, in 85 clinics in Kinshasa, Democratic Republic of Congo, were recruited and followed-up until LTFU, death, transfer out, or six-weeks postpartum, whichever occurred first. Participants were interviewed at enrollment using a questionnaire which include the Patient Health Questionnaire (PHQ-9). Depression was defined as a PHQ-9 score of ≥15.
**Results:** Among 433 women enrolled, 51 (11.8%) had a PHQ-9 score ≥15 including 15 (3.5%) with a score ≥20. At six weeks postpartum, 67 (15.5%) were LTFU and 331 (76.4%) were in care and have accepted all available PTMCT services. Of participants with depression at enrollment, 17.7% (9/51) were LTFU at six weeks postpartum compared to 15.2% (58/382) among those without, but the association was not statistically significant: adjusted OR 1.26 (95%CI 0.57-2.76); adjusted for age, education, gravity, initiation of ANC visit before 20 weeks of gestation, wealth quintile and whether the participant walk to clinic or not. On the other hand, 78.4% (40/51) of participants with PHQ-9 score ≥15 were in care at six week postpartum and had attended all there scheduled visit in time and accepted available services compared to 76.2% (291/382) among those with PHQ-9 score < 15: adjusted OR 1.04 (95%CI 0.51-2.14).
**Conclusions:** In this cohort of newly-diagnosed HIV-infected pregnant women, prenatal depression did not predict LTFU or uptake of PMTCT at six weeks postpartum.

## WEPEB119

### TUBERCULOSIS IN HIV-INFECTED PREGNANT WOMEN (PW) IN HAITI: LESSONS LEARNED (1999-2014)

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**Background:** Haïti is one of the countries most affected by tuberculosis (TB) and HIV in the Americas. TB infection during pregnancy among HIV-infected women is associated with poor maternal and infant outcomes. HIV prevalence among pregnant women in Haiti is estimated at 3%, and the incidence of TB among HIV-infected pregnant women is unknown, as not routinely collected by HIV programs. We report TB diagnoses among HIV-infected pregnant women enrolled in prevention of mother to child transmission (PMTCT) care at GHESKIO, one of the largest HIV programs in Haiti, from 1999 through 2014.
**Methods:** Data from all HIV-infected pregnant women enrolled in PMTCT care at GHESKIO from January 1999 to July 2014 were retrospectively analyzed. PMTCT care spans the period from HIV testing of PW through follow-up of the mom and baby 18 months post partum for final HIV infant diagnosis (according to national guidelines). TB screening and diagnosis was done using the American Thoracic Society diagnostic standards.
**Results:** 3737 HIV infected women had a total 4665 unique pregnancies. Median age was 27 years; 76% earned< $1/day. Median maternal CD4 at time of PMTCT enrollment was 494 cells/ul (IOR 328-691). Among 3737 women, TB was diagnosed in 160 patients (4.3 %) with median CD4 of 313 (23 - 1048) at time of TB diagnostic. Of the 160 TB patients, 76 (47.5%) were on antiretroviral treatment (ART). Previous history of TB was reported in 174 (4.6%) of the 3737 (PW), within a median of 16 month (1-120) prior PMTCT enrollment.
**Conclusions:** This cohort of HIV + pregnant women in Haiti has a high prevalence of TB. This may be an underestimation of TB prevalence given suboptimal screening and difficulty in diagnosing latent TB in pregnancy. There is a need to reinforce active screening for diagnostic of TB in this population to improve health outcomes.

## PREP FOR CONCEPTION AND OTHER APPROACHES FOR THE SERODISCORDANT COUPLE TO ACHIEVE CONCEPTION

## WEPEB120

### KNOWLEDGE, ATTITUDES AND PRACTICES OF SAFER CONCEPTION COUNSELING AMONG PROVIDERS IN DURBAN, SOUTH AFRICA

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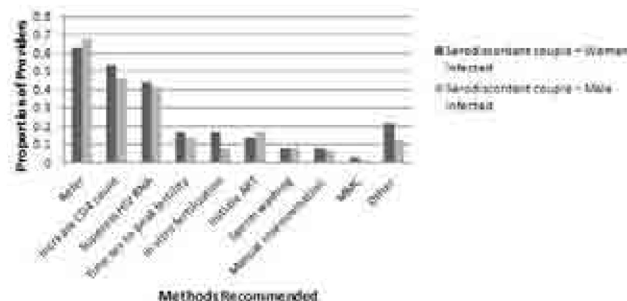
**Background:** In 2011 the Southern African HIV Clinicians Society published guidelines to support HIV-affected couples to meet reproductive goals while minimizing sexual transmission of HIV. We sought to quantify how healthcare workers (HCWs) in KwaZulu-Natal, South Africa view people living with HIV (PLWH) having children, how frequently they discuss reproductive intentions, and their knowledge of strategies to reduce periconception HIV transmission (e.g. ART for infected partner, PrEP for uninfected partner, condomless sex to peak fertility, and assisted reproduction) among an at risk population.
**Methods:** Lists of HCWs from 6 public-sector clinics near Durban were generated. In November 2012, randomly-selected providers were approached to complete questionnaires developed based on formative data collected in the same clinics. Providers working for ≥12 months who had not participated in our formative interviews were eligible. Most doctors from these clinics participated in the formative interviews and were excluded.
Data were summarized utilizing descriptive statistics.
**Results:** 119 participants included 49 enrolled nurses, 28 professional nurses and 22 counselors. Median age was 40 years (IQR: 32, 50), time since training was 8 years (IQR: 4.5, 17.5) and 95% were female. While 92% agreed "it is acceptable for people living with HIV to have children", 40% and 68% never asked female or male clients about reproductive plans. 55% reported knowledge of safer conception strategies. Among those, over 60% recommended referral to another facility or provider and less than half recommended delaying conception until HIV-RNA suppression. Several reported irrelevant strategies (e.g. sperm washing for female-infected serodiscorant couple)(Figure 1).




*[Figure 1. Recommendations for HIV-serodiscordant couples who choose to conceive as expressed by providers reporting safer conception knowledge (N = 65)]*

**Conclusions:** While providers report positive attitudes towards PLWH seeking pregnancy, discussion of reproductive goals remains infrequent and knowledge of safer conception strategies is low. These data highlight the need for further education of HCWs in periconception risk reduction strategies to implement current guidelines and reduce HIV transmission among HIV-affected couples while supporting their reproductive goals.

# ISSUES RELATED TO HORMONAL AND NON-HORMONAL CONTRACEPTION

## WEPEB121

### ASSESSING THE EFFECT OF DEPOT MEDROXYPROGESTERONE ACETATE (DMPA) VERSUS NORETHISTERONE ENANTHATE (NET-EN) ON HIV DISEASE PROGRESSION AMONG RECENTLY INFECTED SOUTH AFRICAN WOMEN

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**Background:** Injectable hormonal contraceptives (HC) are frequently used in South Africa, including among HIV+ women. We compared the effect of two injectable contraceptives, depot medroxyprogesterone acetate (DMPA) and norethisterone enanthate (NET-EN) on HIV disease progression.

**Methods:** Women who acquired HIV infection during the VOICE trial were invited to enroll in MTN-015, a prospective cohort study evaluating the impact of investigational HIV chemoprophylactic preventative agents on HIV disease progression. Study visits occurred at enrollment and 1, 3, and 6 months after detection of HIV infection, then 6-monthly. Contraceptive use, CD4+ T-cell count, plasma HIV-1 viral load, and antiretroviral therapy (ART) initiation were assessed at enrollment and regular follow-up visits. Among South African women reporting injectable HC use at enrollment, Cox proportional hazards models were used to compare effects of NET-EN versus DMPA on time to CD4 < 350 and ART initiation.

**Results:** Among 232 HIV+ South African women who enrolled and returned for follow-up, 184 reported using injectable HC at enrollment, 124 (67%) used DMPA and 60 (33%) used NET-EN. Median time from testing HIV+ in VOICE to enrollment was 68 days (interquartile range [IQR]: 37,114). Median age was 23 years and median CD4 count and HIV-1 viral load were 537 cells/mm$^3$ (IQR: 422,711) and 4.4 $\log_{10}$ copies/ml (IQR: 3.6, 4.9), respectively. Two women were on ART at enrollment. Demographic and clinical characteristics did not differ by baseline injectable method. Median follow-up time was 1.87 years. No significant differences were noted for time to CD4 < 350 or ART initiation by injectable method.

| | # of events/ person-years | Unadjusted HR (95% CI) | Adjusted HR (95% CI)* |
|---|---|---|---|
| *CD4 < 350* | | | |
| NET-EN | 14/61 | 1.23 (0.64, 2.38) | 1.13 (0.58, 2.20) |
| DMPA | 25/133 | Ref | Ref |
| *ART Initiation* | | | |
| NET-EN | 5/72 | 0.67 (0.24, 1.85) | 0.71 (0.26, 1.97) |
| DMPA | 15/147 | Ref | Ref |

HR = hazard ratio. *Cox proportional hazards models adjusted for baseline CD4 count and included injectable HC method as a time-varying exposure with follow-up censored if women reported stopping injectable HC. For the CD4 <350 model, follow-up was also censored at ART initiation.

*[Associations between injectable hormonal contraception and HIV disease progression outcomes among South African women recently infected with HIV]*

**Conclusions:** Understanding the effects of DMPA and NET-EN on HIV disease progression is important in South Africa where HIV prevalence is high and injectable HCs are common. Our findings suggest no substantial difference in HIV disease progression between recently infected HIV+ users of DMPA and NET-EN.

## WEPEB122

### EXPANDING THE MIX OF CONTRACEPTIVE METHODS IN AN HIV PREVENTION TRIAL

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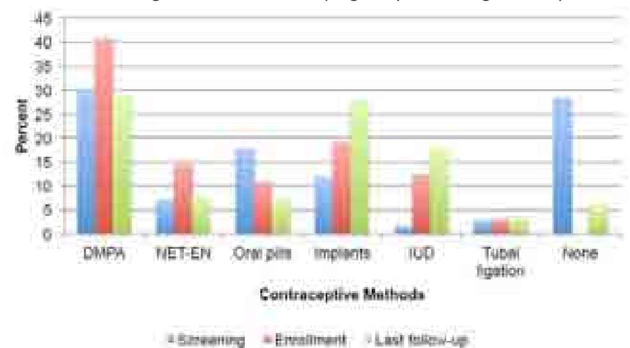
**Background:** In many African settings with high HIV incidence, contraceptive options are limited. Comparatively fewer women use long-acting reversible contraception (LARCs) such as intrauterine devices (IUDs) and implants, than use injectable depot medroxyprogesterone acetate (DMPA), which has been associated with an increased risk of HIV acquisition in some studies. Within a large, multinational HIV prevention study (MTN-020/ASPIRE, a phase III trial of the dapivirine vaginal ring), a Contraceptive Action Team (CAT) was established to expand contraceptive options for participants.

**Methods:** Reliable contraceptive use was an enrollment requirement for MTN-020/ASPIRE. Contraceptive use was assessed monthly; motivations for switching were abstracted from the participants' charts. The CAT was comprised of 1-3 staff members per site; sites identified and addressed challenges with increasing LARC uptake.

**Results:** 2,629 women enrolled in MTN-020/ASPIRE. The CAT initially identified six key barriers to LARC uptake: provider, community, and participant bias; lack of IUD and implant insertion training, and acquisition of LARC devices. At screening, 30% used DMPA, 28% reported no method; LARC's were used by < 15% of women. Over the course of follow-up, IUD use increased from 2 to 18%, and implants increased from 12 to 28%, with 46% of women using LARCs by the end of the study (Figure 1). Oral contraceptive use decreased from 17% to 7%. Method switching during the study occurred in 1,162 women (44%) with the most commonly cited reason for the first switch being interest in LARC. The pregnancy rate during the study was 4%.




*[Contraceptive use at screening, enrollment and the last follow-up visit attended in ASPIRE]*

**Conclusions:** Expansion of the contraceptive method mix at HIV prevention research sites can be successfully achieved with on-site provision of LARCs. These data suggest that, when individually counseled and offered a range of options, women in HIV prevention settings will diversify contraceptive uptake. This approach may inform models for integrated delivery of family planning and HIV prevention services.

## WEPEB123

### DOES HIGHER BODY MASS INDEX WORSEN EFAVIRENZ-BASED ANTIRETROVIRAL THERAPY'S NEGATIVE IMPACT ON THE CONTRACEPTIVE IMPLANT'S EFFECTIVENESS AMONG HIV-POSITIVE WOMEN?

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**Background:** Recent data suggests an association between concomitant contraceptive implant and efavirenz-based antiretroviral therapy (ART) use and increased contraceptive failures (or pregnancies) among HIV-positive women. With other hormonal contraceptives, such as oral contraceptive pills, increasing body mass index (BMI) may also reduce contraceptive effectiveness. We aimed to determine if increasing BMI modifies the association between concomitant efavirenz use and incident pregnancies among implant users.
**Methods:** We conducted a secondary analysis of a cohort of HIV-positive women aged 15-45 years using implants enrolled in care in Western Kenya and followed from January 1, 2011 to December 31, 2013. The primary outcome was incident pregnancy diagnosed clinically. The primary exposures were ART regimen (efavirenz-, nevirapine-based ART, and no ART) and BMI (underweight: BMI≤18.5, normal weight: BMI≥18.5 but < 25, and overweight: BMI≥25 and < 30 since no pregnancies were observed in the few obese (BMI≥30) women in our cohort). We used Poisson models, adjusting for repeated measure, age, and the World Health Organization HIV stage, to compare pregnancy rates among implant users on different combinations of ART regimen and BMI.
**Results:** Our analysis included 3,457 women using implants contributing 5,885 years of follow-up with 84 incident pregnancies. Among efavirenz-based ART users, the adjusted incident rate ratios for underweight and overweight women in comparison to normal weight women were 0.94 (95% CI 0.26-3.34) and 1.49 (0.45-4.92), respectively. Among nevirapine-based ART users, the adjusted incident rate ratios for underweight and overweight women in comparison to normal weight women were 0.58 (0.17-1.92) and 0.74 (0.28-1.96), respectively. At all strata of BMI, we observed higher incident pregnancies among women on efavirenz- vs. nevirapine-based ART. The interaction term between ART regimen and BMI was not significant.
**Conclusions:** Our data does not suggest an association between higher BMIs and worsening negative impact of efavirenz on implant effectiveness. However, studies with greater number and follow-up of overweight and obese women are needed to better evaluate the effect of increasing BMI on implant effectiveness among efavirenz users. Nonetheless, until more definitive data are available, caution should be taken in considering higher BMI an additional risk factor in women considering concomitant implant and efavirenz use.

## OTHER SEX-SPECIFIC ISSUES

## WEPEB125

### AWARENESS OF MALE PARTNER CIRCUMCISION ON WOMEN'S SEXUAL AND REPRODUCTIVE HEALTH

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**Background:** Male medical circumcision (MMC) is known to reduce the risk of HIV acquisition in men by 50-60%, with no direct HIV benefit to women. There is concern that knowledge of MMC efficacy could influence sexual risk behaviours among women. This study investigated whether women with circumcised partners displayed riskier sexual behaviour compared to women with uncircumcised partners.
**Methods:** This secondary analysis from the Vaginal and Oral Interventions to Control the Epidemic (VOICE) trial enrolled 5029 HIV uninfected women, aged 18 to 45 years, at 15 sites in Africa. Participants underwent monthly pregnancy and HIV testing and sexually transmitted infections (STI) testing at baseline and quarterly visits. Socio- demographic and sexual behaviour data were collected. Impact of partner circumcision awareness on participant STI outcomes was assessed using Cox regression models. Impact of circumcision awareness on condom usage and frequency of sex was analysed using GEE models with a logit link. Participant age, education, study site and marital status were adjusted for in all analyses.
**Results:** There were 4982 participants with a baseline response, 1561 (31%) reported having circumcised partners, 2863 (57%) having uncircumcised partners and 558 (11%) did not know the circumcision status of their partner. Partner circumcision rate varied by country: South Africa (33%), Uganda (51%) and Zimbabwe (10%). Women with circumcised partners had a significantly reduced risk of syphilis acquisition compared to all other women, [Hazard ratio 0.51 (0.26, 1.00), p-value=0.05)]. A trend toward significance remained in the adjusted model (adjusted (adj) p-value=0.06). Participants with circumcised partners tended to have significantly fewer sex acts in the past 7 days than participants with uncircumcised partners (6% less likely to have ≥1 act of sex, adjusted p-value= 0.0005). Participants with uncircumcised partners were significantly less likely to have used a condom at the last sex act compared to the other two groups, [adjusted relative risk 0.86 (0.80, 0.92), adj p-value< 0.0001].
**Conclusions:** This study found no evidence of sexual risk compensation in women with circumcised partners. Risky sexual behaviour in women with uncircumcised partners was noted. Ongoing education of couples on the benefits of MMC is essential to HIV prevention efforts.

## WEPEB126

### THE FEMALE GENITAL TRACT MICROBIOME IS ASSOCIATED WITH VAGINAL ANTIRETROVIRAL DRUG CONCENTRATIONS IN HIV-INFECTED WOMEN ON ANTIRETROVIRAL THERAPY

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**Background:** Optimal female genital tract (FGT) antiretroviral exposure is essential for genital virologic suppression and relevant to HIV prevention methods utilizing antiretroviral therapy in women. Changes in FGT microbiota are common and occur with bacterial vaginosis (BV), sexually transmitted infections (STIs), and certain hygienic practices, and may alter genital pH and other factors that influence compartmental drug penetration. We therefore examined the relationship between microbiota and antiretroviral concentrations in the FGT.
**Methods:** Virologically suppressed HIV-infected women on tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) and atazanavir/ritonavir (ATV/RTV) without clinical BV/STIs were prospectively enrolled. Twenty participants underwent 6 twice-weekly visits (N=117) over 1 menstrual cycle where paired samples for plasma and cervicovaginal trough antiretroviral concentrations, and cervicovaginal lavage (CVL) were collected. Antiretroviral concentrations were measured using high-performance liquid chromatography-tandem mass spectroscopy. Illumina MiSeq 16S rRNA gene sequencing of CVL samples, with analysis using R, Phyloseq, and Dirichlet Multinomial Mixtures clustered each participant-visit into a unique microbiome community type (CT) based on similar abundances of bacterial taxa. Repeated-measures analyses, using generalized mixed models, were used to estimate the association between microbiome CT and FGT antiretroviral concentrations controlling for plasma antiretroviral concentrations and significant predictor variables (body mass index, recent sexual activity, and CVL blood contamination).
**Results:** Participants were 95% African American with median age 38 (range, 24-48) years. High-quality sequencing data (N=109) lead to 3 unique microbiome CTs: a low-diversity (by Shannon index) CT dominated by *Lactobacillus* (N=40), and intermediate- (N=28) and high-diversity (N=41) CTs with increased abundance of multiple anaerobic taxa. In multivariable models, compared to intermediate-diversity CTs, low- and high-diversity CTs were associated with 47.6% (95% Confidence Interval (CI), 12.1-68.7) and 54.0% (CI, 8.1-76.8) reduced ATV concentrations (P=0.03), and 49.5% (CI, 8.9-72.0) and 45.6% (CI, -27.3-76.7) reduced tenofovir (TFV) concentrations in the FGT (P=0.06), respectively. FTC concentrations were not significantly associated with microbiome CT (P=0.27).
**Conclusions:** We demonstrate for the first time in this proof-of-concept study that certain microbiome CTs are associated with decreased FGT ATV and TFV concentrations. Validation of these findings in larger studies and with additional antiretrovirals could have broader clinical implications and may influence antiretroviral drug choice for biomedical HIV prevention in women.

## WEPEB127

### SELF-COLLECTED VS. PROVIDER-COLLECTED SAMPLES FOR CERVICAL SCREENING AMONG HIV-INFECTED WOMEN USING XPERT HPV

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**Background:** Self-collected vaginal swabs may provide a useful and cost-effective alternative to provider-collected specimens in HPV "test-and-treat" programs. We determined agreement between self- and provider-collected samples using the Xpert HPV test, a point-of-care, real-time PCR for high-risk HPV (hrHPV).
**Methods:** This is an interim report of an ongoing cross-sectional study of HIV-infected South African women. We calculated
(1) agreement beyond chance (Cohen's Kappa statistic), and
(2) percent agreement among positives between self-collected and provider-collected swabs.
**Results:** Between December 2014 and May 2015, 106 eligible women were enrolled. The median age was 39 years (interquartile range [IQR]: 35-44) and median CD4+ cell count 396 cells/uL (IQR: 269-608). Forty-three (41%) self-collected and 35 (33%) provider-collected samples and were positive for at least one hrHPV type. Self-collected samples displayed greater cellularity, with lower mean Ct values (30.6 vs. 31.7, p=0.005). With respect to agreement between self- and provider-collected samples, the Kappa statistic for any hrHPV type, HPV16, and HPV18 or 14 were 0.64 (95% confidence interval [CI]: 0.49-0.79), 0.68 (95% CI: 0.42-0.94), and 0.71 (95% CI: 0.47-0.96), respectively.
**Conclusions:** We observed robust agreement between self- and provider-collected samples tested using Xpert HPV at the point-of-care, with greater cellularity and increased hrHPV detection in the self-collected samples. Our preliminary results suggest a potential role for self-collected samples in HPV test-and-treat programs.

## WEPEB128

### EFFECT OF GENDER ON SURVIVAL IN AND IN THE CAUSES OF DEATH IN THE AIDS RESEARCH NETWORK COHORT (CORIS) 2004-2014

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**Background:** A higher vulnerability of women admitted in the CORIS cohort was observed in recent years. Our objective was to estimate gender impact on survival and in the causes of death in the CoRIS from 2004 to 2014.
**Methods:** CoRIS is an open prospective multicentre cohort of HIV-infected adults naive to cART at entry. Gender differences in causes of Death and gender effect on time to death were studied. Kaplan Meier survival curve (log-rank test) and Cox estimative regression models were done including some at enrolment confounders (age, category of transmission, geographical origin, level of education, HIV CDC stage, CD4 cell count < 200 cel/mL and HIV-RNA level >$10^5$ copies/ml). Date of entry in the cohort was categorized in 3 periods, 1 (2004- 2007), 2 from (2008- 2010) and 3 (2011- 20014).
**Results:** Overall 371 (3.5%) deaths were observed in the studied period, 71 (4.1%) and 300 (3.4%) in women and male, without no differences in the estimated 10-year survival after entering the cohort, 88% vs. 92%, p=0.83. The most frequent cause of death was related with HIV infection (41.5 %) followed by not HIV related neoplasias (14 %), without differences according to gender or the period explored.
The effect of gender on time to death was investigated separately in the three periods, as an interaction between gender and period was shown (p = 0.003). In an unadjusted model gender has a differential effect in the three periods 1.31( 0.93,185 ;p= 0.11), 0.88(0.53,1.45; p=0.62)
and 0.36 (0.19,0.74;p=0.03), being protective in period 1 changing to a deleterious effect in Period 3. After adjusting by confounder variables gender has no longer effect on time to death 0.78 (0.36,1.73; p=0.55). A predictive model demonstrated that age, education level, HIV stage, CD4 cell count, and HCV coinfection were significantly associated with shorter time to death.
**Conclusions:** Causes of death were similar in women and men without a changing pattern during the studied years. Lower survival observed in women, in the last years is associated to the age, level of education, HIV disease severity and HCV coinfection.

## CAPACITY BUILDING FOR HIV PREVENTION RESEARCH

## WEPEC129

### WORLD REGION OF BIRTH AND AGE ARE STRONG PREDICTORS OF CD4 DECLINE: A STUDY OF HIV SEROCONVERTERS IN THE UNITED KINGDOM AND SWEDEN

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**Background:** At the population level, the first CD4-cell count after HIV diagnosis is used to assess late presentation and estimate incidence (back-calculation) and probable country of HIV acquisition. At the Individual and subpopulation levels, however, CD4-cell decline after seroconversion may be variable. We developed formulas to estimate probable time period of HIV serocoversion that take into account the demographic prolife of the HIV population.
**Methods:** Analyses of national UK and Swedish HIV seroconverters with a documented negative HIV test in the previous year and at least two CD4 counts after three months (0.25 year) of diagnosis and prior to start of treatment. We fitted maximum likelihood multilevel multivariable linear models with random effects on the square root of CD4-cell counts. We defined the 'anchor' date as the date three months after diagnosis for each individual (range 0.25-1.25 years after the seroconversion).
**Results:** 1,653 seroconverters (1,233 UK; 420 Sweden) with 15,881 CD4-cell counts were analysed. The majority were men (90%) and born in Europe (84%). CD4-cell counts at the anchor date differed significantly by world region of birth and decline speed varied significantly by world region of birth and age at seroconversion (Table 1). This can be translated to an average drop of 65 cells/$mm^3$ in the first year among those born in Europe, 46 cells/$mm^3$ (p=0.003) among those born in Africa, and 67 cells/$mm^3$ among the others (p=0.654) and each year increase in age was associated with a 1.3% faster CD4-cell count decline (p=0.002). Formulas can be applied on HIV-diagnosed adults without previous negative HIV tests.

| Parameters (intercept= CD4-cell count at the anchor date) | World region of birth | | | |
|---|---|---|---|---|
| | Europe | Africa | Other areas | Unknown* |
| Upper interquartile limit of the intercept (U) | 690 | 570 | 689 | 703 |
| Median intercept (M) | 561 | 438 | 543 | 559 |
| Lower interquartile limit of the intercept (L) | 444 | 364 | 434 | 439 |
| CD4 decline speed per year (on CD4 square root) for the reference group ‡ ($S_k$) | 1.062 | 1.062 | 1.062 | 0.941 |
| CD4 decline speed per year (on CD4 square root) adjusted world region of birth ($S_r$) | 0 | -0.543 | -0.069 | 0 |
| CD4 decline speed per year (on CD4 square root) adjusted by age ($S_a$) | 0.014 | 0.014 | 0.014 | 0.015 |
| The probable longest time length between HIV seroconversion date and an adult's first CD4 cell count | $\frac{\sqrt{U}-\sqrt{first\ CD4\ cell\ count}}{S_k+S_r+S_a*(age\ at\ diagnosis)}+1.25$ | | | |
| A central estimate of the time length between HIV seroconversion date and an adult's first CD4 cell count) | $\frac{\sqrt{M}-\sqrt{first\ CD4\ cell\ count}}{S_k+S_r+S_a*(age\ at\ diagnosis)}+0.75$ | | | |
| The probable shortest time length between HIV seroconversion date and an adult's first CD4 cell count) | $\frac{\sqrt{L}-\sqrt{first\ CD4\ cell\ count}}{S_k+S_r+S_a*(age\ at\ diagnosis)}+0.25$ | | | |

* For generalization, we built a model on age and time which can be applied on people without world of region reported.
‡ Individuals aged 15 years old and born in Europe.

*[Table 1. Parameters and formulas to estimate probable time period of HIV seroconversion]*

**Conclusions:** World region of birth and age were strong predictors of CD4 decline. Our formulas can be used by other European countries to improve estimate of time from infection in key populations and better inform public health programming for most at risk populations.

## WEPEC130

### ENGAGING MEN IN MICROBICIDE VAGINAL RING TRIALS: SUCCESSES AND CHALLENGES

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**Background:** Addressing women's social and physiological vulnerability to HIV infection is a global health priority, underscored in international strategies aiming to eliminate new HIV infections. Early biomedical responses solely focused on efficacy, without a corresponding investment to broader community in which the women come from. Contemporary study designs recognize that participating women are surrounded by many influencers, e.g. household, community members and stakeholders servicing community to optimize retention and adherence. Identifying mechanisms to support women's microbicide use in communities is a critical pillar for future access.
**Methods:** Seven research centres (RCs) across South Africa (6) and Uganda (1) implemented multi-layered community engagement strategy to meaningfully involve men. Adopting UNAIDS/AVAC Good Participatory Practice (GPP) guidelines as an overarching framework, RCs tailored responses to their environments. Male community leaders, religious institutions and other positions of influence which continue to be male-dominated are targeted in culturally-sensitive, community responsive interventions. Conducted one-on-one /couples' counselling, male workshops and dialogues to reach men in diverse circumstances.
**Results:** All RCs reported increase in male acceptability and support for The Ring Study. Where men are supportive, women display improved adherence and report better psychological well-being. Participants have benefitted from this direct support from community liaison officers in engaging their partners, resulting in improved participant retention.
**Conclusions:** Successful male engagement has positively improved retention and adherence of study participants for The Ring Study. These interventions remain resource intensive and future success requires the identification of critical enablers to ensure that investments efficiently and effectively support women's decision to use vaginal microbicides. This requires a corresponding focus on women's involvement in the design and evaluation of male engagement activities.

# COMMUNITY INVOLVEMENT IN BIOMEDICAL PREVENTION

## WEPEC131

### ENGAGING WITH TRIAL PARTICIPANTS AND STAKEHOLDERS IN THE HIV PREVENTION TRIAL RESULT DISSEMINATION PROCESS IN KWAZULU NATAL, SOUTH AFRICA: OUTCOMES AND EXPERIENCES

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**Background:** Partnering and engaging with trial participants, community, regulatory and government stakeholders is a key component of trial result dissemination plans. The South African Medical Research Council, HIV Prevention Research Unit enrolled 9796 women in four phase III and two phase IIb HIV prevention trials at community-based sites in KwaZulu-Natal between 2003 and 2012. This paper highlights the outcomes of implementing a multi-tiered dissemination plan among these participants and stakeholders.
**Methods:** Dissemination plans included timelines for presenting results to study staff, participants, community working groups (CWGs), regulatory and government stakeholders and the media. Trial outcome scenarios were communicated to participants and stakeholders approximately six months prior to release of results. Researchers worked closely with participants, CWGs, stakeholders and trial sponsors to develop key messages, presentations and press releases, which were translated into the local language. Peer educators and key CWG members were trained in media communication. Researchers contacted participants via telephone, home visits, and SMS to inform them of dissemination meetings. Stakeholders were invited to meetings via telephone, SMS and written letters. Staff, CWGs, participants and stakeholders signed confidentiality agreements when results were disseminated to them while under embargo.
**Results:** Participants received results either at planned meetings or at study sites. Approximately 60% of participants in these studies received results within one week of release. Several dissemination meetings (n=108) were held with CWGs, and other stakeholders. Participants and stakeholders appreciated the transparent and participatory dissemination process. Participants displayed a good understanding of trial results and were willing to participate in future HIV prevention research. Participants expressed disappointment with futile results and reported that some women did not adhere to the protocol and interventions. During the latter three trials, participants (n=20) and CWG members (n=8) were media spokespersons together with study investigators. Participants shared positive trial experiences despite interventions showing no effect in preventing HIV.
**Conclusions:** Using a participatory process to engage participants and stakeholders was effective in ensuring prompt dissemination of results and adequate understanding of trial outcomes. Well-developed transparent communication plans will strengthen the partnership between stakeholders, participants, and researchers and minimize challenges associated with dissemination of trial results.

# MEASUREMENT AND MODELLING OF THE IMPACT OF TREATMENT ON PREVENTION OF HIV

## WEPEC132

### COST-EFFECTIVENESS OF DIFFERENT ART SCALE UP STRATEGIES IN UGANDA: A MATHEMATICAL MODELLING STUDY

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**Background:** Since September 2015, the World Health Organization (WHO) has recommended that ART be offered to all people living with HIV. Many researchers also advocate a more intensive universal 'test-and-treat' (UTT) strategy. We investigate the cost-effectiveness of these and other ART scale-up options in Uganda.
**Methods:** An individual based model was developed simulating HIV transmission and ART scale-up. The model was fitted using history matching, and 1880 baseline scenarios were created to account for uncertainties in costs, disability weights, sexual behaviour, HIV epidemiology, and ART coverage in Uganda. Six different ART scale-up strategies were simulated from 2016-2030:
1) increased HIV testing rates,
2) UTT (increased HIV testing, improved linkage to care, no CD4 threshold for ART),
3) no CD4 threshold for ART,
4) improved pre-ART care,
5) increased retention on ART, and
6) increased ART restart rates.
The cost per DALY averted was calculated (health service perspective, 3% discount rate) for each intervention and scenario, to determine which interventions are likely to be highly cost-effective or cost-effective (cost < 1 or 1-3 per-capita-GDP per DALY averted respectively), and to identify the most cost-effective option.
**Results:** Preliminary results suggest that interventions 3-6 are all likely to be highly cost-effective strategies for scaling-up ART coverage in Uganda, with removing the CD4 threshold being the most cost-effective option in 88% of scenarios. UTT is also very likely to be a cost-effective option (cost-effective in 98% of scenarios), however it is among the top three most cost-effective interventions in only 10% of scenarios. Increasing HIV testing rates is only cost-effective in 3% of scenarios, and is the least cost-effective option in 96% of scenarios.
**Conclusions:** Our results suggest that removing the CD4 threshold for ART initiation is likely to be a highly cost-effective ART scale-up option for Uganda, and it is very likely to be the most cost-effective of the options considered. We recommend that Uganda offers ART to all people living with HIV, following WHO recommendations. UTT is very likely to be cost-effective and should be considered if resources to implement it are available, however it should not be prioritised above other, more cost-effective, strategies.

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## ESTIMATION OF THE NEED FOR ART

### WEPEC133

### HIGH HIV PREVALENCE AND LOW HEALTH SERVICE ACCESS AND UTILISATION AMONG MOBILE POPULATIONS ALONG THE N3 HIGHWAY IN SOUTH AFRICA

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**Background:** In South Africa, female sex workers (FSW) and long-distance truck drivers (LDTD) have been largely understudied. Available evidence shows these populations are highly vulnerable to HIV infection and potential drivers of the HIV epidemic. Using data from the Key Populations along the N3 motorway (KPN3) study, we present HIV testing and prevalence data, explore health service access and utilisation among FSW and LDTD, and provide recommendations for programmes working with these populations.
**Methods:** Time-location sampling was used to recruit 173 FSW and 518 LDTD at rural truck stops between Harrismith, Free State and Cato Ridge, KwaZulu-Natal provinces from August to December 2014. Eligible participants completed an interviewer-administered behavioural questionnaire, underwent HIV rapid testing, and provided blood samples for laboratory HIV testing. Adjusted analyses of key variables showed no difference based on clustering effects or probability weighting.
**Results:** HIV prevalence among FSW and LDTD in the sample was 88.4% (95% CI: 83.3-93.5%) and 16.7% (95% CI: 13.5-19.9%) respectively. HIV-testing within 12 months preceding the survey was reported by 42% (95% CI: 34.6-49.3%) of FSW and 58.9% (95% CI: 54.7-63.1%) of LDTD. Nearly one fifth (19.2%) of FSW and 8.6% of LDTD in the study were newly diagnosed with HIV during study testing and were previously unaware of their status. Among LDTD who self-reported a prior HIV-positive test, 83.3% (95% CI: 72.0-94.6%) had consulted a medical professional related to their status and 71% (95% CI: 57.7-85.1%) were on ART. In contrast, a lower proportion of self-reported HIV positive FSW participants reported consulting a medical professional (71.7%; 95% CI: 63.6-79.8%) and significantly less received ART (48.3%; 95% CI: 39.4-57.2%; P< .01).
**Conclusions:** Like their urban counterparts, FSW on the N3 corridor carry a very high burden of HIV; LDTD displayed prevalence consistent with adult males in the general population. High HIV prevalence and low ART utilization suggest FSW working along transportation corridors are in urgent need of targeted comprehensive HIV services, including prevention, testing and treatment programming and interventions. Furthermore, we recommend additional surveillance to determine the HIV programming needs of FSW and LDTD along other transportation routes in South Africa.

## ESTABLISHMENT OF COHORTS TO STUDY HIV INCIDENCE / PREVENTIVE INTERVENTIONS / NATURAL HISTORY

### WEPEC134

### THE MS2COHORT, A CASE-HOLDING INITIATIVE FOR THE EARLY DETECTION OF HIV AND STI IN MSM WITH HIGH-RISK BEHAVIOR

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**Background:** Men who have sex with men (MSM) are at increased risk to acquire sexual transmitted infections (STIs) and HIV. The STI positivity rate among MSM attending the STI clinic in Amsterdam in 2013 was 18% among HIV-negative and 30% among HIV-positive MSM with a high recurrence of infections. More then 10% of the men who were diagnosed with an STI had a new infection within 1 year.
Our aim was to set up a case-holding cohort of MSM for early detection of HIV and STI and describe risk behavior, drug use and recurrence of infections.
**Methods:** In January 2014 we started a cohort of MSM with high risk behavior at the STI clinic of Amsterdam. Inclusion criteria were HIV-negative MSM: with 2 STIs or used Post-Exposure Prophylaxis in the last 12 months, or HIV-positive MSM with one STI in the last 12 months. We tested the participant 4 times yearly. Questionnaires on drug use and risk behaviour were part of each visit.
**Results:** We included 95 HIV-negative en 85 HIV-positive MSM into the cohort until December 2015. Median age was 39.5 [IQR 32-49].
In 238 of the total 961 visits an STI was diagnosed (24.8%): 121 gonorrhea, 91 chlamydia non-LGV, 38 syphilis and 17 lymfogranuloma venereum (LGV) (table 1) . Five new HIV infections occurred (6.0 / 100 person-years). Poly drugs use of 2 or more drugs in the 6 months prior to the first visit was reported by 76% (n=136) and 85% ( n=116) used 2 or more drugs during sex.

| | HIV-negative MSM | HIV-positive MSM | Total | P-value |
|---|---|---|---|---|
| First visit | 30/95 (31.9%) | 27/85 (31.4%) | 57/180 (31.7%) | 0.940 |
| Second visit | 22/89 (24.7%) | 24/85 (28.2%) | 46/174 (26.4%) | 0.599 |
| Third visit | 17/79 (21.5%) | 22/76 (28.9%) | 39/157 (24.8%) | 0.287 |
| Fourth visit | 12/68 (17.6%) | 22/72 (30.6%) | 34/140 (24.3%) | 0.075 |
| Fifth visit | 9/48 (18.8%) | 16/66 (24.2%) | 25/114 (21.9%) | 0.484 |
| Sixth visit | 6/33 (18.2%) | 11/56(19.6%) | 17/89 (19.1%) | 0.866 |
| Total* | 101/452 (22.3%) | 137/509 (26.9%) | 238/961 (24,8%) | 0.101 |

*[Table 1 STI positivity rate among MSM with high risk behavior at the STI clinic of Amsterdam, not including new HIV infections. *includes later visits]*

**Conclusions:** In this cohort of MSM with high risk behavior for acquiring HIV and STI, frequent screening revealed a high STI incidence in both HIV-positive and HIV-negative MSM and a high HIV incidence. Early treatment and linkage to care provided not only individual but also public health benefits. The association between drug use and incidence of STI/HIV will be further investigated.

## GOOD PARTICIPATORY PRACTICE AND COMMUNITY INVOLVEMENT IN PREVENTION RESEARCH

### WEPEC135

### INVOLVEMENT OF KEY POPULATIONS IN MAPPING AND ESTIMATING THE SIZE OF ‘KEY POPULATION’: EXPERIENCES FROM LAGOS, NIGERIA; GOOD PARTICIPATIVE PRACTICE AND COMMUNITY INVOLVEMENT IN PREVENTION RESEARCH

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**Background:** HIV prevalence amongst Men Who Have Sex with Men (MSM) in Lagos is estimated to be17.2 %. MSM are among the most hidden sexual minority population. The prevailing legal and policy environment in Nigeria exacerbates an extremely vulnerable work life. MSM face severe public stigma, discrimination and fear of being publicly identified and insulted by health workers, and are less likely to seek HIV and sexually transmitted infections (STI) services hence, identifying networks of high-risk MSM are difficult. Therefore, an innovative method is required to be able to identify MSM for HIV services. The USAID- funded Strengthening HIV Prevention Services (SHiPS) for Most at Risk Populations (MARPs) project in Nigeria conducted mapping and size estimate study of MARPs in Lagos and 6 others states and FCT in 2015 with the objective of identifying hot spots for MSM and other key population
**Description:** The study utilized the capture and re-capture methodology recommended by Mannitoba for estimating size of MSM in any location. Capture-recapture is a statistical method for estimating the numbers of individuals from groups that are hidden or hard to reach using a probabilistic calculation. Recapture activities are conducted within one to two weeks after the initial capture activities to minimize any population drifts. The study uses key population as data collectors and enumerators trained on principles of confidentiality and ethical handling of research data.The survey was conducted across the 20 Local Government Areas.
**Lessons learned:** Involvement of key populations enhanced the generation of relevant information about the location, number and typologies of MSM leading to the understanding of the hidden population with the aim of providing evidence for improved programming. Estimated population of MSM (M&C 2015 4,828) compared with recent similar study (LEA, 2012 2,838) shows more number of MSM in Lagos state.
**Conclusions/Next steps:** Considering the involvement of key populations in successful mapping and size estimation, they should be engaged in HIV programming to create ownership and sustainable program impact.

## DETERMINATION OF HIV INCIDENCE

## WEPEC136

### CHARACTERIZATION OF FALSE RECENT RESULTS IN CRF02_AG HIV-1 BY THE LIMITING ANTIGEN INCIDENCE ASSAY

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**Background:** The limiting antigen (LAg) immunoassay is widely used to estimate HIV incidence in cross-sectional surveys. Differences in key assay performance characteristics including the proportion of results that are classified incorrectly as "recent" (false recent ratio or FRR) between subtypes of HIV have been reported previously. Precise estimation of incidence in cross-sectional surveys using laboratory assays requires a FRR below 2%. The performance of LAg in CRF02_AG, the subtype of HIV that is predominant in West African countries including Cameroon and Côte d'Ivoire, is unknown.
**Methods:** De-identified plasma specimens from 95 individuals living in Cameroon and infected with CRF02_AG HIV-1 for more than 2 years were studied. ART treatment naive individuals, recruited during pre-ART preparation, were screened for HIV infection using the national algorithm in Cameroon (Alere Determine HIV 1/2 and Murex Combo Ag/Ab kit). HIV-1 subtype was determined by RT-PCR using HIV-1 specific primers that amplify a fragment of *env* gp41 including the immunodominant region. Viral sequences were aligned with reference strains and phylogenetic analysis was performed using PHYLIP 3.5c. LAg testing (Sedia, OR USA) was performed according to the manufacturer's instructions.
**Results:** Gp41 *env* sequence was obtained from RT-PCR products for all 95 specimens, indicating the presence of HIV RNA at detectable levels. Sequences were found to cluster most closely with CRF02_AG reference strains. LAg normalized optical density (ODn) values ranged from 0.19 to 6.9. Two specimens had ODn below 1.0, and 3 below 1.5 (the threshold for assignment as a "recent" infection). Since all patients were infected for longer than 2 years and had detectable HIV RNA at the time of specimen collection, the FRR is 3.2% (95% confidence interval: 0.7% - 9.0%).
**Conclusions:** The FRR for LAg in this set of 95 viremic, longstanding infected CRF02_AG plasma specimens is slightly higher than has been reported for HIV subtypes A, B and C. These results should be extended and confirmed in additional studies, in order to assess whether or not cross-sectional estimation of HIV incidence using LAg or LAg plus viral load in countries or key populations where CRF02_AG is predominant is feasible.

## WEPEC137

### ESTIMATION OF HIV INCIDENCE USING RETROSPECTIVELY-COLLECTED HIV TESTING HISTORY IN BOTSWANA

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**Background:** HIV incidence is used to assess the impact of prevention interventions and baseline transmission potential in a population. Laboratory capacity needed to perform recency assays to estimate HIV incidence may not be readily available, particularly in resource-limited settings. We propose an alternative approach to estimating HIV incidence based on retrospectively-collected HIV testing history.
**Methods:** We used retrospectively-collected HIV testing history from participants enrolled in the Botswana Combination Prevention Project (BCPP), a 30 community pair-matched, cluster randomized trial. Between October 2013 and November 2015, a random 20% sample of community residents aged 16-64 years enrolled. Participants completed a baseline survey. Date and documentation of last HIV test were collected. All participants without documentation of a prior HIV-positive test result were offered HIV testing. Survival analysis was conducted to account for person-time at risk, assuming that time since infection was exponentially distributed from the documented HIV-negative test date to the survey date. We restricted this analysis to participants who had tested within 12 months of baseline, following Botswana's annual testing recommendations.
**Results:** Among the 12,610 participants enrolled, 10,399 (82%) self-reported previously testing for HIV infection. Only 5,476 (53%) provided documentation of either prior HIV-positive status (N=2,995) or HIV-negative status (N=2,481). Among participants with a previous dated HIV-negative test result, the median time since last HIV test was 6.6 months (IQR: 2.6-14.9). Among 1,700 participants who tested HIV-negative within the prior 12 months, 12 tested HIV-positive at baseline. We estimated a HIV incidence rate of 1.88 cases/100 person-years (95% CI: 0.81-2.94). This incidence estimate is slightly higher than the most recent assay-based incidence estimate of 1.35 cases/100 person-years from the 2013 Botswana AIDS Indicator Survey. A trend toward higher HIV incidence in men than in women was observed (2.00 vs. 1.82 cases/100 person-years, respectively; p=0.37).
**Conclusions:** Estimation of HIV incidence using prior testing data has the potential to expand upon laboratory-based estimates. It will be important to explore how risk behavior varies with the time interval between tests. In resource-limited settings, investing in automated data collection of HIV testing with unique identifiers would allow for an alternative method of HIV incidence estimation.

## WEPEC138

### REPEAT HIV TESTING AND INCIDENT HIV DIAGNOSIS AMONG CLIENTS ATTENDING VOLUNTARY COUNSELLING AND TESTING CLINICS IN WUXI, CHINA

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**Background:** Voluntary counseling and testing (VCT) clinics serve as an important platform for people seeking HIV testing in China. We aimed to elucidate HIV testing behaviors and incident HIV diagnosis among clients attending VCT clinics in Wuxi, China.
**Methods:** Data on clients attending 32 VCT clinics in Wuxi, China 2013-2015 were retrieved. Phone number was used to identify individuals. Simple descriptive statistics were used to describe the characteristics and HIV testing behaviors. Multivariate logistic regression was used to analyze factors associated with repeated HIV testing. Cox regression was used to explore factors associated with incident HIV diagnosis.
**Results:** In total 18359 valid records representing 16621 individuals were included. At first visit, 39.5% were men, 61.7% were younger than 30, 58.3% were married, 27.9% of men reported homosexual behaviors and 31.2% reported previous HIV testing. A total of 5568 clients had 6422 HIV tests in 2013, 5642 clients had 6268 HIV tests in 2014 and 5411 clients had 5669 HIV tests in 2015. Of the 16293 clients who were tested HIV negative at first visit, 6.7% retested during 2013-2015 with an incident HIV diagnosis rate of 4.4 per 100 person-years.
Of the 1625 men who reported homosexual behaviors and who were tested HIV negative at first visit, 17.3% retested during 2013-2015 with an incident HIV diagnosis rate of 12.2 per 100 person-years. Repeat HIV testing was associated with male gender [odds ratio(OR)=1.4, 95% confidence interval(CI): 1.2-1.7], risk behaviors [homosexual behaviors (2.5, 1.9-3.2), commercial heterosexual behaviors (1.7, 1.3-2.2) and injection drug use (7.0, 4.9-9.8), versus casual non-commercial heterosexual behaviors], having ever tested for HIV (4.3, 3.7-5.0), being HIV positive (0.5, 0.3-0.7) and ascending year (2.0, 1.8-2.1).
Incident HIV diagnosis was associated with male gender (HR=8.5, 1.9-38.1), homosexual behaviors (HR=8.4, 1.5-46.7), attending hospital-based VCT clinics (HR=7.8, 1.1-58.3) and being referred by a clinical service (HR=4.5, 1.1-20.1).
**Conclusions:** Low repeat HIV testing rate and high HIV incidence were observed among VCT clients in Wuxi, China. There is an urgent need to increase HIV testing uptake and encourage frequent HIV testing among clients with high risk behaviors, men who have sex with men in particular.

## WEPEC139

### CROSS-SECTIONALLY ESTIMATED AGE-SPECIFIC HIV INCIDENCE AMONG YOUNG WOMEN IN A RURAL DISTRICT OF KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Population-level HIV incidence is the most sensitive indicator of epidemiological trends, especially in the era of monitoring high-level interventions in support of global HIV elimination goals. But, despite progress in methods using demographic and biomarker data, the estimation of incidence continues to be very difficult and expensive. In particular, methods to interpret age structure in prevalence, and its changes over time, are underdeveloped, leading to missed opportunities in leveraging widely available data.

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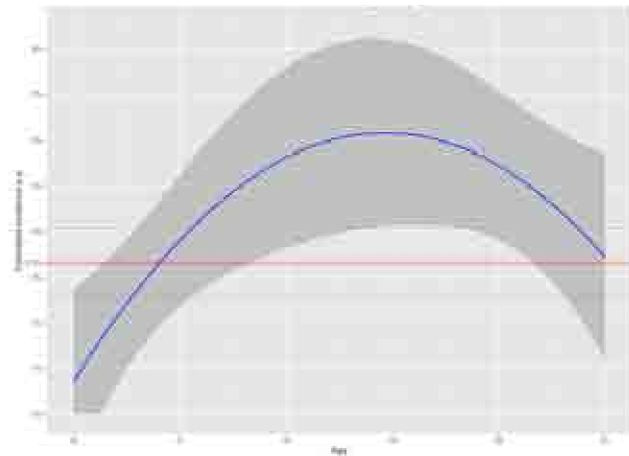
**Methods:** Adapting a method previously described by some of the authors, regression of age-dependent prevalence measures from a population-based survey in Mbongolwane and Eshowe was used to estimate incidence and age trends in incidence, among young women (15-23 years), who experience the highest incidence and who can be regarded as a sentinel population. In addition to a prevalence 'gradient', the method requires an estimate of excess mortality of the HIV positive subpopulation, which, for young subjects, is shown to have negligible impact on the estimation procedure. Multiple parametric forms were explored to consider various trade-offs of precision against sensitivity to age trends.
**Results:** The analysis suggests a rapid escalation in incidence from age 15 to 18 years, with a peak at 19 years of 6.2% p.a. (95% CI: 4.1%-8.2%). Using an age-insensitive model produced an overall incidence estimate of 3.3% p.a. (2.6%-4.1%). The figure shows incidence estimated using the most age-flexible model deployed.



*[Age-specific and overall estimated HIV incidence among women and girls aged 16-21]*

**Conclusions:** These estimates demonstrate the potentially important use of underutilised data in support of incidence trend estimation. The very high incidence at critical ages seen in this analysis would be invisible to routine 5-year age bin analyses, and may be critical to targeting prevention interventions. Generalisation of these methods to data sets with multiple time points will be more illuminating, for example for detection of secular incidence changes, which are currently highly elusive to all established methods.

## WEPEC140

### ESTIMATING RATES AND CORRELATES OF HIV INCIDENCE USING SELF-REPORTED DATA ON PREVIOUS TESTING AND CURRENT RESULTS AMONG ADULTS REACHED BY A HOME-BASED TESTING PROGRAM IN A HIGH-PREVALENCE REGION OF NAMIBIA

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**Background:** HIV incidence is the gold-standard metric for assessing the direction of an epidemic and impact of prevention programs. Provided that self-reported data on HIV status are reliable, comparing self-reported data on previous HIV testing to data from current testing can generate HIV incidence estimates when other methods, such as cohorts and incidence assays, are not feasible. We applied this approach to estimate HIV incidence and correlates of seroconversion among adults reached by a home-based testing program in Zambezi the highest-prevalence region of Namibia (29.4% vs. 14.0% nationally, DHS+, 2013).
**Methods:** We analyzed data collected from adults (age ≥15 years) living in five geographically contiguous areas of Zambezi region who were tested through a home-based program from 12/2014 - 7/2015. Adults self-reporting a prior HIV-negative test during the previous 24 months and receiving a subsequent test through the home-based program were included in our analysis. Person-years (PY) of observation were estimated using the current, home-based testing date and the self-reported date of the most recent previous HIV-negative test. Seroconversion was defined as a positive result from the current, home-based test. Incidence rates were compared using Cox proportional hazards analysis.
**Results:** Among 2,164 adults [60.7% female, 21.3% HIV positive (9.1% among adults age 15-24 years)], 712 (32.9%) self-reported an HIV-negative test during the previous 24 months. Among these repeat testers, HIV incidence was 8.5/100 PY (95% CI 6.3 - 11.5) based on 43 seroconversions in 504.8 PY. Incidence was higher among urban compared to rural residents (16.5 vs. 4.9/100 PY, *P*< 0.001). No significant differences in incidence were observed by sex, age, or marital status.
**Conclusions:** Repeat testers in our survey had an incidence rate well above the threshold of 3.0/100 PY used by the WHO to identify populations at "substantial risk for HIV infection", which suggests unmet prevention need among this subgroup. We recognize the potential for bias if individuals misreport their HIV status. However, the high overall and youth-specific prevalence in our study population, which is consistent with other survey estimates for Zambezi region, support this approach for understanding recent infection. This approach may be particularly useful when frequent repeat testing is possible.

## WEPEC141

### HIGH INCIDENCE OF SUBSEQUENT HIV SEROCONVERSION AMONG MONTREAL PEP USERS

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**Background:** Patients consulting for post-exposure prophylaxis (PEP) are at greater risk for contracting HIV compared to other MSM and non-MSM males. Few studies have examined the subsequent incidence HIV infections in this high-risk population beyond the PEP follow-up period. The aim of this study is to determine the incidence HIV seroconversions after PEP use for sexual exposures.
**Methods:** We prospectively assessed all patients consulting for PEP following sexual exposures from October 2000 to July 2014. Patients that were HIV-positive at the initial PEP consult and those that seroconverted during the 12-week PEP-follow-up were excluded. HIV-negative patients with ≥20 weeks follow-up data were evaluated for HIV seroconversion. The censoring date was the last negative/first positive HIV test/PrEP commencement. A Cox proportional hazards model was used to estimate the factors associated with HIV seroconversion.
**Results:** 1350 patients were included. Patients were male (96%) and MSM (91%) with a mean age of 33y (range 18-74y). 67% of patients had consulted for PEP for the first time, while 33% had repeated PEP episodes. 200 patients (15%) had at least one syphilis infection during follow-up. 129 patients (10%) had also consulted for PrEP. Median follow-up was 176 weeks (IQR 91-273) representing 5075 person-years of follow-up. Eighty-nine (7%) patients seroconverted after PEP use for an HIV incidence rate of 1.75cases/100py (95% CI 1.43-2.16/100py). Patients with a high exposure risk at the time of the PEP consultation have an incidence rate 2.76 times greater than those with a low exposure risk (1.96 vs 0.71 cases/100 py, respectively). All seroconverted patients were MSM with mean age of 33 years (range 21-51y). Patients that are younger (aHR=0.96; p=0.002), have a syphilis infection following PEP (aHR=4.55; p< 0.001) and have a moderate to high exposure risk at their first PEP consult (aHR=2.40, p=0.04) are at greater risk of acquiring HIV following a PEP consultation.
**Conclusions:** Patients consulting for PEP are at high risk of acquiring HIV. Young, MSM individuals with a history of STIs and at-risk behavior are most vulnerable to HIV infection. Patients consulting for PEP should consider PrEP as an alternative therapy.

# METHODS FOR ESTIMATING INCIDENCE USING CROSS SUB-CATEGORYAL SAMPLES

## WEPEC142

### COMPARISON OF MAXIM AND SEDIA LIMITING ANTIGEN AVIDITY ASSAY PERFORMANCE

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**Background:** Accurate methods for cross-sectional incidence estimation are needed for HIV prevention research. The Limiting Antigen Avidity Assay (LAg-Avidity) has been marketed by two vendors (Maxim Biomedical and Sedia BioSciences

Corporation). Performance difference between the two LAg-Avidity assays is unknown.

**Methods:** A total 1410 treatment-naive samples from 176 seroconverters from the Zimbabwe FHI 360 Hormonal Contraception and HIV trial (subtype C endemic area) were tested using the both versions of the LAg-Avidity assay. The correlation coefficients ($R^2$) between both assays for the optical density (OD) and normalized optical density (OD-n) were calculated. We estimated the mean duration of recent infection (MDRI, the average time individuals appeared recently infected using a time window of 2 years) and false recent rate (FRR, the frequency of being identified as recently infected for samples from individuals infected >2 years) for both assays using an assay cut-off of 1.5 OD-n alone or in combination with a viral load of >400 copies/ml or >1000 copies/ml. Differences in MDRI and FRR were calculated.

**Results:** The $R^2$ for OD was 0.93 with a slope of 0.98; the $R^2$ for OD-n was 0.86 with a slope of 0.79. The MDRI (95% confidence interval) in days for Sedia was 140 (117,167) compared to 160 (138,188) for Maxim for a difference of 20 (11,31). The MDRI for an algorithm of LAg-Avidity +VL>400 copies/ml was 117 (95,141) for Sedia and 139 (117,164) for Maxim with a difference of 22 (13,32) days. The MDRI for an algorithm of LAg-Avidity +VL>1000 copies/ml was 104 (84,126) for Sedia and 123 (103,145) for Maxim with a difference of 19 (10,28) days. The FRR for any testing combination was ≤0.22%.

**Conclusions:** Performance differences between Maxim and Sedia assays are due to differences in the calibrators, since these differences were more pronounced for OD-n than OD. The MDRI of the Maxim assay was 21 days larger than the MDRI for the Sedia assay, with near identical FRRs.

## HIV TESTING AND DIAGNOSTIC STRATEGIES

### WEPEC143

### EVALUATION OF A RAPID POINT OF CARE (POC) HIV AND SYPHILIS SCREENING PROGRAM IN AN EMERGENCY DEPARTMENT (ED) SETTING IN DETROIT, MICHIGAN - 2015 - 2016

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**Background:** Cases of primary and secondary syphilis in Detroit, MI increased from 73 in 2010 to 199 in 2013: 56% of 2013 cases were in young black men who have sex with men (MSM), and 52% were HIV coinfected. To respond to a need for increased testing services, we implemented a rapid POC HIV and syphilis testing program for young men receiving care in an ED.

**Methods:** From 6/2015, we offered HIV and syphilis screening to men aged 18-34 years seeking ED care. Two rapid POC tests were employed: the Alere **Determine** HIV-1/2 Ag/Ab Combo test (Determine) and the Syphilis Health Check (SHC) treponemal test**.** All patients were also tested for HIV with the Biorad 4th generation HIV Combo Ag/Ab assay and for syphilis with a rapid plasma reagin (RPR) and treponema particle agglutination assay (TPPA). In order to reduce ED staff burden dedicated infectious disease staff conducted counseling and testing. Among patients with positive SHC results, testing staff reviewed medical records and surveillance data for evidence of past syphilis and offered immediate treatment to patients without a known previously treated infection.

**Results:** Of 582 participants tested (87% black, 5.0% MSM, median age 25 years) HIV (n=3) or syphilis (n=3) was identified in 1.0% of participants by rapid testing. One person had a false positive Determine, and another with acute HIV was only reactive with the Biorad test. The SHC was reactive for 7 individuals, but one person had a false-positive, and 3 cases represented past syphilis (RPR negative and TPPA positive). Concordance of rapid and confirmatory testing was 99.7% for HIV and 98.7% for syphilis. All 4 newly-diagnosed HIV patients were linked to care, and 2 newly-diagnosed syphilis patients received POC treatment.

**Conclusions:** A targeted HIV and syphilis screening program using dedicated, non-ED staff is feasible to implement in an ED setting. A high number of HIV and syphilis infections have been identified and treated (syphilis) or linked to care (HIV). Our results highlight a potential role for dual HIV and syphilis rapid testing in settings with patients at risk for these infections.

### WEPEC144

### WHAT IS THE TRUTH? A COMPARISON OF HIV RESULTS FROM VCT RAPID TEST WITH THOSE FROM A STANDARD ELISA FROM A POPULATION COHORT IN TANZANIA

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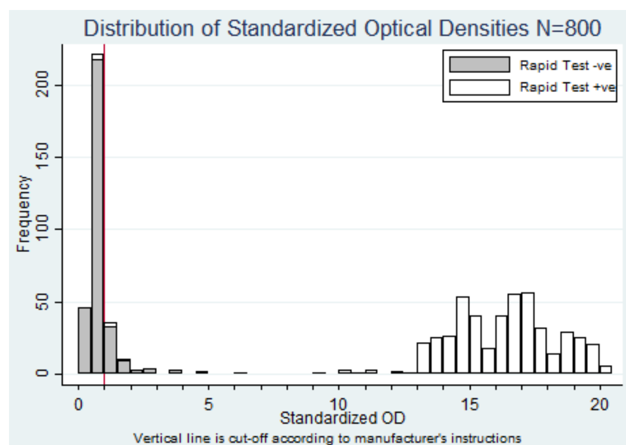
**Background:** The backbone of HIV diagnostic testing in most African countries is the use of two rapid tests to ascertain those HIV positive. Many research surveys use ELISA assays to determine HIV status, but studies have shown that the cut-off for ELISA tests is critical to their performance. Rapid tests undergo quality assurance at the Tanzanian national laboratory.

**Methods:** IIn the 8th serological survey for HIV in the Magu health and demographic sentinel surveillance (HDSS), participants were offered free VCT testing using Determine (screening) and Unigold (confirmatory) rapid tests, and asked for a dried blood spot (DBS) sample for research purposes. DBS from all positive and 6% of negative on Determine are tested on ELISA (Vironostika HIV Ag/Ab) at a reference laboratory.

**Results:** Of the 9,036 respondents to 29th Jan 2016, 8,923 (99%) provided both rapid test result and blood sample. 642 of these (7.2%) were HIV positive on the combined rapid tests. 800 samples have so far been tested by both rapid test and ELISA, of which 474 were positive by both rapid tests. There was 92% agreement between the results.

The 471 positive on both ELISA and rapid test had a median standardized OD (OD/cut-off) of 16.49 (IQR 14.75-17.61). The 62 negative on rapid test but positive on ELISA had a median standardized OD of 1.44 (IQR 1.20-2.57).




*[Distribution of standardised optical densities from Vironostika ELISA test]*

**Conclusions:** It is likely that non-specific reactions on ELISA are responsible for the Rapid Test 'false negatives'. Changing the ELISA cut-off to three time the manufacturer's value, and treating standardized ODs ≥1 and < 3 as Indeterminate (N=53), increases the agreement between the tests to 97.9% (excluding Indeterminates). Widespread use of the two rapid tests, with rigorous quality control in country, may provide a more accurate and truthful diagnosis for HIV than a ELISA test with a cut-off that is too low.

### WEPEC145

### A COMPARATIVE ASSESSMENT OF THE ELISA HIV TEST RESULTS AMONG WEAKLY POSITIVE REACTIVE SAMPLES ON DETERMINE HIV1/2, STATPAK AND UNIGOLD RAPID TEST KITS

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**Background:** A number of reports have come out showing a need to perform follow up confirmatory tests on samples with weak positive rapid test results. Using samples from a research cohort that used the Uganda National rapid test algorithm of Determine HIV1/2 as the screening test, Statpak as the confirmatory test and Unigold as a tie breaker, we investigated the proportion of weak positive on any of the three kits that returned a positive or negative ELISA/ PCR results.

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**Methods:** We generated cross tabulations of the sero rapid test results against the ELISA /PCR tests indicating the percentage of weak positives that returned positive or negative ELISA/PCR results.
**Results:** A total of 231 weak positive (WP) results were selected for this analysis. 71 were WP on Determine HIV1/2, 149 were WP on Statpak and 11 were WP on Unigold. We observed that 64.8% of the WP determine results returned Positive EIA/PCR results while 35.2% returned negative results. For Statpak we observed that 19.5% WP returned positive EIA/PCR results while 80.5% returned negative results. For Unigold, 36.4% of the WP returned positive results while 63.6% returned negative results. When using a parralel or serial method, WP on both Determine and Statpak would score as positive. However, we found that out of the 11 WP (determine and statpak) on screening and confirmatory test, 54.6% returned positive results while 45.4% returned negative results.
**Conclusions:** Since at the point of care results are interpreted following manufacture's instructions, a good proportion that would have been scored as positive when one or both kits returned WP results end up with Negative results. Whenever there is a WP screening or confirmatory test, these should be run on confirmatory ELISA/PCR test kits. There is a need to evaluate this national algorithm which did not go through such an evaluation before being rolled out.

## WEPEC146

### LATIN AMERICA EXPERIENCE IN EXPANDING LARGE-SCALE ACCESS TO RAPID TESTING SERVICES IN PUBLIC SPACES

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**Background: :** Accordingly to the data provided by the respective National AIDS Programs, it's estimated that there are 460,784 people living with HIV in four Latin American countries: Argentina, Guatemala, Mexico and Peru. Of them, only 296,523 (67% average) know their HIV status. Hence in order to increase the number of people diagnosed, we planned and implemented an innovative campaign to conduct massive events with the use of rapid tests at strategic places within different cities in the studied countries.
**Methods:** We sought to identify and quantify the percentage of new HIV diagnoses and the number of new people accessing the HIV testing program. There were more than 1,064 events performed in all countries from Jan. 1, 2014 up to Dec. 31, 2015. All events were organized in open public spaces. We offered group pre-test information before formal testing. We used rapid tests from DETERMINE in Argentina, INSTI in Guatemala and Mexico, and ADVANCE in Peru. After each tests, we offered individual post-test counseling. All tests were offered free of charge, and on voluntary and confidential basis. Each individual was also asked to fill out a written, anonymous, self-administered survey.
**Results:** 265,540 tests were conducted in all four countries. 126,338 men were tested (47.58%). Average age for all people tested was 29 years. There were 2,478 new HIV positive results identified, 1,435 of them in men (57.91%) with an average age of 29 years. In total, 168,429 (63.43%) tests were conducted amont first-time testers.Of all positive results, 23.66% were among people who had never been tested before.
**Conclusions:** In order to accomplish the goal of 90-90-90 we need to increase access to testing that is convenient and quick. Our model has demonstrated that is suitable to be applied on a large scale, at a regional level, offering an easy way to get tested for first-time testers. We also found that prevalence level in the study was higher than the one estimated by UNAIDS with the Spectrum 4.47 model, which estimated that in 2011 the HIV prevalence in the region was around 0.3%-0.5% in people between the ages of 19 to 45.

## WEPEC147

### COMMUNITY-BASED CD4 CELL COUNT DISTRIBUTIONS AMONG HIV-POSITIVE, ART-NAÏVE ADULTS IN THE HIGHEST PREVALENCE REGION OF NAMIBIA: PROGRAMMATIC IMPLICATIONS FOR UNIVERSAL ART ELIGIBILITY

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**Background:** The World Health Organization (WHO) now recommends that antiretroviral therapy (ART) be initiated in everyone living with HIV irrespective of CD4+ cell count. Current ART eligibility guidelines in Namibia include treating all HIV infected persons with a CD4+ count of < 500 cells/μl. To understand the added patient burden that would result from implementation of the WHO guidelines, we estimated community-level CD4+ distributions among HIV-positive, ART-naïve adults in the highest prevalence region of Namibia.
**Methods:** A cross-sectional, household survey was conducted from 12/2014 - 7/2015 in five purposefully selected sentinel sites of Namibia's Zambezi region. Adults (age ≥15 years) completed interviews and received HIV testing if not yet diagnosed and Pima® CD4+ testing if HIV-positive and ART-naïve. Previous HIV diagnosis and receipt of ART were determined through self-report, verified in patient-carried records when available. CD4+ cell count distributions were estimated, focusing on the proportion >500 cells/μl as an indicator of the additional patient volume that would result with universal treatment eligibility.
**Results:** We enrolled 2,163 adults (66.3% participation), of whom 1,312 (60.7%) were female and 461 (21.3%) were HIV-positive. A total of 174 HIV-positive participants received a CD4+ test, of whom 41 (23.6%) had CD4+ counts of ≥500 cells/μl. CD4+ counts ≥500 cells/μl were significantly higher among urban compared to rural residents (32.1% vs. 16.1%, P=0.02). No significant differences by sex or age were observed. Among 15 previously diagnosed but ART-naïve patients, 60% had CD4+ counts < 500 cells/μl.
**Conclusions:** These data suggest an additional ART patient burden of approximately 24% can be expected in Zambezi if CD4+ eligibility criteria were removed, which has human and financial resource implications for service delivery. The true added burden is likely to be less when other routes to ART eligibility (e.g., TB or hepatitis B co-infection, pregnancy, and serodiscordancy) are considered. Urban areas would account for relatively more of the additional patient burden, as CD4+ counts are already significantly lower in rural areas. Our results also suggest that some adults who are diagnosed with HIV but not immediately eligible for ART fall out of routine pre-ART care and progress to a more advanced stage of disease.

## WEPEC148

### MODEL OF COMPREHENSIVE DIAGNOSIS OF STI AND HIV AMONG KEY POPULATIONS: THE IMPORTANCE OF COUNSELING AND ACCOMPANIMENT

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**Background:** Based on the 90-90-90 strategy, we need to design interventions range that can reach key populations most affected by the epidemic, to promote early diagnosis and early detection, but all income to access programs a comprehensive treatment is important to strengthen strategies to reach these people if we want to change the course of the epidemic.
**Description:** With 21 years of experience we developed an intervention model called CODISE counseling, diagnosis, monitoring and evaluation, conducting workshops on MSM gathering places, young men and young women in the streets and deprived of their liberty, Counseling and implementation of rapid testing and positive cases are made to sampling for WB confirmatory test and an appointment for delivery of results and counseling, then channeled and accompanying services of government attention to verify the programmed inclusion program and quality of care, receiving care in the organization in psychology, medical care, nutritional counseling and tanatología to help improve their quality of life. The program takes place in different areas of meeting key populations and public plazas, subway stations, schools, offices of civil organizations, prisons.

**Lessons learned:** With the financial support of CENSIDA a diagnostic program for HIV and other STIs, serving a total of 2,200 people who were made rapid HIV testing, syphilis, Hepatitis B and C, with 189 HIV positive cases resulting develops confirmatory syphilis 82 to 37 to hepatitis B and hepatitis C 9, were provided with care and support achieving enroll 187 HIV-positive cases and other STI programs received government attention to their diagnosis. 60 percent women and 40% men between 19 and 47 years.
**Conclusions/Next steps:** This type of intervention tested to achieve early diagnosis and timely treatment of people who are admitted to government programs immediately with the support and care provided by the team of the organization that achieving the goal of they can be included comprehensive care to maintain their quality of life and thus also contribute to the decrease in new infections and alter the course of the epidemic. Experience shows that counseling is critical to achieving adherence to treatment and comprehensive care and thus achieved the goal of fewer HIV infections.

## METHODS FOR DETECTING ACUTE AND RECENT HIV INFECTIONS

### WEPEC149

### UNRECOGNIZED HIV INFECTION IDENTIFIED THROUGH RNA TESTING OF POOLED SERUM OBTAINED DURING DENGUE OUTBREAK IN SÃO PAULO, BRAZIL

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**Background:** Many acute virological infections show common clinical manifestations. As many symptoms of acute HIV disease may be confounded with dengue, it is conceivable that some patients looking for clinical care during dengue outbreaks may actually represent incident HIV infections.
**Methods:** We accessed HIV RNA in pooled samples of seronegative dengue cases collected during the 2015 outbreak. Pools consisted of 20 serum samples, 100uL each. Samples from patients with previous HIV diagnostic, identified through electronic systems of patients' laboratory monitoring and/or drug dispensary were excluded. HIV RNA was evaluated with RealTime HIV (Abbott, USA). Samples included in pools with detectable HIV RNA were analyzed separately for HIV RNA, serology (Imunoblot DPP HIV 1/2-biomanguinhos, Brazil) and sequenced (partial pol from nested RT-PCR followed by Big Dye, Life, USA), evaluated at NCBI genotyping and Stanford HIVdb.
**Results:** Out of 3119 samples, 1143 tested dengue negative, 440 (39%) of those were tested for HIV in 22 pools. Four had detectable viremia and all negative pools were not detected, with no pool below the limit of detection (40 copies per mL). In three of these pools original samples showed high viral loads (5.85, 6.07 and 6.12 $Log_{10}$), all subtype B, with one with the K103N mutation. No nucleotide ambiguities were observed in these 3 sequences. Serology was negative in 2/3 RNA positive samples, one was gp41 reactive. Four samples from positive pools were unavailable for further testing, 2 from the fourth positive pool and one each from other positive pools; all other samples tested as not detected. Assuming one positive sample for each reactive pool, a HIV prevalence of 0.91% can be estimated; 1.59% if all missing samples were positive.
**Conclusions:** Our study documents HIV infection among individuals looking for health care due to suspected dengue infection. High viremia, indeterminate or negative serology, lack of ambiguous nucleotides and no registry in electronic systems are compatible to acute phase, probable undiagnosed HIV infections. Besides the potential for monitoring the local epidemics, these cases represent missing opportunities of a more comprehensive health care that could both benefit patients and decrease transmission at this heightened infections phase.

## NOVEL APPROACHES FOR HIV TESTING

### WEPEC150

### REACHING 90% TESTED: AN INNOVATIVE PROVIDER-INITIATED HIV TESTING MODEL WITH MODEST INCREASE IN STAFFING BRINGS HIV TESTING AND COUNSELING (HTC) TO SCALE IN 11 CLINICAL SETTINGS IN BUKOBA, TANZANIA

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**Background:** In many outpatient departments (OPDs), provider initiated HIV testing and counseling (PITC) is not available for all patients because of inadequate staffing and/or implementation. As part of the Bukoba Combination Prevention Evaluation (BCPE), a new PITC model was applied in OPDs in 11 facilities of Bukoba Municipality beginning October 2014. PITC indicators were compared one year before and one year after the new model was implemented.
**Methods:** Previously, PITC was provided by health care workers (HCWs) when they determined their patients would benefit from HIV testing. The BCPE-PITC model revised patient flow to ensure HIV testing was offered to all eligible clients without substantially delaying their OPD visit. To implement the new model, staffing at most clinics was increased by 1 HCW and 2 HIV-positive lay counselors (LCs). LCs conducted group pre-test counseling in waiting areas, individually screened all patients on their need for testing, and routed eligible patients to HCWs who conducted HIV tests in private areas (in Tanzania, only HCWs conduct HIV test procedures). After post-test counseling by LCs, patients were directed to resume their place in the clinic queue. HIV testing data were collected on monthly national and BCPE data-collection tools, and analyzed using Microsoft Excel.
**Results:** Compared with one year before, the fully staffed BCPE-PITC model yielded 4.3 times more HIV tests and 5.2 times more HIV-positive tests overall. Also, the model yielded 4.4 and 5.8 times more positive tests among males and females respectively (Table). Of the 1,951 HIV-positive clients identified through BCPE, 1,783 (91.4%) self-reported being out-of-HIV care, of whom 1,517 (85.1%) were newly HIV-diagnosed (never previously tested HIV-positive).

| | 12 months prior to BCPE Oct 2013 - Sep 2014 | | | First 12 months of BCPE Oct 2014 - Sep 2015 | | |
|---|---|---|---|---|---|---|
| PITC Indicator | Total | Male | Female | Total | Male | Female |
| Total tests in OPD clinics in 11 facilities | 8,452 | 4,191 | 4,261 | 36,347 | 12,105 | 24,242 |
| Tested HIV-positive (% of total tests) | 376 (4.4%) | 157 (3.7%) | 219 (5.1%) | 1,951 (5.4%) | 684 (5. 6%) | 1,267 (5.2%) |
| HIV positive, out-of-care (% of total tests) | Not available | | | 1,783 (4.9%) | 654 (5.4%) | 1,129 (4.7%) |

*[Results]*

**Conclusions:** A modest increase in staffing and an integrated PITC approach resulted in over four times as many HIV tests conducted, identified a higher percentage of HIV-infected patients, particularly among males, and a substantial prevalence of HIV-infected out-of-care persons. The model should be considered for scale-up in similar settings to help reach the first "90" of UNAIDS' 90-90-90 targets.

## WEPEC151

### EVALUATING THE PROFICIENCY OF LAY COUNSELORS CONDUCTING POINT OF CARE CD4 COUNT TESTS IN A RURAL COMMUNITY-BASED HIV SCREENING PROGRAM

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**Background:** Community-based voluntary counseling and testing is an innovative strategy to improve awareness of HIV status and linkage to care, particularly among hard to reach rural populations in resource limited settings. Expanding the role of HIV counselors to provide HIV screening and a rapid point of care (POC) CD4 count in one sitting determines HIV status as well as eligibility and urgency to initiate ARV therapy. We present the POC CD4 results as determined by HIV counselors compared with nurse conducted POC and phlebotomy CD4 results within a community based screening program.
**Methods:** A team of nurses and HIV counselors provided health education and offered HIV testing at congregate community settings. Community members testing HIV positive were offered both standard nurse-performed phlebotomy for CD4 count, processed at the local district hospital by flow cytometry, and fingerstick capillary specimen collection by a nurse as well as by an HIV counselor for CD4 count, performed on site by portable PIMA technology.
**Results:** Among 249 HIV-infected study participants, 76% were female and median age was 34.4 (IQR 17-51) years. Fifty-four (22%) were evaluated at municipality events, 47 (18.8%) at homes, 26 (10.4%) at taxi ranks, and 25 (10%) at social welfare grant collection points. The mean bias by Bland Altman of HIV counselor compared to nurse POC CD4 determination was 16.3 cells/mL and LOA (-258.9, -291.5) cells/ml. Acceptable Pearson correlation was found (0.84, p< 0.0001).
**Conclusions:** POC CD4 counts determined by lay HIV counselors outside of health care settings compared favorably to results obtained by nurses and community-derived phlebotomized specimens processed at a hospital laboratory. HIV status and CD4 count can be determined in community settings in one session with appropriate referral to the next step in the cascade, whether for cryptococcal antigen test (CD4< 100), cotrimoxazole prophylaxis (CD4< 200), eligibility for ART (CD4< 500) or wellness care follow-up with Isoniazid Preventive Therapy (CD4>500). POC CD4 results permit the counselor to stress the urgency of referral especially for low CD4 counts and prioritization of ART initiation, thus facilitating the cascade of care. The role of counsellors can feasibly include POC CD4 testing.

## WEPEC152

### IS HIV SELF-TESTING ACCEPTABLE TO KEY POPULATIONS IN VIETNAM? RESULTS FROM A CROSS-SECTIONAL STUDY OF MEN WHO HAVE SEX WITH MEN, FEMALE SEX WORKERS AND PEOPLE WHO INJECT DRUGS

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**Background:** The HIV epidemic in Vietnam is concentrated among key populations (KP). Annual KP uptake of HIV testing through conventional testing services is low (~30%), posing a significant challenge to reaching 90-90-90 goals. Barriers to HIV testing include concerns regarding confidentiality of test result, long wait times, and travel/opportunity cost. Government leaders recognize the potential of HIV self-testing (HIVST) to accelerate testing uptake and case detection. Evidence is needed regarding acceptability of HIVST, test preferences and willingness to pay (WTP) among KP to inform pilot interventions and future guidelines.
**Methods:** We conducted a cross-sectional study from April-June 2015 among 1,296 people who inject drugs (PWID), 1,248 female sex workers (FSW) and 1,528 men who have sex with men (MSM) in six provinces. Sample size was calculated utilizing KP size estimations. Participants were recruited using respondent-driven sampling. Respondents were provided with standard information on HIVST and asked hypothetical questions including intention to use, test preferences, and WTP. Questions were part of larger survey assessing overall KP use, preferences and WTP for HIV goods and services.
**Results:** More than half of respondents reported intention to use an HIVST when available (55.6% FSW, 63.8% MSM, 69.3% PWID). Primary reasons for opting for HIVST were privacy (74.4%), confidentiality (63.7%) and rapid result (49.5%). The majority of those intending to use HIVST were willing to pay for the test (73.4% PWID, 82.0% FSW and 86.4% MSM). Respondents living in urban areas were statistically significantly more likely to report WTP (p< 0.001). MSM were willing to pay a significantly higher maximum price (US$5.4) for HIVST than FSW (US$4.3) and PWID (US$3.9) (p<0.001). There were statistically significant differences in the HIVST type preferred by KP (blood-based versus oral fluid) (p< 0.001): 49.0%/FSW, 46.7%/MSM and 28.3%/PWID stated preference for an oral HIVST; while 59.0%/PWID, 42.9%/FSW, and MSM/ 36.7% opted for the rapid blood-based assay.
**Conclusions:** The majority of KP interviewed reported intention to use HIVST given the privacy and convenience it offers, and willingness to pay for the test. Pilot interventions will need to be tailored in order to address differing MSM, FSW and PWID preferences and ability to pay.

## SURVEILLANCE OF HIV FOR CHILDREN

## WEPEC153

### EARLY WARNING INDICATORS OF PEDIATRIC ARV RESISTANCE IN KENYA: A MIXED METHODS STUDY

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**Background:** In Kenya, the pediatric population represents 10% of total HIV infections. Pediatric HIV patients are at greater risk for HIV drug resistance (HIVDR) than adults. The surveillance of WHO's early warning indicators (EWIs), which are factors at ART clinics associated with HIVDR, is one strategy to combat HIVDR emergence. We assessed readiness of pediatric sites in Kenya to monitor EWIs and facilitators and barriers to EWI monitoring.
**Methods:** We conducted a mixed methods study in 23 purposively selected pediatric ART sites in 18 counties to assess readiness to monitor the five WHO EWIs:
1) on-time medication pick-up;
2) retention in care;
3) pharmacy stock-outs;
4) dispensing of mono-or dual-therapy; and
5) viral load suppression.
Readiness was defined as patient charts having the necessary information to calculate EWIs. Data collection methods included: surveys with pediatric providers (n=32); in-depth interviews (IDIs) with facility administrators (n=23); and chart abstractions of pediatric patients' records ages 0-14. Descriptive statistics were generated for quantitative data and thematic content analysis was conducted for qualitative data.
**Results:** Twelve facilities (48.2%) were missing chart information to calculate EWI(1). IDIs revealed clinic forms lacked space to record vital patient information. Facility records had the necessary information for EWI(2). However, IDIs revealed patient retention is a problem; reasons include lack of staff/resources to trace patients. For EWI(3), two facilities experienced pharmacy stock-out in the last 12 months and 8% of providers agreed that stock-out is a problem. For EWI(4), 34% of providers reported ever prescribing mono-or-dual therapy. For EWI(5), 83.6% of facilities did not have sufficient viral load test results recorded and 80% of providers agreed that testing was not conducted on time. Administrators noted long turn-around times for viral load results were a barrier to care.
**Conclusions:** Results show a need for pediatric ART sites to strengthen record keeping in order to calculate and monitor EWIs. Several structural-level changes are needed to facilitate EWI monitoring including changes to medical forms and quick turn-around time of viral load test results. Capacity building for providers to understand the importance of monitoring EWIs is also needed.

## SURVEILLANCE OF HIV FOR ADOLESCENTS AND ADULTS

### WEPEC154

### IMPACT OF PROVIDER-INITIATED HIV TESTING FOR CHILDREN ON BURDEN OF UNDIAGNOSED HIV

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**Background:** Provider-initiated HIV testing and counselling (PITC) is recommended for all individuals in high burden countries. We investigated the impact of an optimised PITC intervention for children aged 5-16 years on the community burden of undiagnosed HIV.
**Methods:** Opt-out PITC was offered at seven primary healthcare (PHC) clinics in Harare, Zimbabwe to all 6-15 year old attendees over a two year period. A population-based, confidential HIV prevalence survey was conducted following two years of implementation. With guardian consent all children aged 8-17 years (having had 2 years exposure to the intervention) in randomly selected households in the catchment areas of the seven PHCs were offered anonymised HIV testing using oral mucosal transudate (OMT) tests. Data on demographics, previous HIV testing and medical history were determined through interview.
**Results:** A total of 9655 HIV tests (80% of those eligible) were conducted at the PHCs over the two year period. A total of 7146 children in 4251 households enumerated were eligible for the prevalence survey; 256 (4%) declined consent, 1395 (20%) were unavailable at the time of the household visit. The median age in 5493 participants was 12 (IQR: 10-15) years and 53% were female. The adjusted HIV prevalence was 2.5%, with no difference by gender. Among the 135 children found to be HIV-positive 53% were undiagnosed.
**Conclusions:** This survey shows a high prevalence of undiagnosed HIV in adolescents, confirming other reports from the region. Almost half of the HIV-infected children remained undiagnosed despite exposure to PITC that achieved high testing rates. Facility-based HIV testing relies on individuals presenting to the facility and is insufficient to address the substantial burden of undiagnosed HIV among older children and adolescents and alternative, community-based testing strategies are urgently needed.

## SURVEILLANCE OF BEHAVIOUR

### WEPEC155

### MEASURING CHANGES IN SEXUAL AND HEALTH BEHAVIOURS OF FEMALE SEX WORKERS AND THEIR ACCESS TO HIV SERVICES IN A SCALED UP TARGETED HIV PREVENTION PROGRAMS IN KENYA

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**Background:** Female sex workers (FSWs) in Kenya are characterized by high levels of risk in terms of the number of sexual partners, concurrency and low condom use with HIV prevalence rates at 29.3% (NASCOP 2013) among them. 133,675 FSWs are estimated (NASCOP 2012) to be in Kenya. Kenya has a scaled up HIV Prevention treatment and care for FSWs. National AIDS and STI Control Program Government of Kenya conducted two rounds of nationwide polling booth survey (PBS) in 2014 and 2015 to measure changes in behavior of FSWs as a result of program interventions and understand if the FSW programs are achieving their intended effects.
**Methods:** PBS is a group interview method, where individuals give their responses through a ballot box. Individual responses are anonymous and unlinked. Anonymity of the respondent improves reporting on sensitive and personal behaviors. Participants were selected using probability sampling and organized into small homogeneous groups of 10-12 people. Participants were also stratified by sex work typologies. 3351 FSWs from 11 selected counties participated in PBS with a consent rate of 95%.
**Results:** Condom use during last paid sex significantly increased from 87% to 93% (p<0.001). Consistent condom use with paying client significantly increased from 63% to 75% (p<0.001). Quarterly HIV testing significantly increased from 72% to 83% (p<0.001). FSWs experiencing current STIs significantly reduced from 24% to 22% (p<0.020). Condom use during last anal sex significantly increased from 40% to 55% (p<0.001). FSWs accessing Drop in Centre/ Clinic every quarter significantly increased from 51% to 69% (p< 0.001). HIV Positive FSWs enrolled in HIV Care significantly increased from 30% to 81% (p< 0.001). FSWs facing physical or sexual assault significantly reduced from 23% to 18% (p<0.001). Condom use at last sex non-paying partner reduced from 54% to 53% though this was not significant.
**Conclusions:** Responding to HIV programming needs of FSW at scale is key ingredient in national HIV response. As programs with key populations scale up in Kenya, it is important to measure KP programs effectiveness. Behavioral surveys like PBS that can measure sensitive behaviors should be part routine National program monitoring.

### WEPEC156

### EXPLORING PARTICIPANTS' UNDERSTANDING AND CONCERNS RELATING TO QUESTIONS ABOUT ANAL SEX IN A RURAL KWAZULU-NATAL SETTING: A COGNITIVE INTERVIEWING APPROACH

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**Background:** Anal sexual intercourse can significantly increase HIV transmission risk. However, eliciting valid information on anal sex history in surveys can be complicated by heterogeneous understanding of the term "anal sex", and by the social undesirability of reporting such behaviour. We explored how questions regarding anal sex were interpreted in a high-HIV-prevalence rural KwaZulu-Natal community, including understanding of terms and acceptability of questions.
**Methods:** 341 adults (53% female) completed a quantitative questionnaire including questions about anal sex. Cognitive interviews were conducted with 13 men and 15 women post-questionnaire. Interviewers used both pre-scripted and spontaneous retrospective verbal probing techniques. Interviews were audio-recorded, transcribed and analysed.
**Results:** 3% of respondents reported ever having had anal sex; 7% declined to answer the question. Levels did not differ by gender, however those aged under 30 reported having had anal sex significantly more often (7.3%) than those aged over 30 (1.6%). In cognitive interviews, interviewees reported that anal sex is practiced locally. The majority of interviewees perceived anal sex as socially unacceptable; a few perceived it as increasing HIV infection risk. Two-thirds of men understood anal sex as being practiced primarily by men-who-have-sex-with-men, prisoners and ex-convicts.
One woman reported anal sex as a way of gaining sexual pleasure; one woman perceived it as a contraceptive method. 65% of the interviewees (59% women; 41% men) found the survey question "Have you ever had anal sex" easy to answer, although only 71% of these interpreted the term "anal sex" as intended in the survey. Other interpretations including non-anal sex ('dog style', 'thigh sex') and gendered readings ('inserting his penis into a woman's anus', 'into another man's anus').
The majority of interviewees (62%) stated that the survey question can be included in regular survey questionnaires.
**Conclusions:** Reporting of anal sex remains socially undesirable to many in this setting, but asking questions about this topic is considered broadly acceptable. Anal sex may be an important risk factor for HIV in rural KwaZulu-Natal, but given widespread misperceptions about the term, careful explanation within survey questionnaires is likely to be a pre-requisite to generating valid prevalence data.

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## WEPEC157

### ESTIMATED PREVALENCE AND CORRELATES OF SEXUAL CONCURRENCY AMONG PERUVIAN MEN WHO HAVE SEX WITH MEN (MSM)

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**Background:** Sexual concurrency (sexual partnerships that overlap in time) is a known driver of HIV transmission in heterosexual epidemics, yet it is still unclear if concurrency fuels epidemic spread of HIV in MSM populations. Mathematical modeling has been instrumental in estimating the impact of sexual concurrency, but relies heavily on population-specific parameter estimates. The purpose of this study is to use cross-sectional data from the 2011 Peruvian Biobehavioral Survey to quantify the level of concurrency among Peruvian MSM and to describe individual-level characteristics associated with having concurrent sexual partnerships.
**Methods:** Between June and October 2011, Peruvian MSM (N=5,148) were recruited using peer-educator outreach at social venues frequented by MSM (e.g., bars, saunas, etc.). All participants received HIV and STI testing and completed questionnaires which assessed characteristics of their last three male sex partners, including the dates of earliest and most recent sex with each partner. Multivariate logistic regression was used to identify factors associated with concurrent sexual partnerships (any vs. none).
**Results:** Among men who reported at least one male partner in the previous 3 months, 23% had concurrent partners. Estimates of concurrency were significantly higher for participants from Lima compared to participants from outside Lima (24.6% vs. 21.6%, p=0.024). In the adjusted model, men who identified their predominant sexual role as receptive or versatile were more likely than men who identified as insertive to have concurrent male partners (OR=1.40, 95% CI:1.08-1.82; OR=1.28, 95% CI:1.01-1.63, respectively). Homosexual-identified MSM were more likely to practice concurrency with male partners compared to heterosexual-identified MSM (OR=1.72; 95% CI=1.12-2.63). Location modified the association of sex work and concurrency: men who exchanged sex for money, food, drugs, etc., were less likely to have concurrent partners than non-sex workers in areas outside of Lima (OR=0.62, 95% CI=0.47-0.82), but there was no significant difference between sex workers and non-sex workers within Lima (OR=0.909, 95%CI=0.39-2.09).
**Conclusions:** Concurrency is common among MSM in Peru, yet prevalence varies according to demographic characteristics. These data will contribute to understanding concurrency's role in MSM epidemics, which is necessary to inform the design of more tailored and effective prevention strategies.

## SURVEILLANCE OF HIV DRUG RESISTANCE (INCLUDING IN PREP STUDIES)

## WEPEC158

### RESULTS OF SURVEILLANCE OF HIV RESISTANCE IN PEOPLE STARTING ANTIRETROVIRAL TREATMENT IN ARGENTINA PERFORMED ACCORDING TO WHO STRATEGY

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**Background:** The emergence and transmission of HIV drug resistance (HIVDR) may jeopardize the effectiveness of antiretroviral treatment (ART) programs. In Argentina, current guidelines recommend starting ART with NNRTI-based regimens, and pre-treatment HIV genotyping is optional. Currently, 70% of ARV initiators start with NNRTI-based regimens, the majority without previous resistance testing. The aim of this study was to determine the prevalence of resistance-associated mutations in people starting ART in Argentina, using a WHO-proposed methodology (PreTreatment Drug Resistance (PDR) Survey).
**Methods:** This was a cross-sectional, nationally representative study. According to WHO concept notes and using country-specific parameters, 30 ART-dispensing sites throughout the country were randomly chosen to enroll at least 330 persons starting ART (without prior exposure or re-starting ART); to generate a point prevalence estimate of resistance-associated mutations (RAMs) with a 5% confidence interval (for both the total population and for those without ARV exposure). All consecutive patients older than 18 years starting or re-starting ARV in the chosen clinics were enrolled, if provided informed consent. Samples were processed with Trugene (Siemens)®, and analyzed using the Stanford algorithm "HIVdb Program, Genotype Resistance Interpretation"(Version 6.3.1).
**Results:** Between august 2014/march 2015, we obtained 330 samples from people starting ART in the selected sites. Mean(SD) age was 35(11.0) years; 63.4% were male; median(IQR) CD4 count was 275/mm3(106-461); and 16.6% had prior ARV exposure (of these; 71% received ART, 21% MTCT prevention, 6% PEP). The prevalence of RAMs was **14%** (±2.5%). According to drug-class, 3% of the samples showed resistance to **NRTIs**, **11%** to **NNRTIs** and 3% to **PIs**. Prevalence of resistance-associated mutations in those **without** prior exposure was **13%** (±2.5%): 3% had RAMs to **NRTIs**, **10%** had RAMs to **NNRTIs**, 2% had RAMs to **PIs**). The most common mutations found were 103N, 190A, 41L and 101E (41%, 15%, 15% and 12% of those with RAMs, respectively).
**Conclusions:** This PDR surveillance study showed concerning levels of HIVDR in Argentina, especially to NNRTIs. Due to this finding, National guidelines will probably change. However, further analysis is needed to understand the potential impact of these figures, and to determine if introducing HIV genotyping before ART initiation would be a cost-effective intervention.

## WEPEC159

### ESTIMATING LEVELS OF ACQUIRED AND TRANSMITTED HIV DRUG RESISTANCE IN HIGH HIV BURDEN DISTRICTS IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** The South African province of KwaZulu-Natal (KZN) has the largest burden of HIV infection in the country with ~850,000 persons on antiretroviral therapy (ART). Since 2008, moderate levels (between 5-15%) of transmitted HIV drug resistance have been detected among HIV-infected pregnant women in KZN. Routine HIV drug resistance testing is not typically provided for patients failing Non-Nucleoside Reverse Transcriptase Inhibitor-based regimens, or at regimen initiation. To monitor trends, in this analysis we assessed acquired (ADR) and transmitted (TDR) HIV drug resistance in treated and newly infected persons respectively.
**Methods:** Cross sectional analysis was performed on HIV positive samples obtained from the HIV Incidence Provincial Surveillance System, a household-based study designed to monitor HIV prevalence and incidence trends in the Vulindlela and Greater Edendale sub-districts of uMgungundlovu in rural KwaZulu-Natal. Self-reported ART use was determined by survey. Peripheral blood samples were tested for viral load and HIV incident infection using the LaG Avidity Assay. Genotyping of the HIV-1 polymerase gene was performed using a validated in-house method on samples with viral load of >500 c/ml, using nested PCR and Sanger sequencing technologies. Genotypic resistance was defined as the presence of resistance mutations associated with impaired drug susceptibility, using the Stanford Genotypic Resistance Interpretation Algorithm (http://hivdb.stanford.edu).
**Results:** Of the 1596 participants self-reporting to be on ART, 204 (12.7%) had HIV RNA viral levels >500 c/ml and were assessed for ADR. TDR was measured in 75 recently infected participants as determined by the LaG Avidity assay. Within this group of participants, 75% were female, and mean age was 23 years (IQR 19-28years). Total HIVDR amplification rate was 94%. Resistance (NRTI ± NNRTI) was detected in 68% of patients failing ART and 10% of recent infections.
**Conclusions:** Preliminary assessments show moderate levels of TDR amongst participants from this rural community. In addition, the proportion of participants failing ART without resistant viruses (~30%) indicates high levels of non-adherence to ART in the community. These data highlight the need for programmatic improvements in adherence counselling to limit the future development and spread of both acquired and transmitted HIVDR.

## SURVEILLANCE SYSTEMS AND METHODS

### WEPEC160

### TRACKING PEOPLE ALONG THE HIV CARE CASCADE: A TOOL TO ASSESS, DEVELOP AND IMPLEMENT HIV CASE-BASED SURVEILLANCE IN HIGH PREVALENCE SETTINGS

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**Background:** World Health Organization (WHO) released new guidelines in 2015 recommending ten global indicators to collect information along the HIV care and treatment cascade as a principal way to track the epidemic and response, and measure progress towards UNAIDS 90-90-90 targets. As six of the ten indicators utilize data that originate from patient diagnosis, testing and medical records, WHO recommends case-based surveillance (CBS) systems be developed to harness longitudinal clinical data in a format that makes it readily available for use as strategic information at the subnational and national levels. Few high-burden countries have CBS.
**Methods:** To identify systems that are context appropriate, feasible, scalable, and sustainable to implement CBS, it was determined to perform a situational analysis, or strengths, weaknesses, opportunities, and threat (SWOT) analysis, in select countries. A protocol was developed by a team of surveillance experts within the Measurement and Surveillance of HIV Epidemics (MeSH) Consortium. The protocol and tools were modeled from existing resources including: the Centers for Disease Control and Prevention (CDC) Updated guidelines for evaluating public health surveillance systems; WHO Evaluating a national surveillance system, and the National Alliance of State and Territorial AIDS Directors'/CDC Case-Based Surveillance Toolkit. The SWOT protocol includes three parts: 1) desk review of country specific HIV surveillance materials; 2) questionnaire for interviewing HIV-related stakeholders; 3) site visit checklist to observe data collection, collation and flow at the local, regional and national levels. The protocol has been designed to be a comprehensive tool that can be modified for the particular focus of an assessment within different countries.
**Results:** Utilization of the SWOT protocol occurred in two ways:
1) in its entirety to conduct a comprehensive analysis of current electronic management record / surveillance systems in Tanzania;
2) modular to conduct a focused analysis of specific functionality of current surveillance systems in South Africa and Kenya.
In both instances, themes were identified in system attributes such as data quality and simplicity and in the feasibility and readiness for CBS.
**Conclusions:** The SWOT protocol can be used to assist in determining a country's readiness and strategy to develop CBS, as recommended by the WHO.

### WEPEC161

### IMPLEMENTATION OF INTEGRATED HIV BIOLOGICAL AND BEHAVIORAL SURVEILLANCE TO MONITOR HIV PREVALENCE AND INTERVENTION OUTCOMES AMONG FEMALE SEX WORKERS OUTSIDE SEX ESTABLISHMENTS, THAILAND

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**Background:** In Thailand, a shift in female sex work (FSW) to outside establishments (non-venue), i.e., FSWs seeking clients in parks, streets, via phone/internet, has made FSW more difficult to reach by intervention staff. Integrated Bio-Behavioral Surveillance (IBBS) surveys have been implemented to monitor HIV prevalence and progress of interventions toward the national Ending AIDS targets (i.e., 95% condom use and 90% HIV Counseling and Testing (HTC).
**Methods:** A cross-sectional IBBS, using Respondent-Driven Sampling (RDS), has been conducted in three tourist provinces (Chiangmai, Chonburi, and Phuket) biennially since 2011. Eligible FSW were aged $\geq$18 years and solicited clients outside sex establishments in the past month. The sample size of 275 per province was designed to detect a 15% difference in HIV prevalence and behavior changes, using $\alpha$ 0.05, Power (1-$\beta$) 0.80 and a 2.0 design effect. Consenting participants completed a questionnaire and received HIV and STI (*Neisseria Gonorrhoeae* (NG) *infections)* screening. Data were analyzed using RDS Analysis Tool to generate descriptive statistics (percentage with 95% confidence interval).
**Results:** Decreased condom use during 2011 to 2015 was observed in Chonburi and Phuket, 92.1% (88.6-95.4) to 49.4% (41.1-57.7) and 96.6% (94.1-98.8) to 85.8% (79.9-91.7), respectively, but remained constant in Chiangmai at 92%. Increased HTC access was observed in all provinces, however the 2015 coverage was still less than two-thirds (Chiangmai: 36.4% (30.6-43.6) to 55.2% (47.9-62.4); Chonburi: 34.7% (27.7-41.6) to 62.1% (55.7-68.5); and Phuket: 43.2% (37.0-50.2) to 66.1% (58.7-73.5). HIV and NG prevalence remained unchanged (Figure 1).

*[Figure 1: HIV and Neisseria Gonorrhea Prevalence among Non-venue Female Sex Workers - Chiangmai, Chonburi and Phuket, IBBS-RDS, Thailand, 2011-2015]*

**Conclusions:** Although HIV and NG prevalence were not increasing, the below-target achievement for condom use and HCT coverage is critical to informing program managers for an intensified community outreach with condom promotion and HTC recruitment. On-going IBBS-RDS is recommended to monitor the intervention responses among non-venue FSW not collected as part of routine surveillance or monitoring systems.

### WEPEC162

### BIRTH OUTCOMES FOLLOWING ANTIRETROVIRAL EXPOSURE DURING PREGNANCY: RESULTS FROM THE FIRST YEAR OF THE SOUTH AFRICAN PREGNANCY EXPOSURE REGISTRY AND BIRTH DEFECT SURVEILLANCE SYSTEM

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**Background:** Following concerns about the safety of antiretroviral therapy (ART) in pregnancy, the National Department of Health initiated a pregnancy exposure registry and birth defects surveillance (PER/BDS) system in the eThekwini District, KwaZulu Natal in 2013. We describe the findings from the first year, focusing on the risk of adverse birth outcomes (ABOs) (birth defects (BD), stillbirths(SB), neonatal deaths(NND), and low birth weight (LBW) in infants exposed to antiretroviral therapy (ART) during the first trimester (T1) compared to infants born to unexposed HIV-infected and HIV-uninfected women.
**Methods:** Clinical and medicines exposure histories and birth outcomes from maternal interviews, institutional records of women who delivered at Prince Mshiyeni Memorial Hospital (PMMH) from7/10/2013 to 6/10/2014 were analysed. A standardised neonatal surface examination was conducted on live and stillbirths of recruited women.
**Results:** Of the 14 587women delivering at PMMH, 10 417 (71.4%) were captured via the BDS system. 4013 (38.5%) were HIV-infected. 10417 deliveries yielded 10517 birth outcomes including 57 (0.5%) BD, 85 (0.8%) NND, 245 (2.3%) SB and 1307 (12.8%) LBWlivebirths ($\leq$=2500g).HIV-infected women had a higher rate of LBW infants (14.5% vs. 11.0%; risk ratio: 1.33; 95% CI: 1.20-1.47). Among the 3930 (96.7%) HIV-infected women on ART during pregnancy, 517 (13.2%) definitely initiated ART before the pregnancy (T1 exposures). 387 received an EFV-based regimen and 126 received a NVP-based regimen during T1. T1 exposure to NVP-based ART was associated with an increased risk of BD (RR 9.38; 95% CI: 3.4-26.0) as was TDF-based ART (RR: 2.9; 95% CI: 1.1-2.8). No association was noted with other ARVs including EFV. None of the T1 ARV exposures were associated with SB or NNDs. However, T1 exposure to NVP was associated with increased risk of LBW (RR 1.7; 95%CI:1.22-2.4).
**Conclusions:** No association between T1 use of EFV and ABOs was observed on 387

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T1 exposures. Associations between T1 NVP and TDF and BDs, and T1 NVP and LBW needs further investigation. Given the small number of cases (many overlapping), presence of confounders and lack of a postulated common mechanism, these associations require further evidence over time to interpret.

## WEPEC163

### USING DATA TRIANGULATION TO INFORM GEOGRAPHIC PRIORITIZATION FOR PEPFAR TANZANIA: LESSONS LEARNED AND FUTURE DIRECTION

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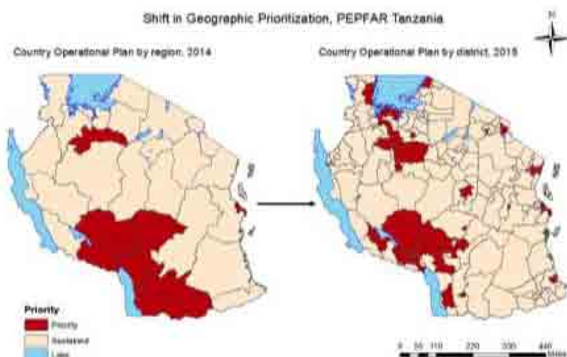
**Background:** Tanzania's national HIV/AIDS prevalence is 5.1% (2012), but the burden varies geographically. PEPFAR 3.0 aims to strategically allocate resources at the subnational/district level in order to reach 80% of all PLHIV with treatment by 2020, to help meet UNAIDS Fast Track goals. In the absence of direct district estimates, we triangulated data sources to identify the best available method for geographic prioritization.

**Methods:** Three district-level data sources and methods were examined. First, Antenatal Clinic Sentinel Surveillance (ANC SS 2011) reports clinic-level HIV prevalence aggregated to the district. PrevR (2014), a UNAIDS geospatial model, uses survey data and geographic information to estimate HIV prevalence. Finally, PMTCT program data (2014) can be used to calculate HIV positivity rates as a prevalence proxy. We reviewed input data for completeness and timeliness and analyzed concordancy of estimates across data sources. Using PLHIV estimates derived from the most reliable method, districts were ranked from highest to lowest number of PLHIV. GIS was used to visualize and overlay estimates.

**Results:** Findings across methods were discordant. Difference between district prevalences varied from 0.02 to 12.81 percentage points. ANC SS was outdated and did not cover all districts. PrevR used outdated 2012 political boundaries and did not report estimates for new districts. PMTCT program data had reporting limitations, but it was the most timely and complete data source. We selected PMTCT program data to create HIV district estimates. Our analysis suggests that 80% of the PLHIV reside in 82 of 171 (48%) districts. Of 171 districts, 42 (25%) were selected for scale-up of testing and ART services, representing 55% of PLHIV in Tanzania (Figure 1).

**Conclusions:** Using mixed methods, we identified the best available data to geographically focus the Tanzania HIV program. All methods had limitations, highlighting the need for more complex modeling of the epidemic at a lower subnational unit.




*[Figure 1. Shift in Geographic Prioritization, PEPFAR Tanzania 2014-2015]*

## POPULATION-BASED SURVEYS WITH HIV TESTING

## WEPEC164

### NATIONAL SOUTH AFRICAN HIV PREVALENCE ESTIMATES ROBUST DESPITE SUBSTANTIAL TEST NON-PARTICIPATION: EVIDENCE FROM THE 2012 NATIONAL POPULATION-BASED SURVEY

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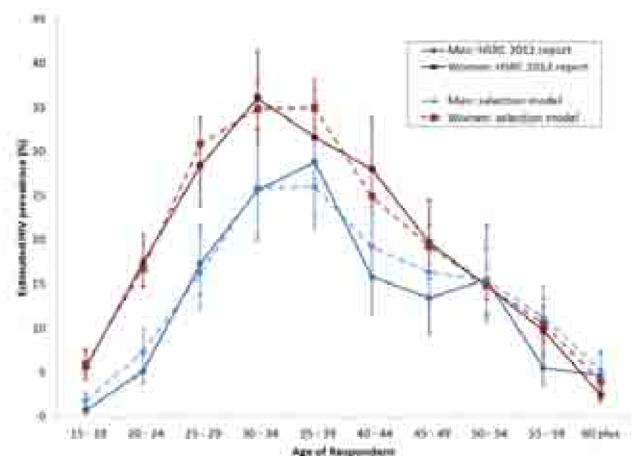
**Background:** Valid national HIV seroprevalence estimates are crucial to planning responses to the HIV epidemic, notably in South Africa, the country with the highest number of people living with HIV. Current South African seroprevalence estimates arise from HIV household surveys which may, due to substantial non-participation, produce biased estimates. We evaluated whether unmeasured factors pre-disposing respondents to decline HIV tests were biasing South African national HIV seroprevalence estimates.

**Methods:** Data arose from the nationally-representative 2012 South African National HIV Prevalence, Incidence and Behaviour Survey. We jointly estimated regression models for consent to test and HIV status in a bivariate, Heckman-type probit framework that accounts for unobserved joint predictors of test consent and HIV status. We used assigned interviewer identity as a selection variable known to predict consent but unable to affect interviewees' HIV status. From these models we estimated the HIV status of all interviewed participants, including those who did not test.

**Results:** Of the 26,710 interviewed participants invited to test for HIV, 21.3% of females and 24.3% of males declined. Interviewer identity was strongly correlated with consent to test for HIV, and declining a test was weakly associated with HIV infection. Our estimates were non-significantly different from previously reported figures for this survey: 15.1% vs. 14.5% for 15-49 year old males; 23.3% vs. 23.2% for 15-49 year old females. Our models suggested that HIV was less prevalent at peak ages but more prevalent in later life for males (see Figure). Similarly, in high-prevalence KwaZulu-Natal, HIV prevalence was estimated to be somewhat lower, and in low-prevalence Western Cape somewhat higher, than previously reported.




*[HIV prevalence estimates from the 2012 HSRC Report and from Heckman-type probit selection model]*

**Conclusions:** We conclude that the most recent HIV prevalence estimates in South Africa are robust under the strongest available test for missingness. Our findings provide support to the reliability of inferences drawn from these national survey estimates.

## WEPEC165

### THE PREVALENCE OF HIV INFECTION IN LARGE, TIME-LOCATION SAMPLE OF BLACK MSM WHO ATTEND BLACK PRIDE EVENTS IN THE UNITED STATES: RESULTS FROM PROMOTING OUR WORTH, EQUALITY, AND RESILIENCE (POWER)

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**Background:** Although multiple studies have documented very high prevalence and incidence rates of HIV infection among Black MSM (BMSM), few studies have attempted to recruit large samples of BMSM within community settings in order to characterize the HIV epidemic in this population. This analysis reports seroprevalence findings from POWER, a large epidemiological study of HIV infection among BMSM in the US.
**Methods:** POWER employed time location sampling (TLS) to recruit BMSM who attended Black Pride events in 6 US cities (N=3,426). Participants completed a behavioral health survey and were offered on-site HIV testing. HIV-positive men were identified either through self-report of seropositive status or through an on-site HIV test; negative men were identified through on-site testing only. After removal of individuals who were not part of the sampling frame (i.e., transgender women, duplicate participants, non-MSM, non-acceptance of HIV testing among men who reported negative status), we achieved an analytic sample of 2,391 men. Analysis was weighted to reflect TLS recruitment probabilities.
**Results:** The prevalence of HIV infection in this sample was 36%. Educational status (p< .0001), sexual identity (p< .02), and age (p< .0001) were all significantly associated with prevalent HIV infection. HIV prevalence rose by age (Table 1).

| Age Group | % (95% CI) |
|---|---|
| 18-19 | 20.6 (12.1-33.1) |
| 20-29 | 27.5 (25.4-30.8%) |
| 30-39 | 34.8 (31.1-39.8%) |
| 40-49 | 47.4 (40.3-54.4) |
| 50-59 | 57.6 (46.5-68.1) |
| 60-69 | 31.9 (12.9-59.6) |

*[Table 1: HIV Prevalence within age group among BMSM in the United States]*

**Conclusions:** These data confirm earlier, small scale studies that used convenience sampling methods to confirm that BMSM in the US are at extraordinarily high risk for HIV acquisition, constituting one of the most heavily impacted populations in the world. Prevalence of HIV infection by age is consistent with an annual HIV incidence rate of 4.16%, which means that an explosive HIV epidemic among BMSM is now occurring in multiple major urban settings in the US. Only a concerted effort that combines behavioral, HIV treatment and PrEP/PEP programs will prevent new generations of young Black MSM from becoming infected with HIV in the U.S.

## WEPEC166

### DECLINING PREVALENCE OF HIV-2, WHILE THE PREVALENCE OF HIV-1 IS STABILIZING: A CROSS-SECTIONAL SURVEY FROM BISSAU, GUINEA-BISSAU

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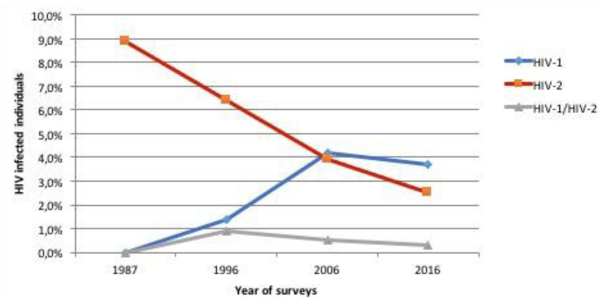
**Background:** With 10-year intervals, the Bandim Health Project has since 1987 conducted three surveys of prevalence and incidence rates of HIV-1 and HIV-2 in Guinea-Bissau, West Africa. The highest prevalence of HIV-2 has been observed in Guinea-Bissau. The aim of the current survey was to evaluate the development in prevalence and incidence rates since 2006.
**Methods:** A cross-sectional survey with 3224 (1421 men, 1803 women) eligible adults living in a 10% sample of the houses (N=412) in the study area in Bissau was conducted between November 2014 and January 2016. Participants had a questionnaire filled out and a blood sample collected. Incidence rates were estimated from 622 individuals participating in both surveys of 2004-2006 and 2014-2016.
**Results:** A total of 2438 (76%, 996 men and 1442 women) individuals participated. The prevalence of HIV decreased from 8.6% (218/2548) in 2006 to 6.5% (159/2438) in 2016 (p< 0.01). With HIV-1/2 dual infections included, the overall prevalence of HIV-1 stabilized from 4.6% (118/2548) to 4.0% (98/2438) (p=0.30). A significant decrease was observed among men in the age group of 25-34 years (p=0.02). A decrease in the overall prevalence of HIV-2 from 4.4% (112/2548) to 2.8% (68/2438) was observed (p< 0.01). Though the prevalence decreased in both sexes, it was only significant for women in the age groups of 25-34 and 35-44 years (p< 0.01, p=0.04). The incidence rate decreased from 0.50 to 0.39 for HIV-1 and from 0.24 to 0.10 for HIV-2 per 100 person-years of observation between the time periods of 1996-2006 and 2006-2016. The female:male incidence rate ratio was 2.34 (95% CI: 0.92-5.93) for HIV-1 and 4.25 for HIV-2 (95% CI: 0.50-36.40).




*[The prevalence of HIV-1, HIV-2 and HIV-1/2 dual infections from 1987 to 2016 in Bissau, Guinea-Bissau]*

**Conclusions:** The prevalence of HIV-2 continues to decrease, although active transmission persists. The prevalence of HIV-1 has stabilized and fewer men were infected compared to 2006.

## WEPEC167

### AWARENESS AND PREVALENCE OF HIV AND STI AMONG FEMALE PARTNERS OF MSM IN ABUJA, NIGERIA

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**Background:** Given the stigma and discrimination against men who have sex with men (MSM), many MSM retain sexual relationships with women who may be unaware of their male partners' sexual practices. Preliminary data from the TRUST cohort study suggests that 60% of MSM in Nigeria reported having female partners, and here we report on the awareness and prevalence of HIV/STIs among this vulnerable population.
**Methods:** From August-December 2015, the Bridging TRUST pilot study recruited 55 confirmed female partners of MSM. TRUST participants who previously reported having female partners chaperoned 1 or more of their main and casual female partners to a women's clinic focused on reproductive and comprehensive HIV prevention and care services. Participants completed a structured survey instrument and clinical testing for pregnancy, HIV, *Neisseria gonorrhea*, and *Chlamydia trachomatis*. Diagnosed infections were treated with antiretroviral and/or antibiotic therapy as needed. Descriptive data on demographics, awareness of HIV/STIs, and the prevalence of HIV/STIs were calculated.
**Results:** Recruited women had a median age of 25 years (IQR: 22-28), few were Muslim (7%), and one-fourth were married or cohabitating with a man. Overall, awareness and discussion of HIV/STIs was relatively high. Women reported having tested for HIV (79%), having tested for STIs (37%) and over half were currently worried about their HIV status (56%). The majority of women reported having only main partners (61%) who they openly discussed their partner's HIV status (59%) or their own status (59%). For casual partners, they were less likely to discuss their partner's HIV status (9%) or their own status (5%). The baseline prevalence of HIV was 7.3% and fewer had an STI infection (4%).
**Conclusions:** The HIV prevalence among female partners of MSM remains higher than the national prevalence of 4% in Nigeria. Those most likely recruited into care openly discussed HIV/STI risk with their main partners and engaged in prior HIV/STI testing. When recruitment relies heavily on the MSM partner, alternative recruitment strategies are needed for the partnerships with a less open dialogue about HIV/STI risk.

## WEPEC168

### WHAT DO KEY STAKEHOLDERS THINK ABOUT HIV SELF-TESTING? ANALYSES OF QUANTITATIVE AND QUALITATIVE FINDINGS FROM A CANADIAN NATIONAL SURVEY

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**Background:** Approximately 21% of people living with HIV in Canada remain undiagnosed. Stigma, social visibility, privacy, and long wait times impede access to HIV testing in health facilities, for which HIV self-testing presents an empowering alternative. Since Canada has yet to approve HIV self-tests, we surveyed key stakeholders engaged with HIV testing initiatives, to identify the opportunities and challenges of implementing HIV self-testing in Canada.
**Methods:** An online survey was disseminated via email by the CIHR REACH 2.0 POCT working group to stakeholders (clinical providers, public health and laboratory professionals, researchers, community based organizations) involved in HIV testing across Canadian provinces. Questions covered the perceived needs, benefits, challenges, concerns, and areas for action. Open-ended questions and comments were analyzed via qualitative content analysis; accommodating a mixed-methods, respondent-informed approach.
**Results:** 183 stakeholders responded to the survey and their responses were grouped into major themes:
1) Needs and benefits: 65% of respondents felt that self-tests should be made available to their clients, conditional on the context of usage, clientele, post-test counseling and care. 71% of respondents felt that investment in self-testing is necessary to reach the undiagnosed, and 72% agreed that self-test instructions require improvements for linkages to treatment and counseling.
2) Concerns and challenges: Concerns about test accuracy, execution, costs, and misinterpretation of results, were highlighted. Emotional instability and coping mechanisms in the absence of counselors were perceived as potential harms. 60% of respondents agreed that clients who self-test false-negative will be less likely to engage in care. 58% felt that operationalizing linkage to care was the largest challenge associated with HIV self-testing. 42% of respondents felt their clients would be open to using innovative internet and mobile phone applications for linkages; but some may lack access to mobile devices. Respondents (21%) urged for timely action and approvals for HIV self-tests.
**Conclusions:** This survey, the first of its kind, demonstrated that key stakeholders are interested in having the option of self-tests for HIV testing in Canada, for reaching the undiagnosed. Concerns regarding linkages to care and counseling, test accuracy and costs, must be addressed before widespread implementation of HIV self-testing in Canada.

## WEPEC169

### HIV TESTING TRIPLES OVER FIVE YEARS SURVEILLANCE AMONG HIV-NEGATIVE FEMALE SEX WORKERS IN IRAN: THE FINDINGS OF A BIO-BEHAVIORAL SURVEY IN 2015

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**Background:** HIV testing practices of Iranian Female sex workers (FSWs) have been shown to be low due to individual- and structural-level barriers to testing. Given the recommendations on frequent HIV testing among FSWs, we aimed to estimate prevalence of HIV testing in a national sample of FSWs.
**Methods:** Facility-based (n=1173) and outreach (n=152) FSWs were recruited from 13 cities in 2015. FSWs aged ≥18 years with a history of selling sex to multiple clients in last year, were recruited. For the current study, only HIV negative FSWs' data were analyzed. Recent HIV testing was defined as having tested for HIV and received the results in last year. FSWs who did not answer this question were excluded. Reasons for HIV testing and not-testing were also recorded. Behavioural data was collected via a standardized questionnaire. The proportion of HIV testing in different levels of predictors was compared using Chi square test.
**Results:** Out of 1310 HIV negative FSWs, 80.6% (95% CI: 81.5, 92.4) had ever tested for HIV. Out of 1049 eligible FSWs, 88.0% (95% CI: 81.5, 92.4) had a recent HIV test. Common reasons for HIV testing were being concerned about their HIV status (82.9%) and advised by health workers (36%). However, main reasons for not tested for HIV among those who did not get tested were no self-perceived risk for HIV (32.5%), not knowing an HIV testing site(28.5%), and not having enough time (21.1%). Being recruited through facilities(88.8%), unstable housing (93.8%), having more than five paying partners (93.7%), having more than one non-paying partners (93.2%), health care services utilization (89.1%), and receiving free condom in the past year (89.9%) were significantly associated with recent HIV testing. Additional analyses on the determinants of HIV testing will be presented.
**Conclusions:** In comparison with the previous round of HIV surveillance among FSWs in Iran, the prevalence of HIV testing has tripled(27.5% in 2010). While these findings are promising and show improvement over a short period of time, scaling up rapid HIV testing should be continued, particularly among outreach FSWs.

## WEPEC170

### HIV AND SYPHILIS AMONG FEMALE SEX WORKERS (FSWS) IN ZAMBIA: RESULTS OF BEHAVIORAL & BIOLOGIC SURVEILLANCE SURVEY 2015

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**Background:** The study was carried out to estimate prevalence and incidence of HIV and syphilis among FSWs. According to the 2013-14 Zambia Demographic and Health Survey, HIV prevalence in Zambia is 13% (15% women, 11% men) aged 15-49 years. Prevalence is not known among FSWs.
**Methods:** This was a cross sectional study done August and September 2015 in 5 districts of Zambia. Time location approach was used to recruit FSWs in brothels, bars and on the streets. A questionnaire was administered and blood was drawn after informed consent. Qualitative syphilis test using RPR and rapid HIV test using Determine and Unigold was performed in the field. Results were given to the participants the following day at a health facility. HIV and syphilis positives were referred for management. Quantitative RPR test was done at a Referral laboratory on reactive plasma. Tie breaker was performed on HIV discrepant results using Western Blot. HIV positive plasma was subjected to HIV incidence test using sedia LAg Avidity EIA. Chi-square tests was used to compare proportions in HIV-positive and negative individuals.

**Results:** 1189 FSWs were recruited and 1113 (94%) accepted HIV and syphilis testing. Median age was 26 years, education was 9 years. Overall, HIV prevalence was 56%; 1.6% were determined to have recent infection (118-142 days). Syphilis prevalence was 21%. HIV positive FSWs were older compared to negatives; median: 28 vs. 23 years (p< 0.001). HIV positivity was higher among those with syphilis than without, 30.2% vs. 9.9% (p< 0.001). HIV positivity was higher in those who consumed alcohol daily, compared to counterparts reporting no drinking.
**Conclusions:** Prevalence of HIV and syphilis is 3 times higher in FSWs compared to 2013-14 ZDHS estimate of 13% in general population. A concurrent syphilis epidemic (21%) may be a significant contributor to spread of HIV. An intervention targeting STI diagnosis and treatment is key and interventions aimed at preventing new HIV infections including test and treat strategy with cART as part of a comprehensive HIV prevention package is essential and can impact the broader epidemic in Zambia.

## WEPEC171

### CONDOM USE AND DECISION-MAKING IN THE CONTEXT OF HIV PREVENTION AMONG FEMALE SEX WORKERS IN IRAN

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**Background:** Although injecting drug use continues to be the main route of HIV transmission in Iran, recent evidences suggest a growing role of sexual transmission. While condoms are freely available to high risk populations, it seems Female Sex Workers (FSWs) continue to practice unprotected sex with their paying and non-paying partners. This study aimed to assess condom use practices and reasons for protected or unprotected sex among FSWs in 2015 in Iran.
**Methods:** Consenting FSWs≥18 years who reported sex trade with multiple male clients in the past year were recruited through facilities and outreach from 21 sites in 13 cities. Using a standardized questionnaire, FSWs' condom use with paying and non-paying partners and the reasons for safe or unsafe sex were recorded.
**Results:** Out of 1337 FSWs, 96% knew a place to get male condoms. However, 59.1% (95%CI: 47.7, 69.6) reported using male condoms in their last sex with a client. Of whom, 89.5% (CI95%: 83.1, 93.7) reported preventing HIV/STIs as the main reason for using a condom. Conversely, client dissatisfaction was the main reason of condom non-use paying sex (44.7%, CI95%: 35.7, 53.9). Condom negotiation was initiated mainly by FSWs (72.2%, 95CI%: 60.3, 81.6) and rarely by clients (8.9%, 95%CI: 5.2, 14.9). Condom use at last sex with a non-paying partner was reported by 43.3% (95%CI: 32.0, 55.3) of participants; Main reasons for condom use and non-use with non-paying partners were reported as HIV/STIs prevention (84.2%, 95%CI 74.7, 90.6) and partner refusal (44.1%, 95%CI: 32.1, 56.8), respectively. Decisions over condom use were mainly made by FSWs (69.3%) and seldom their non-paying partners (8.9%). Only 9.5% (95%CI: 5.0, 17.4) of cases declared condom unavailability and just 0.3% stated condom unaffordability as the reasons for condom non-use.
**Conclusions:** Although condoms are freely available in all harm reduction centers in Iran, FSWs' condom use practices remains low with both paid and non-paid partners. Since the main reason for condom non-use is partner refusal, further programs catered towards improving FSWs' condom negotiation skills as well as educating their clients about the importance of protected sex are recommended.

## WEPEC172

### SURVEY OF PROVINCIAL GOVERNMENT EMPLOYEES TO MEASURE THE RESULTS OF WORKPLACE PROGRAMS ON HIV

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**Background:** Gauteng provincial government tendered a survey of HIV prevalence, knowledge, behaviours, utilization of services and exposure to interventions in order to measure the results of the HIV workplace program implemented for over a million government employees from 2002 to 2010.
**Methods:** HSRC won the tender bid from Gauteng government. A stratified random sample of 3 679 Gauteng provincial government employees was selected from 1.3 million employees across 11 departments. The sampled employees were tested anonymously for HIV and interviewed with a questionnaire. The questionnaire documented socio economic status, knowledge of HIV, sexual and social risk behaviours, utilization of services and exposure to interventions. The profile of government employees is documented and compared with the general population of the province
**Results:** HIV prevalence is 30% lower than the general adult population at 12.5% but the risk profile is very similar. The highest HIV prevalence is found in young unmarried women at 23%, and young women with multiple sex partners have the highest HIV prevalence. Knowledge of HIV prevention, reported condom use and utilization of services is significantly higher in government employees. 35% of people with one sex partner reported using condoms; 71% of people with two sex partners reported using condoms. 20% of men and 5% of women reported having more than one sex partner: some of this group are not using condoms.
85% of government employees had ever tested for HIV, 72% accessed peer education, 25% utilized counselling at work and 25% utilized health screening at work including HIV testing. The profile of employee deaths indicates that HIV and TB deaths continue.
**Conclusions:**
- HIV prevalence in government employees is 30% lower than the general population.
- Gauteng government workplace programs have achieved higher levels of knowledge, condom use with multiple partners and utilization of services amongst employees than the general population.
- The financial, psycho-social and health profiles of government employees require an integrated employee wellness response which extends beyond health screening and chronic medical care.
- Workplace program results should to be measured regularly with a representative sample of employees surveyed every 3 years.

## WEPEC173

### LOW ANTIRETROVIRAL THERAPY COVERAGE AMONG ADULTS, ESPECIALLY YOUNG MEN, LIVING WITH HIV IN A SOUTHERN MOZAMBICAN DISTRICT WITH HIGH HIV INCIDENCE

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**Background:** Very high HIV incidence among adult women in Chókwè District, southern Mozambique (4.6/100 person-years) was reported in 2012 and continues to be observed through the Chókwè Health Demographic Surveillance System (CHDSS).
Here we report the first CHDSS estimates of progress towards globally-endorsed targets of diagnosing ≥90% of people living with HIV (PLHIV) and enrolling ≥81% of PLHIV on sustained antiretroviral therapy (ART).
**Methods:** CHDSS conducts annual demographic surveillance of 95,589 residents. In 2015, all CHDSS households were visited, and HIV testing services offered to residents. Consenting residents were screened for prior HIV diagnosis, HIV care, and ART. Home-based rapid HIV testing was conducted for residents with no prior HIV diagnosis, otherwise confirmatory testing was conducted at the CHDSS laboratory using whole blood.

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**Results:** Of 53,227 adult residents aged 15–59 years, 25,344 (48%) tested for HIV, of whom 5,119 (20%) tested HIV-positive. Proportionally more females than males (52% vs. 41%) and more older than younger adults (50% of 25-59 year-olds vs. 45% of 15-24 year-olds) tested for HIV. Among identified PLHIV, 81% were female and median age was 36. Of PLHIV, 3,179 (62%) had been previously diagnosed, 3,092 (60%) were ever in HIV care, 2,946 (58%) received HIV care within 90 days, and 2,587 (51%) were on ART. Patient-reported ART uptake was confirmed in ≥95% of cases by observing ART pill bottles. ART coverage was lower in younger than older adults with 29%, 45%, 58%, and 61% of adults aged 15–24, 25–34, 35–44, and 45–59 years, respectively, taking ART (p< 0.001). ART coverage was lower in males than females among residents aged 15–44 (35% vs. 50%, p< 0.001), but similar between males and females aged 45–59 years (62% vs. 60%, p=0.517). ART coverage was lowest among males aged 15–24 (20%) and 25–34 years (28%) compared with any other age-stratified gender group.
**Conclusions:** Low ART coverage overall (51%) and very low coverage among young adults, especially young men, at least partly explains high HIV incidence. These findings call for urgent expansion of HIV testing and linkage to universal ART, with additional focus on reaching young adults, especially young men, with ART to improve epidemic control.

## MONITORING AND EVALUATION OF PREVENTION

### WEPEC174

### "REACHING THE HIGHER HANGING FRUITS": RESULTS FROM MULTI-YEAR NATIONAL CROSS-SECTIONAL SURVEYS ON VMMC FOR HIV PREVENTION UPTAKE AND BEHAVIOURAL DETERMINANTS IN ZIMBABWE

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**Background:** Following WHO recommendations, Zimbabwe embraced voluntary medical male circumcision (VMMC) as a constituent of HIV prevention strategies in 2009. Being a non-circumcising country with an MC prevalence of 10% without wide regional differences, VMMC represented a foreign concept for Zimbabweans. In support of the MoHCC, PSI implemented the national communications strategy to increase demand for VMMC through both mass media and interpersonal communication channels. We conducted three bi-annual national surveys to monitor coverage, knowledge and behavioral factors towards VMMC uptake.
**Methods:** We analysed data from three national cross sectional household surveys conducted among adults aged 15 to 49 years. A baseline survey was conducted in 2010 (n=2770), followed by two surveys in 2013 (n=2350) and 2015 (n=3467). Data on male circumcision status, knowledge, perceived availability of services and intention of taking up VMMC were collected through individual interviews using structured questionnaires. The interviews were conducted by trained field interviewers and analysis of variance (ANOVA) was run on the parameters to determine changes over time using STATA Version 13.
**Results:** At baseline in 2010, 11.2% males reported being circumcised. Circumcision uptake increased from 11.8% in 2013 to 24.5% in 2015, (p=0.001). VMMC knowledge increased from 58.3% at baseline to 61.0% and 84.2% in 2013 and 2015 respectively, (p=0.001). Perceived availability of VMMC services increased significantly from 68% in 2013 to 73% in 2015, (p=0.001). Intention to go for circumcision increased initially from 59% at baseline to 63% in 2013 and then decreased to 40% in 2015, (p=0.001).
**Conclusions:** Knowledge about VMMC and uptake and perceived availability of services increased over time reflecting the impact of demand creation and scaling up of services in Zimbabwe. The initial increase in intention to go for VMMC implies that demand creation was effective to motivate early adopters. More research needs to be conducted to better understand barriers to uptake and identify ways to address these among those segments of males still reluctant to get circumcised.

### WEPEC175

### USING PROGRAM EVALUATION DATA TO DESIGN STRATEGIES FOR IMPROVEMENT OF HIV EXPOSED INFANTS DIAGNOSIS (EID) OUTCOME AT HEALTH FACILITIES IN EAST CENTRAL UGANDA

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**Background:** The ultimate outcome of Prevention of mother-to-child transmission (PMTCT) of HIV intervention is to achieve a HIV negative child after the mother having gone successfully through the program. However, over the past years, HIV positivity rates in EID in East Central Uganda has remained above the national target of 5% despite of numerous interventions that have been put in place ( HMIS 2013- 2015).
**Methods:** In 2015, the STAR-EC project, funded by USAID and implemented by JSI and its partners conducted an EID outcome evaluation to establish the factors that are responsible for high HIV positivity in EID in the region so as to improve the existing PMTCT / EID strategies or design new ones. The evaluation involved a mix of quantitative and qualitative methods whereby records of 98 HIV positive infants and their mothers were reviewed for a period of one year; April 14- March 15 and key informant interviews held with service providers at sampled health facilities. Only health facilities with HIV positivity rates above 5% were assessed.
**Results:** Through the evaluation, a number of factors were identified which include late or no presentation of mothers for ANC and PMTCT (only 19% of the mothers of the 98 HIV + infants attended ANC), high rate of home based deliveries, client lost to follow up, late enrolment of children for EID, lack of male involvement and lack of adherence to treatment by HIV positive pregnant women. Based on the findings, the following strategies were designed /strengthened; community sensitization, client follow up by VHTs and community mentor mothers, community mapping and referral of pregnant mothers for ANC by VHTs, option B+ campaign and HIV testing at mother baby care points.
Trend analysis of data from HMIS ( 2012- 2015) indicates that of the 2,578 infants tested for HIV in 2012, 10% were HIV positive as compared to 6.7% (n= 2,780) positivity rate registered in 2015 which improvement can partly be attributed to the implementation of the above strategies.
**Conclusions:** Using evidence from evaluation is critical as elaborated above.This therefore calls for projects to prioritize evaluation studies for better programming and program improvement .

### WEPEC176

### IDENTIFYING PRIORITY SUBPOPULATIONS AND GEOGRAPHIC VARIATION IN PREVENTION THROUGH COMMUNITY LEVEL ESTIMATES OF GLOBAL AIDS RESPONSE PROGRESS REPORTING INDICATORS IN NAMIBIA'S HIGHEST PREVALENCE REGION

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**Background:** Use of subnational data to identify geographic variations and priority subpopulations for prevention is recommended by UNAIDS. However, these data are often scarce. We produced community-level estimates of standardized global AIDS response progress reporting (GARPR) prevention indicators in Namibia's highest prevalence region.
**Methods:** A cross-sectional, household survey was conducted from 12/2014 - 7/2015 in five purposefully selected sites of Namibia's Zambezi region. Individuals aged ≥15 years completed interviews and received rapid HIV testing and counseling. Point estimates of HIV prevalence and select prevention indicators were calculated and statistically significant demographic correlates of each were identified using multivariable logistic regression analysis.
**Results:** We enrolled 2,163 persons (66.3% participation), of whom 1,312 (60.7%) were female and 790 (36.5%) were youth (< 25 years). HIV prevalence among youth

was 9.1% (95%CI: 7.2-11.3) and significantly higher among female youth vs. male youth (adjusted odds ratio (AOR): 5.30, *P*=0.002) and those age 20-24 years vs. age 15-19 (AOR: 2.77, *P*=0.01). Multiple sex-partnerships was 7.5% (95%CI: 6.4-8.7) and significantly higher among males than females (AOR: 3.82, *P*=0.003) and those not-married/cohabitating vs. married/cohabitating (AOR: 2.23, *P*=0.03). Condom use at last sex among those with multiple sex-partners was 55.7% (95%CI: 47.6-63.6) and significantly lower among non-youth (≥25 years) vs. youth (AOR: 0.49, *P*=0.02) and married/cohabitating participants (AOR: 0.17, *P*=0.01). HIV serostatus awareness was 39.1% (95%CI: 37.0-41.1) and significantly lower among males (AOR: 0.43, *P*< 0.001) and non-youth (AOR: 0.54, *P*=0.02).

**Conclusions:** Our results describe significant subpopulation heterogeneity in prevention indicators within Namibia's highest prevalence region. Nearly one in ten youth were HIV positive, and the likelihood of infection increased between the late-teen and early twenty years, suggesting high incidence and need for enhanced prevention focus among youth. Older and married adults with multiple sex-partners were less likely to use condoms, highlighting points of vulnerability for infection among older adults. Males were less likely to be aware of their serostatus and have only one sex partner, suggesting that their behavior is a primary driver of HIV infection in the region. Community level estimates such as ours can be used in geographically heterogeneous epidemics to target resources and interventions where most needed.

## WEPEC177

### HOW POSSIBLE IS REPLACINING ANC HIV SENTINEL SURVEILLANCE WITH THE PMTCT PROGRAMME DATA IN A RESOURCE CONSTRAINED NATION?

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**Background:** HIV prevalence is measured in Nigeria through biennial sentinel surveillance survey conducted among pregnant women (PW) attending antenatal clinic (ANC) at the 160 sentinel sites using unlinked anonymous testing (UAT). This periodic exercise has been considered expensive and irregular. As a result, some authorities advocated for replacement of the ANC HIV sentinel surveys (ANC HSS) with the routine PMTCT data. Currently in Nigeria, using PMTCT data in place of ANC HSS in determining HIV prevalence may have some inadequacies as a result of poor quality data and weak M & E system.

**Methods:** PMTCT data within the same period of the ANC HSS was abstracted from the PMTCT registers and the results were compared with that of ANC HSS.. The consent rate which is defined as, "the number of PW sampled by ANC HSS who consent to PMTCT HIV testing over the total number of PW sampled by ANC HSS" was calculated. The calculation of the consent rate was restricted to sites offering PMTCT services and have data. The Non consent bias, differential prevalence ratio and level of agreement between ANC HSS and PMTCT HIV testing data were also determined.

**Results:** The findings show that the national prevalence from the ANC HSS is 3.0% compared with the 2.0% (95% CI: 0.0 - 10.2) from the PMTCT routine data. The number of PW sampled by ANC HSS who consented to PMCT HIV testing is 18,037 when compared with 32,085 pregnant women sampled by ANC HSS making the consent rate of 56.2%. There was no PMTCT data in 52 (32.5%) sentinel facilities and the highest facilities with missing data occurred in the North west zone and least (8%) in the south west zone. In many of the sites, there were incomplete documentation and data quality issues.

**Conclusions:** Much as it seems cheaper to replace the ANC HSS with PMTCT data for estimation and modeling, this may not be so soon visible without strengthening the monitoring and evaluation system and the PMTCT counseling and testing at all levels. This is because of high refusal rate for HIV testing and quality of data at the facility level.

# MONITORING AND EVALUATION OF TESTING

## WEPEC178

### ESTIMATING HIV PREVALENCE FROM DATA ON FALSE POSITIVES IN SCREENING PROGRAMS: IMPLICATIONS FOR 90-90-90

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**Background:** A goal of the UNAIDS 90-90-90 strategy is to ensure that, by 2020, 90% of people living with HIV know their HIV status. Estimating HIV prevalence among people eligible for screening allows assessment of how many additional HIV positives might be diagnosed through continued screening efforts in this population. This, in turn, could help inform decisions about how best to focus resources within a country's 90-90-90 strategy.

**Methods:** We developed statistical methods for estimating HIV prevalence from data on false positives in a sample of individuals who tested positive on a screening test with known sensitivity and specificity. We applied these methods to screening data on ART-naïve adults in Swaziland from 2014 to 2016. Participants were screened using a rapid test with sensitivity=99.0% and specificity=99.1% as given by conservative published estimates. Among those testing positive, viral load (VL) was measured by rt-qPCR. Those with VL< 100 copies/mL, the lower detection limit, were classified as false positives.

**Results:** 140 of 1778 (7.9%) test positives had VLs below the lower detection limit. Based on these results, we estimated the HIV prevalence among the population eligible for screening to be 10.6% (95%CI: 8.9% to 12.2%). This estimate was sensitive to assumptions about the properties of the screening algorithm. If WHO minimum standards for sensitivity (99%) and specificity (98%) were used instead of the published estimates, the estimated prevalence among those screened increased to 19.1% (95%CI: 16.4% to 21.8%).

**Conclusions:** We have developed methods for estimating HIV prevalence from data on false positive HIV tests. Data of this type are often collected in screening programs that seek gold-standard verification of all, or a subsample of, positive tests. In this context, our methods provide an estimate of HIV prevalence in the population being targeted for screening. If the estimated prevalence is unexpectedly low, this could mean that continued intensive screening efforts in this population are an inefficient use of resources. Alternatively, the accuracy of the screening test as implemented in the field may be lower than assumed.

## WEPEC179

### LAY COUNSELOR REDEPLOYMENT IN KWAZULU-NATAL, SOUTH AFRICA, LEADS TO CONSIDERABLE DROP IN HIV TESTING

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**Background:** In settings such as KwaZulu-Natal, South Africa, an area with both a high HIV burden and severe health worker constraints, lay counselors have played a critical role in the provision of HIV testing and counseling services as well as adherence counseling. At the end of 2014, the KwaZulu-Natal Department of Health announced the phasing out of the cadre of lay counselors, with the stated aim of retraining and identifying new careers for these individuals.

In the uMlalazi municipality, where Médecins Sans Frontières (MSF) works in collaboration with the local Department of Health in delivering HIV treatment, lay counselors have been withdrawn from 9 clinics in two waves: Jan 5th, 2015 (CW1) and June 15th, 2015 (CW2). This stepwise counselor withdrawal provides an analytical opportunity to examine the impact of this change in health worker capacity on the total number of clinic-based HIV tests.

**Methods:** We used clinic-level fixed effects analysis with data on monthly HIV testing rates from the national South African electronic HIV treatment records system (TIER.net) from August 2014 - December 2015. Clinic-level fixed effects and control for months allowed us to account for all unobserved and observed confounding variables at the clinic-level, and trends in HIV testing by calendar time, respectively.

**Results:** We observed over 16,000 tests (7020 tests administered 5 months pre-CW1, 5125 tests administered 5 months post-CW1 / pre-CW2, and 4264 tests administered post-CW2). Following CW1, the monthly average of HIV tests decreased 25% and following CW2 the monthly average decreased a further 13%. After controlling for clinic-level fixed effects and months, we found that having one less counselor is associated with 28 fewer tests per month (95% CI: 22.19 to 34.37).

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**Conclusions:** These findings suggest that the counselor withdrawal substantially decreased clinic-based HIV testing. If these findings are representative of the experience province-wide, they illustrate how lay counselor withdrawal may jeopardize efforts to deliver the UNAIDS 90-90-90 strategy.

## MONITORING AND EVALUATION OF TREATMENT AND CARE

### WEPEC180

### DETERMINANTS OF CD4 IMMUNE RECOVERY AMONG INDIVIDUALS ON ANTIRETROVIRAL THERAPY IN SOUTH AFRICA: A NATIONAL ANALYSIS

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**Background:** Understanding patterns of CD4 immune recovery among individuals on antiretroviral therapy (ART) is important, with increasing emphasis on viral load (VL) monitoring and selective CD4 testing. South Africa's National Health Laboratory Service archives millions of CD4 and VL test results. At present this source of strategic data is underused due to difficulties in linking test results back to individual patient data. Using the NHLS database and a linking algorithm, we undertook the largest ever national analysis of CD4 immune recovery among ART patients.

**Methods:** A probabilistic matching algorithm was used linking routinely collected CD4 count and VL data (2010-2014) to unique individuals ≥15years. Individuals with ≥1 VL and ≥2 CD4 count results were included. Immune recovery was defined according to different CD4 thresholds: achieving CD4 counts of ≥200, ≥350 and ≥500 cells/m$^3$ after ART initiation. Time to recovery was estimated using survival analysis. Multivariate modified-Poisson regression was used to estimate differences in recovery according to age, sex, CD4 count at ART initiation (baseline) and VL suppression.

**Results:** The cohort included 1,070,900 individuals [4,367,924 CD4 tests, 70% female, median follow-up 24 months, age 44 years and baseline CD4 count 213 cells/mm$^3$]. Proportions achieving CD4 immune recovery to 200, 350 and 500 cells/mm$^3$ were 79.7% (in a median 10.3 months), 63.7% (12.2 months) and 41% (16.4 months) respectively. Among virally suppressed individuals (n=919,649), immune recovery was greater: 85.5% (9.4 months), 68.3% (12.4 months) and 44.4% (17.3 months) achieved recovery to 200, 350 and 500 cells/mm$^3$ respectively. Immune recovery was lower among men [adjusted risk ratio (aRR) 0.92 (95%CI 0.91-0.92)], older persons [aRR 0.93(95%CI 0.92 - 0.94) for ≥50 vs. 25- 34years], those with lower baseline CD4 counts [aRR0.70 (95%CI 0.69 -0.70) for < 50 cells/mm$^3$ vs. 150- 199 cells/mm$^3$] and those not virally suppressed [aRR 0.53 (95%CI 0.53 -0.54)]

**Conclusions:** The lack of CD4 immune recovery was greatest among those with low CD4 counts at baseline and no VL suppression in follow up. Interventions encouraging earlier ART initiation and better VL suppression should be strengthened. Analyses of routine datasets using novel record linking approaches can be used to strengthen monitoring and evaluation of ART programmes.

### WEPEC181

### EARLIER INITIATION OF ANTIRETROVIRAL THERAPY IN A NATIONAL COHORT OF PEOPLE NEWLY DIAGNOSED WITH HIV ATTENDING AUSTRALIAN SEXUAL HEALTH CLINICS

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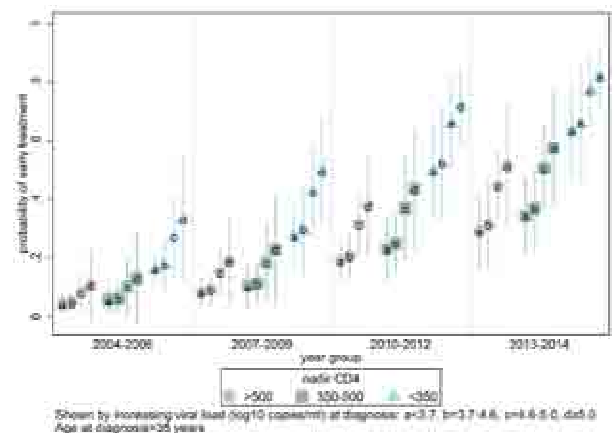
**Background:** Early initiation of antiretroviral therapy (ART) protects people living with HIV against HIV-related morbidity and mortality (START). Early treatment is now also a cornerstone of HIV prevention (HPTN 052). We determined changes in the probability of early-treatment among a cohort of people newly diagnosed with HIV attending Australian sexual health clinics (SHCs) from 2004-2014.

**Methods:** Longitudinal data from 42 SHCs were analysed. The cohort included new HIV diagnoses between January-2004 and June-2014. Early ART was defined as commencing within 6 months of diagnosis. Bivariate mixed effects logistic regression models were developed with early ART as the outcome and the following covariates: age, sex, HIV transmission risk, geographical remoteness, nadir CD4+ count and plasma HIV load (VL) at diagnosis, Hepatitis B surface antigen and Hepatitis C antibody status. We adjusted all analyses for time period. Clinic was included as a random intercept. Significant covariates ($p<0.05$) were used to fit a predictive multivariate model.

**Results:** A total of 720 new HIV diagnoses were included in analyses. The majority of diagnoses were male (>95%) and men who have sex with men (82%) with median age of 34 years (interquartile range [IQR]:27-43). The median CD4+ count at diagnosis was 362 cells/µl (IQR: 252-510). Early ART initiation rates increased significantly over-time: 17% in 2004-6, 26% in 2007-8, 42% in 2010-12 and 53% in 2013-14 ($p<0.001$). In a multivariate model increased probability of early treatment was associated with increased age ($p=0.032$); lower CD4+ count ($p<0.001$); higher VL ($p=0.029$); and later time period ($p<0.001$) (Figure 1).




*[Figure 1: Probability of early ART initiation following HIV diagnosis by year and nadir CD4]*

**Conclusions:** In this cohort of new HIV diagnoses, early ART initiation rates have increased substantially over the study period. Patients diagnosed in 2013-14 were much more likely to have early treatment initiation compared to 2004-6. Despite this success, further strategies are needed to maximise the benefits of treatment as prevention.

## WEPEC182

### HIV TREATMENT REFUSAL IN PATIENTS WITH HIGH CD4 COUNTS: EVIDENCE FROM DEMOGRAPHIC SURVEILLANCE IN RURAL KWAZULU NATAL

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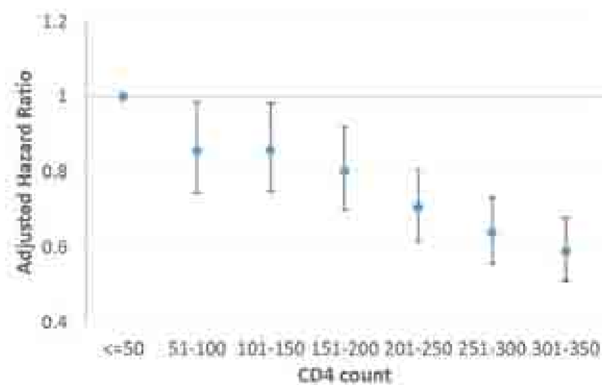
**Background:** Recent WHO guidelines recommend HIV treatment for patients regardless of CD4 count. However, healthier individuals may be less willing to start therapy than patients at lower CD4 counts. We assess predictors of ART uptake among patients presenting for HIV care in rural KwaZulu-Natal.

**Methods:** Clinical records were analyzed for all treatment-naïve adults (18+) with a first eligible CD4 count (< 350) in the Hlabisa HIV Treatment and Care Programme from August 2011 to December 2012. Cox Proportional Hazards models were used to assess the association between first CD4 count value and time from first CD4 to ART initiation, adjusting for age and sex. For a sub-set of healthier patients (CD4 200-349) who resided within the surveillance area of the Africa Centre for Population Health, we assessed a range of sociodemographic, economic, and geographic predictors of ART uptake.

**Results:** Of 4,739 patients presenting for care with eligible CD4 counts, 55%, 58%, and 59% initiated ART within 6 months, 1 year, and 2 years of their first CD4 count in Hlabisa sub-district. Rates of ART initiation fell by 9% for every 50-cell increase in baseline CD4 count (p< .001). Among healthier patients under demographic surveillance (n=193), individuals living more than 2 km from their nearest clinic (HR 0.81, 95% CI 0.57-1.16) and with children under 6 (HR 0.63, 95% CI 0.39-1.03) were less likely to initiate, whilst older individuals (HR 1.16 per year, 95% CI 1.04-1.30) were more likely to initiate. Patient sex, education, employment, wealth, and household size were not significantly associated with time to initiation.

**Conclusions:** Healthier individuals were significantly less likely to initiate ART. Children in the household and distance to clinic were identified as barriers in healthier patients. Barriers to uptake must be addressed to increase the number of people on treatment at high CD4 counts.




*[Lower Uptake of ART in Healthier Patients]*

## WEPEC183

### USE OF PROGRAMMATIC DATA ON VIRAL LOAD TO ASSESS ART ADHERENCE IN BRAZIL FROM 2009 TO 2015

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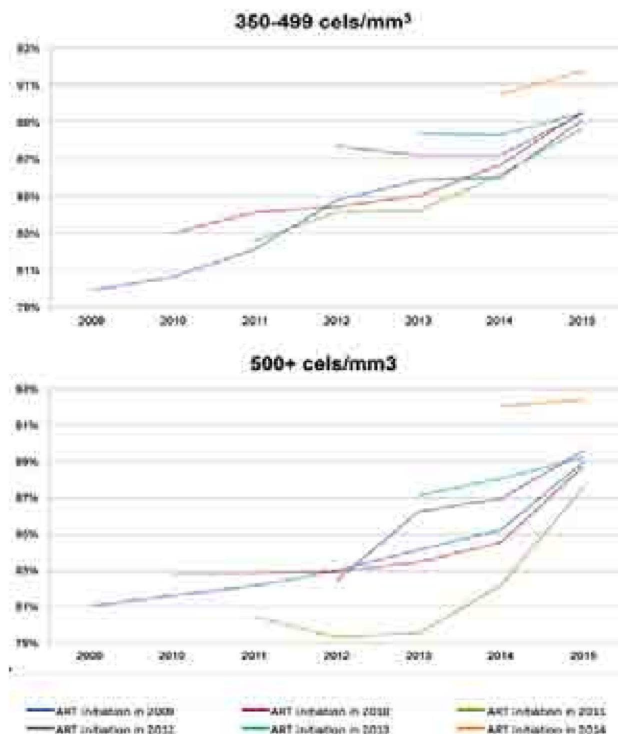
**Background:** In December 2013, the Brazilian AIDS programme changed its recommendations on ART to treat all HIV+ people regardless of CD4 count. Moreover, the country has also implemented fixed-dosed combination (FDC) (TDF+3TC+EFZ) since 2014. An important issue raised regarding the Treatment for All strategy is whether people with high CD4 counts would present poorer adherence. This study aims to use viral load suppression (VLS) rates to indirectly assess adherence in Brazil.

**Methods:** We used programmatic data on CD4, VL and ARV dispensation to assess VLS (< 1000 copies/mL) in two CD4 categories (350-500 cells/mL and >500 cells/mL) at ART initiation by cohort of ART initiation (2009-2014). CD4 categories were established using the last CD4 count performed before first dispensation (up to 180 days); selected VL was the last one performed each year, at least 180 days after the beginning of treatment. Statistical analysis for comparison of VLS rates was performed using chi-squared tests.

**Results:** Data from 55,629 patients and 148,800 VL exams were analyzed. VLS was above 79% for all years and groups analyzed; no statistical difference (p>0,05) was found between the CD4 categories for the 2013 and 2014 cohorts. The 2014 cohort presented higher VLS (p< 0,05) in both CD4 groups, when compared to all other cohorts.




*[Viral Load Supression Rates by year according to the CD4 count at ART initiation and cohort of treatment initiation]*

**Conclusions:** In 2014 and specially in 2015, a considerable increase in VLS was observed in all cohorts, and could be related to the implementation of FDC initiated in 2014. The 2014 cohort presents significantly higher VLS rates than all other cohorts, suggesting the success of the new guidelines, which restricted prescription rules to first line patients (1st line treatment should be TDF+3TC+EFZ if no contraindications). Finally, there was no difference in VLS between the two CD4 strata in 2013 and 2014 cohorts, helping refute that adherence among persons with high CD4 counts would be poorer.

## WEPEC184

### NO DIFFERENCE IN ADHERENCE TO ANTIRETROVIRAL THERAPY BY SEX IN AFRICA: A META-ANALYSIS

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**Background:** Adequate adherence to antiretroviral therapy (ART) is necessary to reduce morbidity, mortality, and transmission of HIV. In Africa, men on treatment have worse outcomes than women. A potential contributor to this imbalance may be a difference in levels of ART adherence. This meta-analysis compared ART adherence between men and women in sub-Saharan Africa.
**Methods:** Medline, Embase, and Web of Science were searched for articles in any language reporting ART adherence in sub-Saharan Africa through October, 2014. Abstracts were screened by two independent reviewers. Studies involving both men and women age 15 and over were assessed for inclusion. Authors reporting overall adherence were contacted for information on adherence by sex. Pooled odds ratios were calculated using random-effects models.
**Results:** From the 1796 abstracts identified, 65 articles involving a total of 29,695 men and 49,261 women met the inclusion criteria. Definitions of adherence varied by study and ranged from >80% to 100% of doses taken. The overall random effects pooled odds ratio (pooled OR) for adherence among men compared to women was 0.94 (95% CI 0.85-1.05, $I^2$=86%). In a sub-analysis by adherence measure, studies using pharmacy records to measure adherence showed a marginally significant difference in adherence between men and women (pooled OR 0.93, 95% CI 0.87-0.99, $I^2$ 34%), while studies using pill count or self-report did not (pill count pooled OR 0.81, 95% CI 0.53-1.17, $I^2$=86%; self-report pooled OR 0.99, 95% CI 0.77-1.27, $I^2$=90%). In a pooled analysis of 53 studies with individual-level data, 73% (95% CI 69%-78%) of men and 74% (95% CI 70%-79%) of women met criteria for being adherent.
**Conclusions:** Men with HIV in sub-Saharan Africa present later to care, have increased loss-to-follow-up, and have higher mortality rates than women. While the relative adherence of men and women varied greatly between studies in this meta-analysis (overall $I^2$=86%), men do not appear to have worse ART adherence than women. Instead, approximately 26%-27% of African adults, regardless of sex, have suboptimal adherence. Interventions are needed to improve adherence for both men and women taking ART.

## MONITORING AND EVALUATION OF HIV CASCADE

## WEPEC185

### FAST-TRACKING OF THE HIV RESPONSE: DO THE METROS LEAD THE WAY TO REACHING 90-90-90 IN SOUTH AFRICA?

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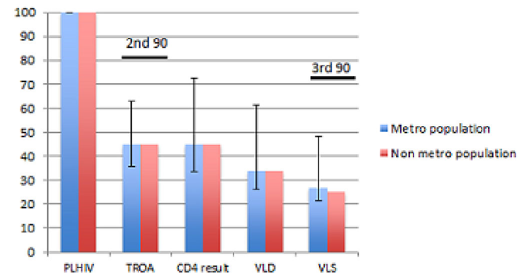
**Background:** City mayors worldwide have pledged to achieve the 90-90-90 targets by 2020. South Africa's 8 metropolitan municipalities (metros) are priority areas as HIV burden is generally high and populations large. HIV programme planning and progress tracking requires comprehensive data. While South Africa has a wealth of data, routine data systems work in parallel and aren't appropriately linked to allow progress tracking along the HIV Care Cascade (HCC). Poor implementation of the unique patient identifier means it's difficult to link laboratory test results back to patient data.
**Methods:** We collated data sources to understand the HCC in South Africa's metro and non-metro populations including demographic, HIV prevalence and death notification data and HIV laboratory data (2014-2015) that we linked to unique individuals using a probabilistic matching algorithm. We defined HCC using: number of persons living with HIV (PLHIV); total remaining on ART (TROA); numbers with a CD4 count and viral load (VL) test results in the past year and the number of suppressed VL tests.
**Results:** 37% of South Africa's PLHIV live in metros. HIV was the second most frequent cause of death in four metros (2014) while it ranks 5 nationally. On average, progress along the HCC is virtually the same for metro and non-metro populations with a large gap to reach 90-90-90 for both (Figure 1). The HCC showed large variations across the metros with 2-5 metros faring worse than the average non-metro population across the cascade. Across the metros, 35%-63% of PLHIV were on ART, annual CD4 and VL test coverage ranged from 33%-73% and 22%-61% respectively while viral suppression ranged from 67%-85%.
**Conclusions:** There are currently large gaps in the metro's 90-90-90 level of achievements. The District Implementation Plans will support the metros to focus HIV interventions for attaining the HCC targets by 2020.




*[Fig 1. HIV care cascade in metro and non-metro populations, South Africa (April 2014 to March 2015)]*

## WEPEC186

### LINKAGE TO CARE AND RETENTION IN CARE AMONG HIV-INFECTED MEN WHO HAVE SEX WITH MEN IN GUANGZHOU, CHINA

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**Background:** Effectively measuring linkage to care and retention are essential to meet global HIV goals, especially in light of policies promoting decentralization of services. China has a highly centralized HIV service delivery system, providing an opportunity to track patients through the care continuum. We examined the proportion of men who have sex with men (MSM) newly diagnosed with HIV linked to and retained in care over time and space in Guangzhou, China.
**Methods:** Data of HIV-infected MSM diagnosed and living in Guangzhou from 2008-2014 was accessed retrospectively from the Guangzhou CDC. Linkage to care was defined as receiving a CD4 test within 3 months of diagnosis. Retention in care was defined as receiving ≥2 CD4 tests annually after linkage. We grouped men according to year in order to examine trends over time. Univariate analysis was performed to examine associations with linkage. We also mapped the geographic distribution of residences of individuals linked and the distribution of residences of individuals retained.
**Results:** A total of 2008 MSM (4679 person-years follow-up) were diagnosed and living in Guangzhou. Their median age at diagnosis was 29 years old (IQR=24-35). At diagnosis, 17% (337/1952) of MSM were married and 79% (1586/2008) had attained at least high school education. Before diagnosis, 24% (227/952) of MSM had been diagnosed with sexually transmitted diseases. MSM with higher education levels (odds ratio=1.48,95%C.I.=1.13-1.93) were more likely to be linked. From 2008 to 2014, MSM linkage to care increased from 49% to 87%, and the rate of retention in care increased from 29% to 51%. MSM diagnosed after 2011 (OR=4.03,95%C.I.=3.16-5.13) were substantially more likely to be linked. Geographically, the rate of linkage ranged from 72%-100%, and the rate of retention ranged from 23%-60% across 11 districts in 2014.
**Conclusions:** With the increasing number of new diagnoses of HIV among MSM in Guangzhou, linkage to care has increased as well. However, the rate of retention in care is only half that of linkage to care, which may affect the overall effectiveness of HIV treatment and control.

## WEPEC187

### A COMPARISON OF THE CONTINUUM OF HIV CARE IN ELEVEN EUROPEAN COUNTRIES USING STANDARDISED METHODS

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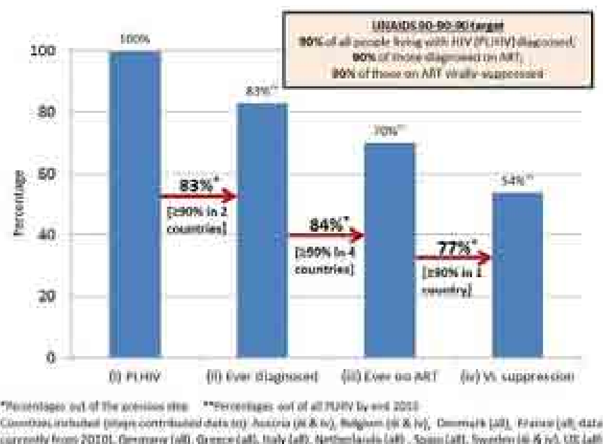
**Background:** UNAIDS has set a 90-90-90 target to curb the HIV epidemic by 2020, but methods used to derive these proportions are not standardised, hindering comparisons between countries or compilation across regions.

**Methods:** Through a collaboration between the European Centre for Disease Prevention and Control, several EuroCoord HIV cohorts and European surveillance agencies, we aimed to construct a standardised, four-point continuum of HIV care for eleven European countries for 2013 (or most recent year available). Definitions for each stage were standardised as follows:
i) number of people living with HIV (PLHIV) in the country by end of 2013;
ii) proportion of PLHIV ever diagnosed;
iii) proportion ever diagnosed who ever initiated ART (regardless of treatment guidelines);
iv) proportion ever on ART who were virally-suppressed (≤200 copies/mL) at last visit (01/07/2012 to 31/12/2013).
PLHIV estimates were derived, where feasible, using back-calculation models to estimate HIV incidence and the undiagnosed fraction from surveillance data, or using multi-parameter evidence synthesis. Stage two was based on surveillance data, if available, or cohort data otherwise. Stages three and four were derived from country-specific cohorts.

**Results:** Complete data are available from eight countries (partial data for three). One country achieved all three of the UNAIDS 90-90-90 targets, and another achieved >85% for each stage. In total, 647,249 people were estimated to be living with HIV (eight countries, prevalence 0.18%); between 5500 (0.10%) and 150,000 (0.32%) in each country. Proportions at each stage varied widely between countries and were, on average: 83% (range 71-91%) diagnosed; 84% (range 73-96%) on ART; and 77% (range 63-93%) virally-suppressed (figure).




*[Continuum of HIV care in eleven European countries]*

**Conclusions:** Few countries achieved all three of the 90-90-90 targets according to our definitions. Standardising methods for the continuum remains a challenge for all stages. These data provide useful comparisons to governments and healthcare planners.

## WEPEC188

### DISTANCE ELASTICITY OF DEMAND FOR HIV TREATMENT: SEX DISPARITIES IN UTILIZATION

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**Background:** The geographic distribution of HIV care and treatment services is an important determinant of access to care. Using data from a large demographic surveillance area in rural South Africa, we assessed the association between distance to the nearest HIV clinic and rates of linking to care, initiating ART, and remaining in care at 12 months after ART initiation, and examined how this association differs for men and women.

**Methods:** Distance to nearest HIV treatment clinic was calculated for all individuals residing within the catchment area of the Africa Centre Demographic Information System in rural KwaZulu-Natal, South Africa, on 31 December 2005 (n=32,157). These data were then linked to clinical records from the public sector HIV treatment and care program in the region. Associations between distance to clinic and time to linkage to care, ART initiation, and 12 month retention after ART initiation were estimated in Cox Proportional Hazards models, adjusting for age and sex. Models were additionally stratified by sex.

**Results:** Living an additional kilometre away from the nearest clinic was associated with a 6.6% (95% CI 4.9% to 8.3%) reduction in linkage to care, a 6.5% (95% CI 4.2% to 8.7%) reduction in ART initiation, and a 5.4% (95% CI 3.4% to 7.4%) reduction in 12-month retention on ART. Stratifying by sex, the association between distance to clinic and failure to link, initiate, and be retained was significant at the 0.01 level for women; no association was observed for men.

**Conclusions:** Women residing further from clinics were less likely to seek HIV care and treatment services; no such patterns were observed for men, suggesting that the geography of HIV infection and care-seeking may differ for men and women. Information on the geographic distribution of clinical services vis-à-vis patients served can be used to improve program planning and resource allocation.

| *Hazard ratios, adjusted for age and sex (95% confidence intervals)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Linkage to care | | | Initiation of ART | | | Retention on ART at 12 months | | |
| Variable | Full Sample | Men | Women | Full Sample | Men | Women | Full Sample | Men | Women |
| n | 31,898 | 12,664 | 19,234 | 31,972 | 12,679 | 19,293 | 32,076 | 12,711 | 19,365 |
| Distance to nearest clinic (1 km) | 0.960*** (0.942, 0.977) | 0.990 (0.954, 1.027) | 0.950*** (0.930, 0.970) | 0.965** (0.943, 0.988) | 0.991 (0.948, 1.036) | 0.956** (0.930, 0.982) | 0.997* (0.957, 0.997) | 1.004 (0.964, 1.045) | 0.968** (0.945, 0.991) |
| * p<0.05, ** p<0.01, *** P<0.001 | | | | | | | | | |

*[Distance to clinic and progress to different stages of the care cascade]*

## WEPEC189

### MONITORING HIV CASCADE DATA FOR DECISION-MAKING: TARGETING KEY POPULATIONS WITH MULTIPLE RISK BEHAVIORS REVEALED AS THE PRIORITY IN MWANZA, TANZANIA

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**Background:** Accurate HIV cascade data on key populations (KP) are critical for targeted HIV program implementation. ICAP at Columbia University developed and implemented an innovative monitoring and evaluation (M&E) system for a PEPFAR-funded KP program in Mwanza, Tanzania.

Tuesday 19 July

Wednesday 20 July Poster Exhibition

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Late Breaker Posters

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**Description:** Using a case management system, peer outreach workers (OWs) deliver HIV prevention interventions in the field to people who inject drugs (PWID), female sex workers (FSW), and men who have sex with men (MSM) including mobile HIV testing, escorted referral to health facilities (HF), behavior change communication, condom/lubricant distribution, and STI/tuberculosis screening. Each client's unique identifier code (UIC) is documented on the OW's business card which is carried by the client. OWs record the UIC in service delivery logs at each encounter and on referral forms submitted to HFs for HIV services. Service delivery and referral data are entered into a Microsoft Access database that tracks individuals longitudinally. Aggregate service delivery data measured number of individuals reached, tested, and linked to care by KP group. All HIV positive results and linkage data, and a 10% random sample of HIV negative results were verified against HF registers.
**Lessons learned:** Between October 2014 and September 2015, 1940 individuals were reached, of which 1583 (82%) were tested for HIV at least once, 63 (4%) tested HIV-positive and 34 (54%) linked to care. Testing was lowest among female PWID (34%), FSW + PWID (41%) and FSW who use drugs without injecting (PWUD, 54%). Among those tested for HIV, prevalence was highest among individuals with multiple risk behaviors: MSM + PWUD (27%), FSW + PWUD (18%), and FSW + PWID (13%); furthermore these groups were least likely to link to HIV care (Table).

| Indicator | TOTAL | Male PWID | Female PWID | MSM | MSM + PWUD | FSW | FSW + PWID | FSW + PWUD |
|---|---|---|---|---|---|---|---|---|
| Reached , n | **1940** | 837 | 41 | 173 | 19 | 759 | 37 | 74 |
| Tested for HIV, n (% out of reached) | **1583 (82%)** | 704 (84%) | 14 (34%) | 147 (85%) | 11 (58%) | 652 (86%) | 15 (41%) | 40 (54%) |
| Tested HIV+, n (% out of tested) | **63 (4%)** | 9 (1%) | 0 (0) | 2 (1%) | 3 (27%) | 40 (6%) | 2 (13%) | 7 (18%) |
| Linked to HIV care, n (% out of HIV+) | **34 (54%)** | 5 (56%) | N/A | 1 (50%) | 0 (0) | 25 (63%) | 0 (0) | 3 (43%) |

*[HIV cascade results from October 2014-September 2015, by KP group]*

**Conclusions/Next steps:** Although sample sizes were small, results suggest a need to refocus targeting of interventions to KPs with multiple risk behaviors for highest yield. Further efforts are needed to improve HIV testing uptake among female PWID and FSW who use and inject drugs through tailored messaging, targeted outreach, and mobile testing efforts.

## WEPEC190

### INSUFFICIENT PROGRESS TOWARDS THE 90-90-90 TARGETS IN THE SOUTH-EAST ASIA REGION

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**Background:** In South-East Asia region of World Health Organization (WHO), despite progress in the HIV response, new HIV infections and AIDS-related deaths have plateaued since 2010. We track the progress towards the 90-90-90 targets in nine countries from the region.
**Methods:** From review of global AIDS response progress reports, direct inputs through questionnaires, and country presentations during regional workshops, data on number of people living with HIV (PLHIV) diagnosed, in care, receiving antiretroviral therapy (ART), retained on ART, and with viral load (VL) suppression were collected to construct the HIV cascades for 2014.
**Results:** PLHIV who have been diagnosed (first 90) ranged from 24% in Indonesia to 80% in Thailand.

| Country | Estimated people living with HIV or PLHIV | PLHIV diagnosed (% of estimated PLHIV) | PLHIV enrolled in care (% of PLHIV diagnosed) | PLHIV on ART (ART coverage) | PLHIV on ART as a % of diagnosed | ART retention at 12 months (in %) | PLHIV on ART who received viral load test (% of estimated PLHIV) | PLHIV on ART with viral suppression (in %) |
|---|---|---|---|---|---|---|---|---|
| Bangladesh | 8,935 | 3,111 (35%) | 1,517 (49%) | 1,287 (14%) | 41% | Not available | Not available | Not available |
| Bhutan | 1,000 | 403 (40%) | 307 (76%) | 167 (17%) | 41% | 87% | Not available | Not available |
| India | 2,117,000 | 1,400,000 (67%) | 1.1-1.5 million (79-100%) | 747,175 (36%) | 50% | 74% | Not available | Not available |
| Indonesia | 658,510 | 160,138 (24%) | Not available | 50,400 (8%) | 31% | 71% | Not available | Not available |
| Myanmar | 212,560 | Not available | Not available | 85,626 (40%) | Not available | 82% | 9,586 (11%) | 87% |
| Nepal | 39,249 | 25,839 (66%) | 25,421 (98%) | 10,407 (27%) | 40% | 84% | 1,198 (12%) | 84% |
| Sri Lanka | 3,336 | 1,737 (52%) | 825 (47%) | 644 (19%) | 37% | 91% | 581 (90%) | 42% |
| Thailand | 445,642 | 356,514 (80%) | 301,959 (85%) | 271,652 (61%) | 76% | 78% | 211,546 (78%) | 96% |
| Timor-Leste | 464 | Not available | 203 (-) | 173 (37%) | Not available | Not available | Not available | Not available |

*[Progress towards the 90-90-90 targets in nine countries in the South-East Asia Region in 2014]*

These numbers are probably overestimated in some countries since the duplications and deaths could not be removed from the cumulative HIV cases ever diagnosed. Fewer PLHIV are aware of their HIV status in countries prioritizing testing by geography and for high-risk populations. PLHIV on ART as a percentage of those diagnosed (second 90) is below 50% in all countries except Thailand (which recommends treatment for all). Even though these countries have adopted the 2013 WHO treatment recommendations, implementation is lagging far behind. Once PLHIV are on ART, 12-month retention rates are high in all countries. Limited available data show high VL suppression among PLHIV on ART (third 90) in three countries. But the above estimates are calculated using 'PLHIV on ART who have received a viral load test' as the denominator, a number that is low in countries due to limited availability of VL testing.
**Conclusions:** Except Thailand, none of the countries in the region are on track to achieve the 90-90-90 targets. Innovative HIV testing strategies and improved access to ART and VL services are urgently required. Also, countries need to strengthen their information management systems for monitoring the progress towards these targets.

## WEPEC191

### CHANGES IN ENGAGEMENT IN THE CARE CASCADE AFTER INTENSIFIED PROGRAMMING INCLUDING COMMUNITY MOBILIZATION OF FEMALE SEX WORKERS IN ZIMBABWE

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**Background:** Female sex workers (FSW) face numerous barriers to health seeking. Targeted HIV services, community mobilization, and training health care workers to reduce stigma and discrimination may improve engagement in the care cascade. We present results from two respondent driven sampling (RDS) surveys conducted in 3 sites in Zimbabwe before and after the implementation of the *Sisters with a Voice* intervention, which included enhanced community mobilization.
**Methods:** We conducted RDS surveys in Mutare, Hwange and Victoria Falls in 2011 and 2015 among women FSW aged ≥18 years, using identical methodology. In 2011, 370, 237 and 229 FSWs were recruited in Mutare, Hwange, and Victoria Falls over six waves of recruitment. In 2015, 407, 255 and 251 FSWs were recruited. We calculated RDS-I weighted prevalence for each stage of the HIV care cascade and sociodemographic variables as shown in Table 1. We compared indicators from 2011 and 2015 to understand whether engagement with care among FSW had changed over this period.
**Results:** HIV prevalence in Mutare was increased, prevalence decreased in the other two sites. Engagement in prevention and care increased between 2011 and 2015, as summarized in Table 1.

| Cascade Variables | Hwange | | Mutare | | Victoria Falls | |
|---|---|---|---|---|---|---|
| | 2011 (N = 233) | 2015 (N = 251) | 2011 (N = 338) | 2015 (N = 400) | 2011 (N = 229) | 2015 (N = 243) |
| | RDS% | RDS% | RDS% | RDS% | RDS% | RDS% |
| HIV Prevalence | 50.6 | 41.3 | 50.6 | 63.7 | 69.6 | 62.1 |
| Negative and tested in last 6 months | 16.9 | 57.2 | 17.5 | 44.9 | 5.5 | 33.7 |
| Negative but not tested in last 6 months | 31.3 | 16.3 | 30.5 | 11.8 | 24.4 | 12.2 |
| Positive, aware of status and on ART | 14.8 | 20.4 | 19.5 | 38.6 | 17.6 | 46.8 |
| Positive, aware of status and not on ART | 11.6 | 6.1 | 5.9 | 4.6 | 16.7 | 7.2 |
| Positive, never tested/collected test results | 25.4 | 0.0 | 26.4 | 0.1 | 35.8 | 0.0 |

*[Table 1: Comparison between 2011 and 2015 cascade indicators collected during RDS surveys in three sites in Zimbabwe]*

Other differences between surveys include higher age of FSWs, higher median age at first commercial sex, and increased number of commercial sex partners in the past week in 2015 compared to 2011.

**Conclusions:** While it is difficult to attribute improvements in prevention and care due to program intervention alone, this was likely partly due to engagement with the program. Reaching FSW with effective HIV prevention and care will be key to reaching 90:90:90 in southern Africa and beyond.

## WEPEC192

### HIV TREATMENT CASCADE IN UKRAINE: A CROSS-SECTIONAL ANALYSIS OF REGIONAL PATTERNS IN 2015

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**Background:** HIV treatment cascade is widely used tool to monitor gaps from diagnosis to viral suppression. We conducted this study to investigate heterogeneity in the cascade for people living with HIV (PLH) across 8 HIV high burden regions in Ukraine and their correspondence to the Fast-Track milestones.
**Methods:** As of 01/01/2015, data from regional routine HIV/AIDS surveillance and Spectrum were pooled together for this analysis. Following categories of care were measured: 1) estimated number of PLH; 2) HIV diagnosed; 3) enrolled in care; 4) retained in care as a number of PLH who received a clinical examination at least once within 12 months; 5) on ART; 6) undetected viral load as an estimated number of PLH who are on ART 6 months and more and have viral load less than 40 RNA copies/mL.
**Results:** In Ukraine, 59% of the estimated number of PLH in the country are diagnosed and enrolled in care. 48% of those are on ART, which represents only 28% of the PLH population. 78% of those on ART or 22% of the total PLH population have undetected viral load. Results demonstrate significant differences across regions in the extent of gaps along HIV care continuum. Proportion of diagnosed PLH ranges from 33 to 63% of the estimated number of PLH in the region. Proportion of PLH on ART varies from 14 to 33%. While over three quarters of those on ART have undetected viral load in all selected regions, only 14-25% of the estimated PLH population are virally suppressed.
**Conclusions:** Although the extent of losses along the HIV treatment cascade differs across regions in Ukraine, all regional programs must prioritize enrollment in HIV care and earlier ART eligibility. Improvement of regional cascade estimates requires data quality strengthening, such as approving indicators needed to develop cascades for PLH with regional stakeholders, validating regional PLH population size estimates and introducing a standardized electronic tracking system of HIV infected patients.

# MONITORING AND EVALUATION OF HEALTH SYSTEMS

## WEPEC193

### PLACE OF DEATH: AN 11 COUNTRY, 4 CONTINENT COMPARISON FOR PEOPLE DYING OF HIV-RELATED CAUSES USING ROUTINE DEATH CERTIFICATION DATA

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**Background:** People continue to die with HIV Despite ART, with 1.2 million HIV-related deaths in 2012. Place of death is an important indicator of quality, and identifies where adequate resources must be provided to ensure high quality care at the end of life to reduce avoidable suffering. This study aimed to determine place of death, and associated patient and health system factors, in 11 countries across 4 continents.
**Methods:** International Place of Death (IPoD) study, collected death certificate data for one year in countries with ART coverage of at least 80%, and palliative care provision according to WHO (Belgium Canada, France, Italy, Korea, Mexico, Netherlands, Spain, Sweden, UK, USA). Data included place of death, age, sex, regional urbanization level and healthcare supply. Home death risk ratios (relative risks) and multivariable models of predictors were calculated.
**Results:** 19,739 HIV-related deaths were reported, accounting for 3.5% of all deaths. The highest proportion (per 1000 deaths) of HIV-related deaths was for Mexico (9.8), and the lowest for Sweden (0.2). The vast majority were men (75%) aged 0-49 (69.1%). Hospital was the most common place of death (56.6% Netherlands, 90.9% Korea) (see Table 2). The least common places were palliative care institution (3.3%-5.7%), nursing home (0%-17.6%) and home (5.9%-26.3%). Compared with age-standardized distribution of cancer patients, HIV patients were consistently less likely to die at home, more likely to die in hospitals and also more likely to die in a nursing home. Living in a region with a higher number of hospital beds reduced the chances of dying at home in Italy and Mexico and living in an area with a higher number of general practitioners increased the chances of dying at home in the UK and in Mexico (but reduced them in the USA).
**Conclusions:** The place of death for people with HIV is more likely to be hospital compared to data for all other incurable conditions. This may be due to lack of community resources, social isolation or unpredictability of death. However, clinical research effort is urgently needed to evaluate the quality of hospital terminal care for people with HIV.

# REPRODUCTIVE CHOICES AND INTERVENTIONS FOR WOMEN (INCLUDING SERODISCORDANT COUPLES)

## WEPEC194

### HIGH PREGNANCY INCIDENCE AND LOW CONTRACEPTIVE USE AMONG FEMALE ENTERTAINMENT AND SEX WORKERS IN PHNOM PENH, CAMBODIA: NEED FOR PRIORITIZATION OF SEXUAL AND REPRODUCTIVE HEALTH SERVICES

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**Background:** While HIV and unintended pregnancy are occupational risks inherent to sex work, few studies have examined pregnancy incidence or reproductive need among this population. Indeed, research on the strategies utilized to prevent pregnancy among female entertainment and sex workers (FESW) in Cambodia is limited. This study therefore examined the correlates of pregnancy incidence as well as the HIV and pregnancy prevention methods of Cambodian FESWs, working in Phnom Penh.
**Methods:** Data were obtained from the Young Women's Health Study (YWHS)-2, a 12-month prospective cohort of 220 FESWs, aged 15-29 years. Interviewer-administered surveys were conducted at baseline and every three months from 2009-2010. A project clinician collected biological samples to test for HIV/STI, illicit drug use and pregnancy. Correlates of incident pregnancy were examined using bivariate and multivariable extended Cox regression analysis.
**Results:** In total, 204 FESWs were eligible for this analysis, with the majority (60.3%) of participants between the ages of 25-29. Pregnancy incidence was high (22/100py), as were indicators of unmet reproductive health need: at baseline, only 10.8% reported use of hormonal contraceptives, and 11.3% had an abortion in the last three months. Condom use (at last sex) by non-paying partners was much lower than condom use by last client (14.9% vs. 90.0%). In multivariable analysis, younger age (19-24 years versus 25-29 years) (Adjusted Hazards Ratio (AHR): 2.28; 95% Confidence Interval (CI) 1.22-4.27), lower monthly income (400,000-600,000 Riel (< $150 US) versus >600,000 Riel (>$150 US)) (AHR 2.63; 95%CI 1.02-6.77) and self-reported condom self-efficacy (AHR 0.89; 95%CI 0.81-0.98) were independently associated with incident pregnancy ($p < 0.05$).
**Conclusions:** Our results indicate high incidence of pregnancy and unmet reproductive and sexual health needs among FESWs in Cambodia. These findings suggest the need for multi-level interventions, including venue-based HIV/STI prevention interventions, in the context of legal and policy reform. The high pregnancy incidence in this population may also undermine HIV prevention intervention trials. Together these data support the exploration of innovative, comprehensive sex worker-specific sexual and reproductive health service models, including as part of HIV prevention trials.

## WEPEC195

### USE OF HIV PRE-EXPOSURE PROPHYLAXIS DURING PREGNANCY AND LACTATION AT 2 U.S. CENTERS

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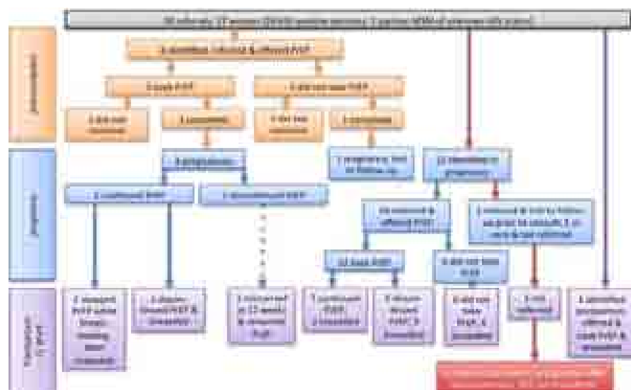
**Background:** HIV acquisition during pregnancy and lactation is associated with increased perinatal transmission. No studies report pre-exposure prophylaxis (PrEP) use after 7 weeks gestation or in lactation. We describe PrEP use in and around pregnancy to highlight implementation challenges and prompt future study.

**Description:** Two United States (U.S.) centers began offering PrEP during pregnancy in 2010 at specialty clinics for women living with HIV. Chart review was performed on women at high-risk for HIV acquisition pre-conception, during pregnancy and lactation at these centers from 2010-2015.

**Lessons learned:** 27 women and 30 referrals (3 repeat pregnancies) were identified. 26 women had an HIV-infected partner, 73% (19/26) of whom were on treatment, and 42% (11/26) of whom were virally suppressed. 39% (10/26) of partners had known detectable virus and 23% (6/26) had unknown viral loads.

The median time from identification to consultation was 30 days (IQR 2-62). Two women were lost to follow-up before consultation. One woman identified was not referred in the setting of multiple pregnancy complications. She remained in care and was HIV-negative at delivery, but was lost to follow-up until 10 months postpartum when she was diagnosed with HIV. Her infant was not infected. No other sero-conversions were identified.

In 70% (21/30) of referrals, women were pregnant at consultation; none received safer-conception counseling. Of referrals who were offered PrEP, 67% (18/27) chose to take PrEP. Median length of time on PrEP was 30 weeks (IQR 20-53). No PrEP-related pregnancy complications were identified. 57% (13/23) of women in care at delivery did not follow up postpartum.



*[Figure. Women identified as at substantial risk of HIV acquisition pre-conception, during pregnancy and postpartum at 2 U.S. centers]*

**Conclusions/Next steps:** When offered pre-conception, during pregnancy and lactation, U.S. women frequently chose to use PrEP. Further research and education are needed to close gaps in care linkage, offering women safe and effective HIV prevention methods in and around pregnancy. The postpartum period is particularly vulnerable to loss to follow-up.

## WEPEC196

### A POPULATION OF PREGNANT SOUTH AFRICAN MOTHERS LIVING WITH HIV (MLH), MOTHERS WITHOUT HIV (MWOH) AND THEIR CHILDREN OVER THE FIRST THREE YEARS OF LIFE

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**Background:** Most attention on mothers with HIV (MLH) focuses on the perinatal period to ensure that their children are not born seropositive or become seropositive in the first six months of life. However, MLH face life-long health, mental health, and relationship challenges. This study recruited a population cohort of pregnant mothers in 12 township neighborhoods of Cape Town, South Africa and followed the families through three years post-birth. We compare the MLH and their children to mothers without HIV (MWOH) and their children over time.

**Methods:** Pregnant women in 12 Cape Town, South Africa neighborhoods (N=584) were recruited: 98% were assessed in pregnancy, 92% within two weeks post-birth, 88% at 6 months, 84% at 18 months, and 86% three years post-birth. There were 186 MLH and 398 MWOH. Child and maternal outcomes were monitored (controlling for neighborhood and repeated measures), and contrasted over time using longitudinal random effects regression analyses and, for measures collected once, with multiple regressions.

**Results:** Only 4.8% of MLH's children were seropositive; these were excluded from additional analyses. Children of MLH and MWOH died at similar rates (8.5%) and were similar in social and behavioral adjustment, vocabulary, and executive functioning at three years of age. Children of MLH tended to be significantly (p< .10) shorter, over time, had lower height-for-age Z scores (were more likely to be stunted) and were also hospitalized more often than children of MWOH. These outcomes emerged in households in which pregnant MLH were more disadvantaged compared to MWOH (less income, more informal housing, more food insecurity, depression, and alcohol use). MLH were significantly more depressed over time than MWOH, but were similar in other risks over time. MLH did not take care of their own health after pregnancy. Three years post-birth, only 62% had re-engaged in HIV care. Those MLH who did go to care received ARV.

**Conclusions:** Only the physical health of children of MLH is compromised, compared to children of MWOH-- social, behavioral, language, and cognitive functioning appear similar. Similar to global patterns, MLH face far more challenges than peers in the same neighborhoods.

## WEPEC197

### DUAL CONTRACEPTIVE USE AMONG WOMEN LIVING WITH HIV IN CANADA: POTENTIAL FOR WOMEN-CENTRED HIV CARE DELIVERY MODELS

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**Background:** WHO guidelines recommend dual contraception for women living with HIV (WLWH) to prevent unintended pregnancy and HIV transmission. We examined the prevalence and correlates of dual contraceptive use among Canadian WLWH.

**Methods:** We analysed baseline survey data from the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS), a multi-site community-based research study with 1,425 WLWH enrolled. Analyses were restricted to pre-menopausal, non-pregnant, cis-gender women aged 16-49, who reported consensual sexual activity within 6 months before interview. Dual contraceptive use was defined as consistent condom use with another effective contraceptive method (IUD/IUS, hormonal, or permanent). Multivariable logistic regression examined independent correlates of dual contraceptive use. With accumulating evidence that sexual HIV transmission risk approaches zero with sustained HIV viral suppression, we also explored the prevalence of dual contraceptive use applying an alternative definition: use of an IUD/IUS, hormonal, or permanent method in addition to ***either*** consistent condom use ***or*** viral suppression (< 50 copies/mL).

**Results:** 453 participants (32% of total enrolled) were included. Median age was 38 (IQR: 33,43), 23% identified as Indigenous, 31% African, Caribbean, or Black, and 41% White. 88% were heterosexual and 50% reported no pregnancy intentions. At interview, 78% were receiving antiretroviral therapy, 74% self-reported viral suppression, and 51% self-reported receipt of women-centred HIV care (WCHC). Of those with ≥1 regular sexual partner (n=418), 66% had HIV-negative and 8% had HIV status-unknown partners. By mutually exclusive categories, 18% of women used dual contraception, 27% barrier methods, 13% permanent methods, 8% hormonal methods, 6% IUD/IUS, and 27% did not use effective contraception. Women reporting receipt of WCHC had significantly higher adjusted odds of using dual contraception (aOR: 3.13; 95%CI: 1.23-8.13). When the definition of dual contraception was expanded to include viral suppression, prevalence increased to 40%.

**Conclusions:** Fewer than one-fifth of sexually-active WLWH in this study used dual contraception. Associations with receipt of WCHC suggest the potential of this HIV care model to improve dual contraceptive uptake and sexual and reproductive

health outcomes. Use of effective contraceptive methods with viral suppression may offer women an alternative dual contraception strategy to prevent unintended pregnancy and minimize HIV transmission, without condoms.

## STI CONTROL TO PREVENT HIV TRANSMISSION

### WEPEC198

### ANAL DOUCHING AND SHARING DOUCHING EQUIPMENT ARE NOT ASSOCIATED WITH ANORECTAL STIS: A CROSS SECTIONAL STUDY AMONG MSM AT THE STI CLINIC AMSTERDAM, THE NETHERLANDS

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**Background:** Men who have sex with men (MSM) are at high risk for anorectal sexual transmitted infections (STIs). Many MSM use anal douches in preparation for sex, which might break down the mucosal barrier function and facilitate the acquisition of STI pathogens. If shared, contaminated douching equipment itself could also be a transmission route. We determined whether anal douching and sharing douching equipment were associated with STI.
**Methods:** In a cross-sectional study among 994 consecutive MSM attending the STI outpatient clinic of Amsterdam between February and April 2011 we collected data on anal douching, sexual behaviour and STI. We used multivariable logistic analysis to determine the association between anal douching and sharing douching equipment and acquiring anorectal STI, after adjusting for high risk behaviour, i.e. age, ethnicity, condom use, number of partners, HIV-status and sexual position (top, bottom, versatile or no anal sex) .
**Results:** The prevalence of anal douching was 46% (n=460) of which 25% (n=117) shared douching equipment. In 12%(n=123) syphilis and/or anorectal infections with non-LGV chlamydia, lymphogranuloma venereum and/or gonorrhoea were found. In univariable analysis anal douching (OR 2.7, 95%-CI 1.7-4.1, p< 0.001)) and sharing douching equipment (OR 4.3, 95%-CI 2.5-7.3, P< 0.001) were significantly associated with anorectal STI. In multivariable analysis these associations were no longer statistically significant (aOR 1.3, 95%-CI 0.8-2.2, and respectively aOR 1.9, 95%-CI 1.0-3.6, p=0.14).
However in this multivariable model HIV-positivity (p< 0.001), younger age (p=0.007) and receptive anal intercourse (p=0.011) were significantly associated with anorectal STIs.
**Conclusions:** Almost half of MSM in our study sample use anal douching and a quarter of those MSM share douching equipment. Yet, after correcting for high-risk sexual behaviour such as condom use, number of partners, HIV-status, age and sexual position, anal douching and sharing douching equipment does not appear to contribute to the acquisition of anorectal bacterial STI or syphilis.

### WEPEC199

### TAKING SERVICES TO THE COMMUNITY: A CASE OF FEMALE SEX WORKERS

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**Background:** It has been shown that enrolling clients early on ARV's has a greater impact of reducing the viral load and thereby reducing the transmission of HIV.
NYG partnered with Management Sciences for Health, with funding from USAID for a programme aimed at providing adequate access to Health services for Female sex workers. A test and treat approach was used for the project..
Its main objectives were to increase access to HIV prevention services for female sex workers (FSWs), increase access to HIV counselling and treatment services, and cervical cancer screening, and promote HIV prevention behaviours among FSWs with a strong focus on correct and consistent use of condoms.
**Description:** Implementation took place in Tlokweng, Botswana,. A peer education model was employed to recruit female sex workers to participate in the programme. Up to 474 clients were successfully mobilized. Health services were made available at NYG centre. An active referral system was put in place to ensure high involvement.
**Lessons learned:** The tablebelow represents referrals for different health services among female sex for the period January - June 2015.

| | HCT HCT | | STI | STI | TB | TB | CERVICAL CANCER | CERVICAL CANCER | ART |
|---|---|---|---|---|---|---|---|---|---|
| | NEW | REPEAT | NEW | REPEAT | NEW | REPEAT | NEW | REPEAT | NEW |
| JANUARY | 64 | 0 | 56 | 1 | 51 | 2 | 44 | 0 | 0 |
| FEBRUARY | 67 | 6 | 84 | 11 | 84 | 11 | 31 | 0 | 0 |
| MARCH | 71 | 3 | 97 | 14 | 82 | 12 | 2 | 0 | 16 |
| APRIL | 37 | 2 | 57 | 5 | 41 | 3 | 9 | 0 | 6 |
| MAY | 37 | 9 | 63 | 13 | 50 | 8 | 24 | 0 | 2 |
| JUNE | 20 | 0 | 38 | 1 | 32 | 0 | 4 | 0 | 0 |
| TOTAL | 296 | 20 | 395 | 45 | 340 | 36 | 114 | 0 | 24 |

*[Referrals for Health service]*

**Conclusions/Next steps:** There is significantly low number of clients enrolled in ATR over this period, suggesting that female sex workers need a lot of attention to enable them to enrol on ARV's. A good number of clients monitoring their CD4 count declined the test and treat initiative as they felt it was not necessary.
Despite a programme that included investment in condom promotion, there are so many cases of Sexually Transmitted Infections, which refutes recent studies showing increased condom use among female sex workers.

## MALE AND FEMALE CONDOMS AND OTHER PHYSICAL BARRIERS

### WEPEC200

### WHO HAS HEARD OF OR EVER USED THE FEMALE CONDOM IN SOUTH AFRICA? THE NATIONAL FEMALE CONDOM EVALUATION IN SOUTH AFRICA

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**Background:** South Africa (SA) has one of the largest and best-established, public-sector male and female condom (MC and FC) programmes world-wide. We are conducting the first comprehensive multi-method evaluation of the SA FC programme since FCs were introduced into SA in 1999. The primary objective of the evaluation is to describe and evaluate approaches used in the national SA FC programme and, identify predictors of FC uptake and continued use.
**Methods:** The existing National STI sentinel site surveillance sample of approximately thirty sites per province was used for this study and includes rural and urban primary health care facilities, Community health centres, mobiles and hospitals. Additionally a sample of non-public sector sites- tertiary education, NGOs, social marketing and sector (≈ 30) were included. As one component of the evaluation, we are conducting an anonymous with men and women in a sub-sample of approximately 50% of the sentinel sites and all non public. The anonymous survey asks facility clients if they have ever heard of or used FCs, whether they know they are available, and if they have been offered FCs at the facility they are attending.
**Results:** A total of 1662 surveys have been completed at 45 facilities to date. Of the 879 currently analysed, similar percentages of women (82.2%) and men (83.5%) have ever heard of FCs. However, only about two-thirds knew they were available at the facility where they completed the survey, even though all facilities surveyed had distributed FCs at some time and 92% were currently distributing them. Overall 14.7% have ever used a FC, and of these, two-thirds (65.4%) had used them for dual protection (pregnancy and STI/HIV prevention). Nearly two-fifths (37%) had ever been offered a FC in the facility they were attending, but this varied widely between facilities, ranging from < 10% to 80%. Knowledge and ever use by clients varied considerably across facilities.
**Conclusions:** Although FCs are widely available through the public and non-public sectors, clients are still not fully informed of their availability. Nevertheless, knowledge and ever use of FCs has increased compared to previous national HIV surveys.

## WEPEC201

### SILCS DIAPHRAGM AS A MULTIPURPOSE PREVENTION TECHNOLOGY: AN ACCEPTABILITY STUDY COMPARING SILCS AND STANDARD APPLICATORS TO DELIVER VAGINAL GEL IN DURBAN, SOUTH AFRICA

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**Background:** The SILCS Diaphragm is a reusable barrier contraceptive developed to be easy to use and comfortable for both partners. The single-size design eliminates the need for an exam to determine diaphragm size. Researchers are assessing the SILCS Diaphragm as a low-cost, reusable delivery system for microbicide gel to protect from both unintended pregnancy and HIV/STIs, thus serving as a multipurpose prevention technology (MPT). This study assessed acceptability and preference for the SILCS Diaphragm for gel delivery compared to gel delivery from a prefilled applicator.

**Methods:** A randomized, crossover study among women aged 18-45 in Durban, South Africa, with data collected via coital logs, questionnaires, and focus group discussions. Women used each method during five separate sex acts. Acceptability and preference endpoints were summarized using means and medians (for continuous measures) and frequencies and percentages (for discrete outcomes). Acceptability—ranked on a 5-point scale—compared both gel delivery scenarios using Friedman's test.

**Results:** A total of 116 women were screened, 115 enrolled and 106 (92%) completed the study. Almost all women (88.3%) spent three minutes or less applying gel and inserting the SILCS. Around half of women found inserting the SILCS, checking its placement and knowing it was in the correct place, somewhat or very easy. Less than 4% found any of these procedures difficult. Gel leakage was found to be less acceptable in the gel applied by applicator compared to applied by SILCS. Slightly more women reported applicator/gel was "very acceptable" (68%) compared to SILCS and gel (60%).

68% were interested in using SILCS plus gel if it could protect from *both* unintended pregnancy and HIV, compared to 18% of women who would use SILCS for pregnancy prevention and 14% who would use a microbicide gel for HIV prevention.

**Conclusions:** This study expands knowledge about South African women's experience with the SILCS Diaphragm as a potential MPT. Results confirm that women can easily learn to use the SILCS Diaphragm, find it comfortable; and experience of sex for both partners is acceptable. The benefit of using the SILCS Diaphragm and microbicide gel as a potential MPT greatly increased women's interest in using this method.

## WEPEC202

### FACTORS ASSOCIATED WITH CONDOM USE AMONG MEN AND WOMEN LIVING WITH HIV IN LILONGWE, MALAWI

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**Background:** Understanding the influences that affect condom use is a critical step towards tailoring STI/HIV prevention efforts. We aim to identify factors associated with self-reported condom use among HIV-infected individuals in Lilongwe, Malawi.

**Methods:** This is a cross-sectional analysis of 220 men and 254 women who were HIV-infected and sexually active within the past 6 months. The participants completed surveys at one of two HIV clinics in Lilongwe from September to December 2013. Multivariate logistic regression models evaluated associations between potential predictors of consistent condom use over the past 1-month (CCU) and use at last coitus (ULC).

**Results:** Among women: 37% and 55% reported CCU and ULC, respectively. Decreased CCU was associated with desire for future children (aOR 0.41 (0.20, 0.82)), coital frequency (>1x/week (aOR 0.45 (0.23, 0.87)), and making decisions alone about condom use (aOR 0.27 (0.13, 0.60), whereas increased CCU was associated with the ability to refuse sex without condoms (aOR 13.13 (6.48, 26.59)). These factors and belief that condoms prevent HIV transmission (aOR 3.35 (1.10, 10.24)) were also associated with ULC. Among men: 51% and 69% reported CCU and ULC, respectively. Decreased CCU was associated with desire for future children (aOR 0.38 (0.18, 0.79)) and alcohol or drug use during coitus (aOR 0.45 (0.22, 0.91)), whereas increased CCU was associated with ability to refuse sex without condoms (aOR 5.77 (2.70, 12.34)) and belief in need for condom use with other contraceptives (aOR 4.79 (2.12, 10.85)). Decreased ULC was associated with coital frequency >1x/week (aOR 0.47 (0.24, 0.91)), whereas increased ULC was associated with ability to refuse sex without condoms (aOR 6.53 (3.33, 12.80) and belief in need for condom use with other contraceptives (aOR 2.65 (1.23, 5.72)).

**Conclusions:** Our study highlights the need to improve condom utilization among HIV-infected individuals. While different factors are associated with condom use among men and women, the ability to refuse sex without condoms was the strongest predictor of CCU and ULC for both groups. Importantly, antiretroviral therapy and contraceptive use do not deter condom use. Promotion of joint decision-making and empowerment within a relationship are important steps towards improving condom utilization.

## WEPEC203

### PREFERENCE FOR VARIETY OF CONDOM TYPES IN A COHORT OF SOUTH AFRICAN MSM FROM PORT ELIZABETH AND CAPE TOWN

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**Background:** Consistent use of condoms during anal intercourse is a central component of effective comprehensive HIV prevention for men who have sex with men (MSM) and may be impacted by having a choice of condom brands and types. African MSM use of different condom brands/types has not been previously reported and may be useful for prevention organizations planning for increasing condom choices for MSM.

**Methods:** Sibanye Health Project is a 1-year prospective study of combination HIV prevention among MSM and transgender women from Cape Town and Port Elizabeth, South Africa. At baseline, all participants were given a starter package of condoms that contained 7 different types, one being a standard condom (Choice) that is the most commonly available in South Africa. During follow-up, we tracked requests for additional condoms by brand/type and administered condom satisfaction surveys. We describe requests for standard condoms compared to all other varieties overall, and by city and participant baseline HIV status.

**Results:** Through January 2016, we have enrolled 201 participants and conducted 745 follow-up visits. Except for the standard condom, requests for other condom brands-types were common (51-74%) and were similar (all 2-way correlations p< 0.001). The majority of participants requested more condoms of the non-standard varieties (9,824 condoms requested) compared to only 2 requests (11 condoms requested) for standard condoms (Table). The mean satisfaction rating for standard condoms was also lower than for other condoms. Nearly all of those who were HIV-positive have requested additional non-standard condoms.

**Particpants who Requested Additional Condoms at Follow-up Visits by Participants' City and Baseline HIV Status - Sibanye Health Project, 2015-2016**

| | Condom Brands (Type)* | |
|---|---|---|
| | **Non-standard Condom** | **Standard Condom** |
| | Atlas Ultra-Thin (thin)<br>Durex Enhanced Pleasure (flared)<br>Impulse Bare Pleasure (external ribbed)<br>ONE Condom Pleasure Plus (internal ribbed)<br>ONE Color Sensations (colored)<br>Trustex Assorted Flavors (flavored) | Choice (standard) |
| | n (%) | n (%) |
| **Total (N=201)** | 176 (88%) | 2 (1%) |
| **City** | | |
| Cape Town (N=100) | 86 (86%) | 2 (2%) |
| Port Elizabeth (N=101) | 90 (89%) | 0 (0%) |
| **HIV status at baseline visit** | | |
| HIV-negative (N=167) | 143 (86%) | 2 (2%) |
| HIV-positive (N=34) | 33 (97%) | 0 (0%) |
| **Number of condoms requested** | 9,824 | 11 |
| **Mean satisfaction** (N=96)** | 4.3 | 1.8 |

* Condom brand names may be registered trademarks.
** Mean satisfaction was scaled based on 1 = low satisfaction (frown face) to 5 = high satisfaction (smile face).

*[Condom Requests in Sibanye Health Project]*

**Conclusions:** South African MSM in our cohort do not prefer the most commonly available condom brand when given a choice of other types of condoms. Further research is warranted to determine whether condom preferences and access may be associated with more consistent use, but HIV prevention organizations should consider offering other types of condoms now to meet this group's preferences.

## WEPEC204

### WILL HE LET ME USE A FEMALE CONDOM, WILL SEX BE THE SAME? ATTITUDES AND EXPERIENCES OF FEMALE CONDOM USERS ATTENDING SELECTED PUBLIC-SECTOR HEALTH FACILITIES IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** HIV infection remains a serious threat to women's lives. While the male condom has been the cornerstone of HIV prevention, many women are unable to use it with partners. The female condom (FC), is an effective alternative, but some women face use and partner negotiation challenges. ObjectivesTo assess FC attitudes and use among a cohort of new acceptors and those who last used it >six months ago attending public-sector health facilities.
**Methods:** A longitudinal cohort of 598 women aged 18-45 were enrolled from four public-sector health facilities in KwaZulu -Natal between September 2014- October 2015 and assessed at baseline, 1, 6, and 12-months. We report on baseline and 1- month follow-up results.
**Results:** 513 women completed their one-month follow-up interview. Mean age was 28 years; two-thirds had a regular partner; 17% were married. Prior to enrollment, around a third had ever used the FC for contraception. A majority (91%) reported FC use in the past month. Just over half said their FC experience was positive; 83% experienced no discomfort during sex. Most women (85%) at Month 1 reported their partners were supportive; 81% indicated that partners didn't object to FC use. The majority (85%) at Month 1 strongly agreed that the FC makes sex better compared to 57% at baseline. Almost all women knew that FC offers dual protection. 80% of women at Month 1 felt that FC puts the woman in charge compared to 56% at baseline. Most women (80%) at Month 1 said sex felt good with FC compared to 43% at baseline. Four percent of women at baseline didn't know whether using a FC takes fun out of sex, but by Month 1, 79% reported that FC doesn't take fun out of sex. Over half of women at Month 1 reported their partner's sexual experience was not affected by FC.
**Conclusions:** Women in the cohort found the female condom enhancing their sexual experiences and most reported their partners also supported FC use during sex. Monitoring attitudes and patterns of use at 6 and 12 month follow-up visits will provide key information about the influence of sexual pleasure on continued use.

## HIV TESTING

## WEPEC205

### HIV P24 ANTIGEN AMONG HIV ANTIBODY SERONEGATIVE BLOOD DONORS IN SOUTH-WEST NIGERIA

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**Background:** Testing of blood donors is carried out majorly using antibody detection kits in Nigeria. These kits detect antibodies to HIV antigens which appear usually later than the p24 antigen. Transmission of HIV through infected blood and its products accounts for approximately 10% in African region.This study was therefore carried out to determine the prevalence of p24 core antigen in blood donors already screened as HIV negative by the antibody detection method.
**Methods:** AA total of 1440 blood samples were collected from regular blood donors from different hospitals in Southwestern Nigeria. Sera from the blood were screened for HIV1 and 2 antibodies by Determine™ HIV-1/2 kit (Abbott Laboratory, IL, USA) and confirmed with the Immuno Comb® II HIV 1/2 (Bispot kit PBS Organics and Israel 2005). Initially HIV antibody seronegative sera were further screened for the presence of HIV 1/2 antibodies and p24 HIV core antigen using ELISA kits (Genscreen ™ ULTRA HIV Ag - Ab). Manufacturer's protocols were strictly followed. Statistical analysis was done using packages within SPSS and P value < 0.005 considered significant.
**Results:** Out of the initial 1440 HIV antibody seronegative sera, 9(0.63%) were positive for the p24 HIV core antigen. There was significant association between the distribution of p24 antigen seropositivity with history of sexually transmitted infection (P=0.000), blood transfusion (P=0.000), and multiple sexual partners (P=0.001).
**Conclusions:** With the prevalence of 0.63% antigenaemia among blood donors in southwestern Nigeria, there is the need for the Nigerian government to urgently adopt WHO blood safety strategies for resource-limited settings and to optimize donor selection and testing algorithm. HIV screening of donors must be based on a combination of antibody-based test and p24 antigen test coupled with a stringent blood donor selection algorithm.

## WEPEC206

### ACCEPTABILITY OF HUMAN IMMUNODEFICIENCY VIRUS SELF-TESTING AS A SCREENING STRATEGY IN BEITBRIDGE DISTRICT, ZIMBABWE, 2015

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**Background:** Low uptake of traditional forms of HIV testing and counseling (HTC) remains a primary bottleneck toward universal access to treatment and care in Zimbabwe. In 2014 Beitbridge District, using the facility based HTC, failed to achieve its uptake target by 32%. Zimbabwe is contemplating introducing HIV self-testing (HIV ST) as an alternative to facility based HTC.
Against this background we sought to determine acceptability of, and intention to conduct HIVST in Beitbridge District.
**Methods:** An analytic cross-sectional study using Integrated Behaviour Model (IBM) was conducted. Adults (18-49 years) residing in Beitbridge district were recruited. Data on HIV ST intention were collected using pretested interviewer administered questionnaire. Statistical Package for the Social Sciences (SPSS) 17 was used to conduct exploratory factor analysis and multivariate linear regression to determine independently associated factors with HIV self-testing intention.
**Results:** Of the 289 respondents recruited, 60% were female. The median age was 28 years ($Q_1$= 23; $Q_3$= 34). Eighty per cent (n=243) reported intention to conduct HIV self-testing. About 254 (87.9%) would accept HIV ST if the kits were offered at low cost. Being single (aOR=35.2, p< 0.05), Self- Efficacy (aOR = 4.73, P < 0.05), attitude (aOR=3.59, p< 0.05), and injunctive norm beliefs (aOR=1.76, p< 0.05) independently predicted HIV ST intention. Main motivating factors was privacy n=203 (70%), whilst lack of counseling n=95(33%) was highlighted a possible barrier.
**Conclusions:** HIV self-testing is highly acceptable and preferable if kits are offered at low cost. We recommend piloting of HIV ST and strategies such as telephonic counseling or outreach schedule to address lack of counseling. Research is also required on the sustainability and cost-effectiveness of implementing program at a subsidized cost.

## WEPEC207

### SYSTEMATIC REVIEW ON HIV SELF-TESTING (HIVST) PERFORMANCE AND ACCURACY OF RESULTS

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**Background:** HIVST has potential to increase access to and uptake of HIV testing, particularly among key populations. Many countries have already or plan to introduce HIVST and WHO plans guidance for late-2016. There are, however, concerns about rapid diagnostic tests (RDTs) usability and accuracy when used for HIVST. We will summarize the evidence on HIVST accuracy to inform policy development.
**Methods:** We searched three databases and five HIV conferences abstracts (January 1995-November 2015) for studies assessing diagnostic accuracy and performance of RDTs used for HIVST. Review was restricted to reports with true/false-positive and true/false-negative, used to calculate sensitivity and specificity. We analyzed data by type of specimen collection (oral-fluid or whole-blood), type of support provided and HIV prevalence among study participants. Study results using the same RDT for HIVST were pooled.
**Results:** 15 studies were included. Study QUADAS methodological quality was variable and most studies (n=12/15) used oral-fluid RDTs. HIV prevalence was high (median: 12.6%). HIVST sensitivity (range: 65%-98.8%) and specificity (range: 94.7%-100%) were high. Studies using blood RDTs reported higher sensitivity (96.4%-98.8%) compared to those using oral-fluid RDTs (65%-97.9%). Studies reporting low sensitivity were generally among people with known HIV status and/or using ART, and rural populations with lower literacy. Except for Kurth et al (15.1%), studies using blood RDTs (0.86%-5.71%) had a higher proportion of invalids, compared to studies using oral-fluid RDTs (0.06%-3.35%). Pooled estimates for studies using the same test were similar to manufacturer's indications.

**Conclusions:** Accuracy of RDTs used for HIVST can be high, independent of type of support. Blood RDTs used for HIVST report higher sensitivity, but lead to more invalid results compared with oral-fluid RDTs. Poor sensitivity is related with inappropriate products, poor or no instructions-for-use and the use by people with known HIV status and/or using ART. Policies and regulations should adapt national testing strategies and validate testing algorithms that include HIVST.

[HIV diagnostic test accuracy and characteristics of included studies (n=15)]

## WEPEC208

### ENHANCING ACCESS TO HIV TESTING SERVICE FOR MEN WHO HAVE SEX WITH MEN (MSM) IN LAO PEOPLE'S DEMOCRATIC REPUBLIC (PDR)

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**Background:** Men who have sex with men (MSM) have a high HIV prevalence in Lao PDR: 5.6% in Vientiane in 2007. The Lao Center for HIV/AIDS/STI, in collaboration with US Centers for Disease Control and Prevention and World Health Organization, have worked since 2009 to strengthen Global Fund-supported MSM prevention programs in Vientiane Capital and Vientiane Province. In 2015, the team introduced additional recruitment strategies and capacity building training to increase access to HIV testing and ensure HIV-infected MSM were linked to care. Here we describe the outcomes of these initiatives.
**Methods:** We conducted MSM target mapping in Vientiane Capital and Province, and training for health care providers and staff of community-based organizations on HIV counseling, program monitoring, and improving the quality of counseling and laboratory services. Monitoring systems were implemented at 13 HIV testing sites (government and a community-based drop-in center) to allow continuous quality improvement. Mobile HIV testing and an incentivized, coupon-based, peer-driven intervention (PDI) were added to expand access to HIV testing using MSM mapping information. HIV-positive MSM were referred to antiretroviral treatment (ART) sites using referral cards and outreach case managers.
**Results:** The number of MSM tested for HIV in Vientiane Capital and Province rose from 98 in 2012 to 1,009 in 2015. Of the 1,009 MSM, 410 (41%) were recruited at the drop-in center, 300 (30%) using PDI; 188 (19%) at mobile clinics; and 111 (11%) at government testing clinics. Overall, 37 (4%) MSM were HIV infected; HIV prevalence was highest among MSM recruited at the government testing clinics (14%). HIV prevalence was < 3% among MSM recruited using PDI at mobile clinics, and at the drop-in center. In Vangvieng District, HIV infection was documented for the first time among 4/33 MSM (12%) who were tested at mobile HIV testing sites. Of the total 37 HIV-positive MSM, 30 (81%) were successfully referred and registered for care at ART sites.
**Conclusions:** We implemented a model that successfully increased HIV testing among MSM. The HIV prevalence in government clinics and Vangvieng District was higher than expected, signaling a need to accelerate HIV interventions among MSM in Laos.

## WEPEC209

### ACCEPTABILITY, FEASIBILITY, AND PREFERENCE FOR HIV SELF-TESTING IN ZIMBABWE

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**Background:** Access to and demand for HIV testing services (HTS) remains inadequate. HIV self-testing (HIVST) may substantially scale-up acceptability and access to testing, addressing many barriers to provider-delivered testing (PDHTS) strategies. We compared the offer of HIVST versus PDHTS in Zimbabwe to examine preferred testing method and characteristics of testers by method.
**Methods:** Outreach teams visited rural and peri-urban communities in advance to promote testing using either PDHTS or HIVST, and inform them of community testing dates. Individuals ≥18 years presenting for testing who had a mobile phone and provided consent were enrolled. A baseline questionnaire was administered and participant phone numbers were registered for follow-up. Those opting for HIVST received a self-test with validated instructions, and were contacted after 2 weeks to complete a telephone questionnaire about their experience.
**Results:** 1000 participants were recruited, 500 from rural and 500 from urban areas. Mean age was 33 years (range 18-74) and 52% were male. 17% of participants had never accessed HTS. Overall, 695 (70%) participants opted for HIVST. Those who self-tested were more likely to be <35 years (p=0.02), more educated (p<0.01), have ≥1 sexual partners in the past 3 months (p=0.01), and less likely to have used a condom at last sex (p=0.06). 622 (89%) self-testers completed a telephone questionnaire. Of these, 32 (5%) had not yet used the test. Primary reasons were being busy/traveling (44%) and fear of results (19%). The Table shows telephone questionnaire results, by rural/urban setting.

| Characteristic | Total (N=590) N(%) | Rural (N=307) N(%) | Urban (N=283) N(%) | p-value |
|---|---|---|---|---|
| Self-test not at all hard to use | 564 (96%) | 299 (97%) | 265 (94%) | 0.03 |
| Tested with someone else present | 169 (29%) | 82 (27%) | 87 (31%) | 0.28 |
| Tested with a sexual partner | 120 (12%) | 64 (13%) | 56 (11%) | 0.44 |
| Reported an HIV-positive test result | 47 (8%) | 15 (5%) | 32 (11%) | 0.01 |
| Comfortable learning test result without a provider present | 540 (92%) | 289 (94%) | 251 (89%) | 0.02 |
| Would want next test to be a self-test | 510 (86%) | 276 (90%) | 234 (83%) | 0.01 |
| Would recommend self-testing to others | 586 (99%) | 306 (100%) | 280 (99%) | 0.47 |
| Of those testing HIV+ (n=47), attended post-test HIV services within 2 weeks | 25 (53%) | 8 (53%) | 17 (53%) | 0.99 |

[Post-test telephone questionnaire data among 590 participants who used the self-test, stratified by rural/urban setting]

**Conclusions:** Results suggest that HIVST is highly acceptable, and preferred by the large majority over PDHTS. HIVST may encourage testing among couples, younger people, and potentially those at higher risk. Importantly, half testing positive via HIVST had linked to post-test services by the time of follow-up, similar to available linkage data from PDHTS. HIVST represents a promising alternative for increasing knowledge of HIV status in Zimbabwe.

## WEPEC210

### HOME TESTING FOR HIV SUCCEEDS IN REACHING FIRST-TIME AND INFREQUENT TESTERS IN THE NETHERLANDS: RESULTS OF THE HIVTEST@HOME TRIAL

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**Background:** HIV self-tests (HIVST) may help to increase HIV test uptake by eliminating barriers to testing. The Amsterdam Public Health Service developed and evaluated an HIVST-service that provided reliable HIVST in combination with internet counseling for individuals at risk for HIV, especially men who have sex with men (MSM) and migrants from HIV-endemic countries.
**Methods:** Using MSM- and migrant-specific media, a campaign was launched to motivate MSM and migrants to visit www.time2test.nl. The website included information about HIVST, an optional questionnaire measuring demographics, and the option to buy HIVST packages. During a national 'HIV testing week 2015', packages could be obtained for free. Packages included an oral fluid-based test (OraSure Technologies), a manual, and a code to access online instructions and counseling. An evaluation questionnaire sent five weeks after purchase measured HIVST user experience and satisfaction, self-reported HIVST results, previous HIV-testing behaviour and linkage to care.
**Results:** From August-2014 to December-2015 the website attracted ~34000 visitors, of whom 5016 answered demographical questions. Of those, 56% (2802/5016) were MSM and 9% (472/5016) were migrants of non-Western origin. Median age was 34 years (IQR=26-44). 683 persons purchased 935 tests. During the HIV testing week 139 persons obtained 243 free tests. Of the 822 participants, 56% were MSM and 7% were non-Western migrants. Half (47%; 386/822) of all participants accessed the online instructions and counseling, and by February 2nd 2016, 15% (121/822) completed the evaluation questionnaire. The majority were (very) satisfied with the service (96%) and instructions (99%), and did not experience problems while testing (93%). 26% (32/121) were never tested for HIV, whereas for 13% (16/121) their last test was >3 years ago. 2.5% (3/121; 95%CI=0.8-7.0) tested positive, and 2/3 persons who tested HIVST positive were confirmed positive and accessed HIV care.
**Conclusions:** Although only a limited number of identified HIV infections were reported and non-Western migrants were underrepresented among our participants, our data suggest that almost 40% of the self-test users were first-time or infrequent testers. User experiences were positive and user satisfaction was high. A home-testing service for HIV is feasible and relatively easy to implement as an additional tool to identify HIV infections.

## WEPEC211

### BOOSTING VOLUNTARY AND FREE COUNSELLING AND HIV TESTING FOR MEN HAVING SEX WITH MEN IN TURKEY

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**Background:** There are no Voluntary Counselling and Testing Centres (VCTs), no national HIV-testing guideline, nor community-based testing opportunities in Turkey, where the number of new diagnoses increased by 467% (2004-2013, WHO). Although approximately eight million HIV tests are performed each year, these are random, not targeted at most-at-risk-populations (MARP) and are not anonymous (if covered by the state health insurance system) due to various structural barriers. The community-initiated testing project presented in this abstract aimed at filling this gap and increasing the number of people who are aware of their HIV-positive status, so that they can reach treatment and reduce further transmission.
**Description:** Being the first and only of its kind, the current project, started in March 2015, provides voluntary, free and anonymous counselling and testing to men having sex with men (MSM) in Istanbul, where the prevalence is the highest, with the cooperation of the single HIV patients' organisation of Turkey and a private laboratory.
**Lessons learned:** The project is advertised in MSM bars and clubs, online platforms, billboards and social media applications. Over 1000 people applied and received counselling by a peer-counsellor. To date, 200 people got tested, 13.5% were diagnosed with HIV and directed to treatment. This is the highest prevalence rate detected in any testing initiative in the country. The country's official HIV prevalence rate is below %0.1. People diagnosed with HIV were 18 to 30 years old MSM, including undocumented migrants. Majority had CD4 counts lower than 300 and did not have medical insurance. High levels of social barriers and self-stigma preventing MSM from testing are also documented through the project.
**Conclusions/Next steps:** The project proved the success of targeted, anonymous testing and fills a data gap by generating evidence. The project provides a new model for Turkey, in which a non-governmental organisation and a private clinic collaborated. The results are used for evidence-based advocacy for the re-opening of VCTs and establishment of community-based testing venues.

## WEPEC212

### THE IMPACT OF AN ELECTRONIC ALERT EMBEDDED IN ELECTRONIC MEDICAL RECORDS ON HIV TESTING AMONG A HIGH-RISK POPULATION IN THE UNITED STATES

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**Background:** Individuals seeking diagnosis or treatment for sexually transmitted infections (STIs) are at an increased risk for HIV infection. We evaluated the impact of an electronic alert for HIV testing embedded in electronic medical records (EMRs) on same-day HIV testing rates.
**Methods:** The electronic alert was implemented around October 2012 at a large managed care organization, targeting individuals over 14 years old with undiagnosed HIV status who were tested for any of the following STIs: gonorrhea/chlamydia, syphilis, and Hepatitis B or Hepatitis C infection. We identified individuals who received at least one STI test targeted by the alert during 4.5 years prior (01/2008-06/2012) and 2.5 years after the alert implementation (01/2013-06/2015). We compared the same-day HIV testing rate during the pre- and post-implementation periods among all patient encounters that were eligible for HIV screening per the alert criteria. Stratified rate was calculated by age, gender, race/ethnicity, and type of STI test. In multivariable analyses, adjusted associations between demographics and receiving HIV testing on the same day of the STI test(s) were estimated by using logistic regression with generalized estimating equations to account for correlation within individuals.
**Results:** There were 1,287,187 (32.2% male) and 885,439 (31.1% male) individuals during the pre- and post-alert periods, contributing 3,043,792 and 1,992,715 eligible encounters in the analysis, respectively. The demographic characteristics were comparable between study samples during the two periods. The overall same-day HIV testing rate increased from 50.7% to 61.2% after the implementation of the alert. The greatest increase was observed in individuals ≥ 50 years of age (14.7%), males (12.0%), Asian/Pacific Islanders (13.6%), and those receiving only a syphilis test (18.3%). In multivariable analysis, compared with 25-39 year olds, individuals aged ≥ 50 years were the least likely to receive same-day HIV testing [odds ratio (OR) =0.258, 95% confidence intervals (CI): 0.256-0.260]. Male gender (OR=2.633, 95%CI: 2.618-2.648), and black and Hispanic race/ethnicity were associated with a greater likelihood of receiving same-day HIV testing (black: OR=1.268, 95%CI: 1.257-1.279; Hispanic: OR=1.098, 95%CI: 1.091-1.105; vs white).
**Conclusions:** Evidence-based electronic alerts embedded in EMRs have great potential as an effective systematic intervention to improve targeted HIV testing among high risk populations.

## WEPEC213

### USING *TWO HIV RAPID TEST SCREENING ALGORITHM* PROGRAM TO EXPAND TESTING AND IMPROVE FAST REFERRAL AT 10 AIDS CLINICAL SITES IN CHINA

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**Background:** Thousands of clients took part in the *Two HIV Rapid Test Algorithm Program (RTP)* to find their HIV status in China. The program contributed to expand HIV testing, quicker HIV diagnosis and linkage to care & treatment. This study evaluated the program and explores ways to reach high risk populations.

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**Methods:** Between July 2013 and April 2015, Ten health facilities which represented regions with different HIV prevalence in China and designated ART providers at national, provincial and prefectural levels, adopted the program. A two rapid test algorithm was implemented to detect HIV and improve linkage. All clients with a reactive rapid HIV test (Determine HIV (1+2) electro selenium kit from United States) were offered a second rapid HIV test (colloidal gold kit, SD from South Korea) within 30 minutes. Clients with two positive results were immediately provided with pre-ART laboratory tests and counseling/treatment education to prepare them for ART initiation.
**Results:** During the study period, a total 73,073 clients were tested for HIV, with male to female ratio at 2.5:1. Clients who came for testing as a result of unprotected sex accounted for 62.8% while 34.7% of clients were not willing to share their exposure risk history. A third of the tester (33.1%) were retesters. A total of 3,999 clients (5.5%) were tested positive. Prevalence among males (6.5%) and first-time test clients (7.0%) were significantly higher than that in females (3.0%, $P< 0.001$, $\chi^2=359.97$) and previously test history clients (2.5%, $P< 0.001$, $\chi^2=338.93$). Prevalence among MSM (6.0%) data in 2015 was also significantly higher than that in other exposure populations (4.3%, $P< 0.001$, $\chi^2=34.318$). 87.6% of clients tested positive had been referred to hospitals, and 89.8% of them had been initiated ART regardless of their $CD_4$ level. The clients who were not initated (356) were found to have refused treatment because of high $CD_4$ levels.
**Conclusions:** The pilot program in China reveals a relatively high HIV prevalence and ART initiation rate, it is meaningful to expand HIV rapid testing among males, people who do not know their status and the MSM population to identify more positive patients.

## WEPEC214

### PARTNER NOTIFICATION FOR HIV TESTING SERVICES (HTS) APPROACH IN TANZANIA UNDERSCORES NEED FOR DISCORDANT COUPLE PACKAGE

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**Background:** With UNAIDS's 90-90-90 goal, approaches to HIV testing which yield high positivity rates are critical for sub-Saharan Africa. Partner notification, where sexual partners of newly-diagnosed clients are contacted by their partner or a provider, is effective, but underutilized, in identifying undiagnosed individuals. Successful applications of this approach have been documented in Malawi and Cameroon. Identification of serodiscordant couples presents a critical HIV prevention opportunity given high risk of the uninfected partner. This study evaluated feasibility, acceptability and effectiveness of partner notification in facility-based HIV testing services (HTS) in Tanzania.
**Methods:** The study was conducted in 3 hospitals in Njombe (Tanzania's highest HIV prevalence region), June - September 2015. Individuals diagnosed with HIV in PITC or VCT were enrolled as index clients, and offered passive, contract or provider referral to HTS at the same facility: partners testing positive were referred into HIV care and treatment. Serodiscordant couples were defined as those in which the sexual partner indicated that they were in a current partnership with the index client.
**Results:** 390 individuals (53.1% female) enrolled as index clients and 248 of their named sexual partners were successfully referred, in all but one case via passive referral. 238 partners tested for HIV, 61.8% testing positive. More female partners tested positive (67.9% vs. 53.5% for male). 88 sero-discordant couples were identified, 87 of which were reached through passive referral - the remaining one through provider referral. 76.1% of discordant couples were husbands or wives, 15.9% were boyfriends/girlfriends and 8% were casual partners.
**Conclusions:** Tanzanian facility-based HTS settings are a feasible venue for high-positivity rate partner notification programs, including identification of sero-discordant couples. A social preference for partner notification as a means to disclose serostatus to the main partner was seen in the study, making the intervention in many cases a facilitated disclosure intervention by the HTS counselor. Given the number of sero-discordant couples identified, we recommend that partner notification programs are rolled out with a comprehensive prevention package for discordant couples, including risk reduction counseling, provision of condoms, immediate provision of ART for the index partner and PreP for the HIV uninfected partner as appropriate.

## WEPEC215

### LAY PROVIDER HIV TESTING SERVICES FOR KEY POPULATIONS: PRELIMINARY RESULTS FROM A NEW STRATEGY TO ACCELERATE 90-90-90 IN VIETNAM

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**Background:** The HIV epidemic in Vietnam is concentrated among key populations (KP). Annual KP uptake of HIV testing through conventional testing services is low (~30%). This poses a major challenge to achieving 90-90-90. The USAID/PATH Healthy Markets Project, in collaboration with government and NGO partners, is piloting community based lay provider HIV testing to enhance KP access to HIV testing and accelerate diagnosis and treatment enrollment.
**Description:** The pilot aims to evaluate the model's acceptability, feasibility, and effectiveness for screening KP for HIV and ensuring linkages to care. Services are implemented in two mountainous and remote provinces, Nghe An and Dien Bien, and in two cities: Ha Noi and Ho Chi Minh City (HCMC). Non-health care workers (peer outreach workers and village health volunteers) were trained to proficiently offer test-for-triage (A0) in community settings using a rapid diagnostic test (RDT) (Determine™ HIV-1/2), and refer all reactive cases to health facilities for HIV diagnosis, and enrollment in treatment (confirmed cases). Standard operating procedures, video tutorials, and service algorithms were developed to reinforce the quality of testing. Local government health authorities provide supervisory support to the lay providers.
**Lessons learned:** Preliminary results are encouraging, with lay providers identifying a higher proportion of positive cases (5.4% of clients tested) than conventional HIV testing (2.4% according to national data, VAAC). All confirmed cases of HIV have been enrolled in treatment programs. In the first two months of implementation, over 1,660 people have been tested, and 90 new HIV cases were (5.4%). Male clients accounted for 90.6% of confirmed cases. Confirmed cases included those with a high CD4 count, where early treatment is particularly important for preventing transmission. Investment in training, job aids and supervision has translated into high quality testing by lay providers.
**Conclusions/Next steps:** Preliminary results indicate that lay provider testing can contribute to the identification, accurate diagnosis, and timely treatment of KP with HIV, especially those with a high CD4 count. The pilot is currently expanding to additional districts across the four provinces as requested by the provincial AIDS centers.

## WEPEC216

### WORKING EVENING AND WEEKEND SCHEDULES IS EFFECTIVE IN REACHING MORE MEN FOR HOME-BASED HIV TESTING: FINDINGS FROM HPTN 071 (POPART) IN SOUTH AFRICA

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**Background:** HPTN 071 (PopART) is a community-randomised trial of the impact of a combination HIV prevention package on population-level HIV incidence, being conducted in South Africa (SA) and Zambia. The package includes annual rounds of home-based HIV testing by Community HIV Care Providers (CHiPs), and must cover a high proportion of both men and women to be successful. In response to a low proportion of men being reached during regular business hours, weekend and evening work schedules were implemented in the 6 intervention communities in SA.
**Methods:** From 1 September to 13 December 2014, CHiPs worked a Tuesday-Saturday or Monday-Friday schedule. During weekdays, working-hours were 9am-5pm, 10am-6pm, and 11am-7pm for 5/5/4 weeks respectively; on Saturdays teams always worked 9am-5pm. To compare the 3 working-hour shifts, the average number of HIV tests/day was calculated for each week, excluding Saturdays, and these 14 values analysed using linear regression. To compare weekdays and Saturdays, analysis was restricted to the 10wks that CHiPs worked on Saturday; for each week, the average number of HIV tests/day was calculated separately for weekdays and Saturday, and a paired t-test used to compare 10 paired values. The number of staff working each day was consistent over the 14wk period, with minimal staff turn-over.

**Results:** 9,857 men had HIV tests during this period, with an average of 210/day. On average, 27% (262vs207) more tests/day were completed on Saturdays than weekdays, and 46% (255vs175) more tests for the 11am-7pm shift than 9am-5pm shift during weekdays.

| | Average number of HIV tests/day | 95% Confidence Interval | P value |
|---|---|---|---|
| Overall (14 weeks) | 210 | 193 - 227 | |
| Tuesday-Saturday schedule (10 weeks) | | | |
| Weekdays | 207 | 173 - 242 | |
| Saturday | 262 | 225 - 298 | 0.0003 |
| Work shift (14 weeks) | | | |
| 9am-5pm (5 weeks) | 175 | 143 - 207 | |
| 10am-6pm (5 weeks) | 166 | 134 - 198 | |
| 11am-7pm (4 weeks) | 255 | 219 - 291 | 0.004 |

*[Average number of HIV tests per day]*

**Conclusions:** Working weekend and evening schedules substantially increased the average number of HIV tests/day in men. If home-based HIV testing programmes emerge as an important component of the public health response to the HIV epidemic, they will need to reach men in large numbers; our data indicate that non-traditional work schedules will be necessary.

## WEPEC217

### THE IMPACT OF THE SCALE UP OF VOLUNTARY MEDICAL MALE CIRCUMCISION SERVICES ON MEN'S POPULATION-LEVELS OF HIV-TESTING IN RURAL ZAMBIA, 2009-2013

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**Background:** In response to recommendations by the World Health Organization, voluntary medical male circumcision (VMMC) services were launched in Zambia in 2009. Men opting to undergo VMMC are offered provider-initiated HIV-testing services (PITC) prior to circumcision. Scaling-up VMMC has the potential to increase population-levels of HIV-testing amongst all men, both directly (through the offer of PITC at VMMC services) and indirectly through normalising knowledge of ones HIV-status. The aim of this study was to assess how VMMC services contribute to uptake of HIV-testing among men.
**Methods:** We conducted an integrated analyses of programmatic data, systematic observations and population-based surveys, to describe VMMC service scale-up, including delivery, promotion and uptake, in 42 study sites in three districts. Using a 2013 population-based survey, we describe HIV-testing behaviours of men reporting circumcision between 2009 and 2013 and men reporting that they are not circumcised. We used cluster-level summary analyses to investigate whether VMMC scale-up was associated with higher levels of recent HIV-testing within 12 months prior to the survey.
**Results:** VMMC services were delivered in 62% (n=26) of study sites. Posters were observed in 58% (n=15) of sites where VMMC was delivered. No other promotional activities were observed in these sites. Between 2009-2013, 6% (n=138) of men were circumcised. Being recently circumcised was strongly associated with ever-testing for HIV, with 86% (n=118) of recently circumcised men ever-testing compared with 59% (n=1222; p< 0.01) of uncircumcised men. An estimated 45% (n=53/118) of circumcised men had HIV-tested before the year of their circumcision. The cluster-level mean of VMMC was 8% in sites where VMMC was delivered compared to 5% in sites where services had not. The cluster-level mean of recent HIV-testing was 33% compared to 30% (p=0.30), respectively.
**Conclusions:** VMMC scale-up has provided men with access to HIV testing services. Yet this study shows no evidence that scale-up is associated with increased population-levels of HIV-testing. This may be because relatively few men were circumcised and a high proportion had tested for HIV prior to being circumcised or because men in sites where VMMC services were not known to be delivered accessed services through alternate providers.

## WEPEC218

### PROVISION OF ORAL HIV SELF-TEST KITS TRIPLES UPTAKE OF HIV TESTING AMONG MALE PARTNERS OF ANTENATAL CARE CLIENTS: RESULTS OF A RANDOMIZED TRIAL IN KENYA

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**Background:** Kenyan women have higher HIV prevalence than men (6.9% vs. 4.4%) with 4.8% of married/cohabitating couples serodiscordant. Partner's HIV status is unknown to 42.2% of pregnant women. Antenatal care (ANC) attendance is nearly universal (95.4% attend first ANC). In 2012, 95% of Kenyan ANC clients were offered and accepted HIV testing. Despite a policy promoting male partner testing in ANC only 6% of male partners are tested. We evaluated the impact of using oral HIV self-testing on HIV testing among male partners of ANC clients in Kenya.
**Methods:** In a three-arm randomized controlled study in 14 ANC sites in Eastern and Central Kenya, consenting women at first ANC were randomized to either: Group 1 receiving standard-of-care; Group 2 receiving a card stating the importance of male HIV testing in prevention-of-mother-to-child-transmission; or Group 3 whose participants received the same card plus two OraQuick® HIV oral test kits with instructions for testing with the partner at home. Consenting women completed a baseline questionnaire and endline questionnaire after three months. Consenting male partners were surveyed three months after enrolling ANC clients. The primary outcome was male partner HIV testing, by any means, within three months after ANC client enrollment.
**Results:** 1410 women were randomized. At the time of analysis, 756 have been followed up and 669 men responded to the survey (623 couples). Baseline characteristics of the men in three study groups did not differ. (p>0.05). Of the 669 men surveyed, In Group 3, 83% of men reported having taken a HIV test, compared to 28% in Group 1 and 36% in Group 2 (p-value< .001) (overall 48%, n=326). Most men testing for HIV indicated testing together with their partner regardless of the study group. --information that was corroborated by the female partners. Of the men using HIV self-test kits, over 90% reported it was very easy to take a swab and read the test results.
**Conclusions:** Preliminary results indicate that the ANC platform offers a unique opportunity to increase HIV testing among men using oral self test kit. By increasing male partner testing, the potential exists to reduce mother-to-child-transmission and other new infections among adults.

## WEPEC219

### MOONLIGHT HIV COUNSELING AND TESTING INCREASES HIV TESTING UPTAKE AMONG MEN

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**Background:** Despite global recognition of male involvement as a key priority area in the fight against HIV/AIDS, available scientific evidence indicates low uptake of HIV counseling and testing (HCT) among men even in settings like maternal and child health (MCH) clinics where it is fully encouraged. We set out to compare male HCT uptake for two testing approaches; PITC in MCH clinic and moonlight HCT.
**Methods:** By March 2012, AIDS Healthcare Foundation (AHF) had scaled up a test and treat project in Masaka-Uganda. AHF strengthened Provider Initiated Testing and Counseling (PITC) at the Masaka regional Referral hospital's MCH clinic to encourage men test with their pregnant partners for HIV. In the same period, AHF rolled out moonlight testing (ML), specifically targeting men and the most at risk populations. HIV testing under the moonlight strategy begin at around 18:00 hours and runs to around 22:00 hours. We present here a comparison of HCT uptake by men in these two testing approaches (PITC at MCH and Moonlight HCT) for the period Jan 2015 to Nov 2015.
**Results:** In the study period, 24,336 individuals received HCT of which 6,489 (26.7%) were by moonlight HCT. Under both testing strategies, more than 86% of clients tested were aged ≥15 years, and HIV positivity was 3.1% and 2.8% for PITC and ML HCT respectively. In the reference period, 5,408 males received HCT of which 4529 (83.7%) were tested through moonlight HCT. Furthermore, of the overall testers at MCH, only 879 (4.9%) were males whereas 4,529 (69.8%) were male testers under ML HCT. HIV positivity was 4.1% and 1.9% for PITC and ML HCT respectively.

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**Conclusions:** Our findings indicate that moonlight HCT is most appropriate for men compared with VCT in MCH clinics. Male HIV positivity at static health facilities is higher than it is at generalized community outreaches and therefore, combination strategies are important to improve on early HIV diagnosis among men and promotion of PMTCT services.

## WEPEC220

### A PRELIMINARY EVALUATION OF THE HIV TESTING ALGORITHM IN THE IPM 027 TRIAL

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**Background:** The Ring Study (IPM 027) is a Phase III, multi-centre, randomized, double-blind, placebo-controlled safety and efficacy trial of a Dapivirine Vaginal Ring in healthy women. An HIV testing algorithm using serial rapid tests and Western Blot confirmation was implemented in the trial. The application and evaluation of the algorithm which was used to confirm HIV seroconversions will be discussed.
**Methods:** HIV testing was performed on venous blood samples collected from participants at all scheduled post-enrolment visits. Samples were first tested using the Determine™ HIV-1/2 rapid test. In the event of a reactive result, the same sample was tested using the FDA-approved OraQuick® Advance Rapid HIV-1/2 Antibody test. In the event of discordant results between the Determine and OraQuick rapid tests, the sample was tested using the Uni-Gold™ HIV-1/2 rapid test. If two reactive rapid test results were obtained, a sample was collected for Western Blot confirmation at a central laboratory. All results were reviewed by the HIV Seroconversion Monitoring Committee (HSMC) who provided consensus confirmation of HIV seroconversion. The HSMC could request repeat of the algorithm if the Western Blot result was indeterminate or additional testing to confirm seroconversion.
**Results:** 80.8% of the total number of cases identified as potential seroconversions (two reactive rapid tests) were confirmed to be HIV seroconversions based on the standard algorithm. 14.2% of cases identified as potential HIV seroconversions required repeat of the standard algorithm prior to being confirmed. 5% of cases identified as potential HIV seroconversions required additional tests outside of the standard algorithm prior to being confirmed.
**Conclusions:** The majority of HIV seroconversion cases could be confirmed based on the standard HIV testing algorithm and this demonstrates that the algorithm was robust and effectively implemented.

## WEPEC221

### INCREASED ACCESS TO TESTING AND KNOWLEDGE OF HIV STATUS IN DOMESTIC WORKERS AND JOB SEEKERS IN KWAZULU-NATAL

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**Background:** Most job seekers and domestic workers find it difficult to access health care due to their busy daily schedule as they find themselves spending hours in queues waiting to apply for jobs or finish work after the clinic has closed. The purpose of this initiative was to increase HCT (HIV Counselling and Testing) uptake among domestic workers and job seekers.
**Methods:** : A Quality Improvement Project using the challenge model was used in a suburban public sector primary clinic in Durban that has a total catchment population of 6799. Staff were coached and mentored to do bottle neck analysis and were asked to propose solutions to enhance access to HCT services. A decision was made to implement HCT through community outreach, which was implemented in August 2015. Outreach areas were visited once weekly. The HCT outreach programme was expanded to include cervical cancer screening and condom distribution. Health services were provided to clients waiting in queues either applying or awaiting responses to job applications. A room allocated to ensure privacy was used for service delivery and where unavailable, clients were taken to the clinic for procedures.
**Results:** An average of 225 clients (15-49 years) per month was provided with HCT prior to the outreach intervention and this increased to an average of 404 clients (15-49 years) per month post intervention. Condom distribution increased from an average of 5360 per month to 11160 per month and an increase in cervical screening from an average of 6 clients per month to 16 clients per month. All (100%) of clients received their cervical cancer screening results and 28 women (6%) were referred to hospital for further management as required.
**Conclusions:** HCT community outreach services contributed to an increased number of people knowing their status, increased screening for cervical cancer screening and enhanced access to condoms.

## WEPEC222

### TARGETING HIV TESTING AT A POPULATION LEVEL: A COMPARISON OF THREE APPROACHES

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**Background:** Targeted HIV testing has been proposed as the most efficient strategy to diagnose HIV infected subjects in low prevalence populations. The present work aimed to compare the accuracy of three different HIV testing targeted approaches previously validated to predict HIV infection.
**Methods:** All participants in DRIVE study (a non targeted HIV testing programme in Emergency Department and Primary Care Centre -PCC-), were tested for HIV and filled out a self-administered questionnaire on HIV risk of exposure and clinical indicators (RE&CI). The RE&CI questionnaire included 6 questions to evaluate the risk of exposure to HIV and others to asses 14 HIV associated clinical indicators (from the HIV Indicator Diseases across Europe Study -HIDES- list). One positive item defined the patient at being at risk for HIV. The other two tools considered were: Denver HIV Risk score (DHRS) with a Cut-off>30 and HIDES using only 14 clinical indicators. We calculated Sensitivity (Sn), Specificity (Sp), positive predictive value (PPV) and negative predictive value (NPV) of the three tools, considering the gold standard confirmed cases of HIV infection with EIA/WB. Number of missed HIV infections (NMHI) and tests avoided were also calculated.
**Results:** 5,329 participants between 18-60 years old completed paired valid RE&CI questionnaires and rapid HIV tests in the DRIVE study (69.3% in the PCC). 50.4% were women and median age 37 (28-47) years. Confirmed new HIV diagnoses were detected in 22 subjects (4.1‰) with this non-targeted strategy. The percentage of the population identified to be at risk for HIV infection by a positive questionnaire, DHRS>30 and with at least one item of 14 HIDES list selection was 51.2%, 39.7%, and 26.9%, respectively. Sn, Sp, PPV, NPV, NMHI and test avoided were 100%, 49%, 0.80%, 100%, 0 and 2,601 respectively in RE&CI questionnaire approach, 72.7%, 60.41%, 0.76%, 99.8%, 6 and 3,212 in DHRS, and 91%, 74.4%, 1.4%, 99.9%, 2 and 3,948 in 14 items of HIDES list.
**Conclusions:** All three tools avoided HIV tests, but only the questionnaire captured all HIV-infected subjects detected by the non-targeted strategy. A selection of HIDES list presented a high sensitivity, and was able to avoid the highest number of tests.

## WEPEC223

### WHAT ROLE DOES HIV SELF-TESTING (HIV-ST) HAVE FOR MEN WHO HAVE SEX WITH MEN (MSM) IN THE UK? TESTING NEEDS, SOCIAL NORMS AND BIOLOGICAL CITIZENSHIP

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**Background:** Continuous monitoring of health is increasingly an expectation of responsible patient citizenship. This is particularly true for those deemed to be 'most' at risk by the epidemiological and public health sciences. HIV testing among MSM in the UK may be understood as an obligation, and a requirement for participation in gay male culture.
**Methods:** Six focus group discussions (FGD) were conducted between July and November 2015 with 47 MSM aged between 18 - 64 in London, Manchester and Plymouth. MSM were purposively sampled based on HIV testing history, sexual orientation and ethnicity. FGDs covered HIV testing behaviour, HIV-ST intervention preferences and perceptions of HIV-ST in relation to other testing opportunities. FGDs were recorded and transcribed verbatim, then subjected to a narrative analysis using NVivo10.
**Results:** MSM's narratives identified three main rationales for testing for HIV: in response to risk, to seek reassurance (to 'double check'), and to conform to expectations of the medical establishment and peer groups.

When men were not confident in receiving a negative result, health care staff support was highly valued and emphasized as a crucial part of an HIV testing intervention. Concerns regarding lack of such support therefore undermined HIV-ST's role following a risk event.
Instead, HIV-ST was accepted as a technology facilitating the risk management and social expectations of medical practitioners and peers. It rarely met the goals or needs of individuals, as most do not lack access to appropriate HIV testing, but was highly acceptable despite this. HIV-ST was presented as shifting the surveillance of risk into the home creating new obligations in relation to biological citizenship.
**Conclusions:** The role of HIV-ST for MSM in the UK will likely be partly limited to testing when MSM do not perceive themselves to be at risk of infection. Instead, self-testing offers reassurance. Whilst not mobilised in response to high risk occurrences in practice, self-testing enables MSM to demonstrate responsible citizenship in keeping with public health and social expectations of ongoing risk monitoring. This implies that self-testing extends the reach of risk governance from the clinic into the home but without necessarily impacting as envisaged by public health.

## WEPEC224

### THE REASONS FOR NOT HAVING RECOURSE TO HIV TESTING FOR KEY POPULATIONS IN MOROCCO

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**Background:** In Morocco, despite tremendous efforts of Civil Society and Ministry of Health, 65% of people living with HIV (PLHIV) don't know their serostatus. HIV Testing is offered free of charge, in Morocco, in NGOs (anonymously), hospitals and primary health care centers by trained physicians using rapid testing technology. Hence the need to diversify and multiply HIV testing services (HTS) and to explore barriers to HIV Testing.
**Methods:** Association de lutte contre le Sida (ALCS), the leading NGO for HTS in Morocco, conducted in 2015 a pilot project to study the feasibility and acceptability of trained lay providers community based HIV testing and counseling (LPCB-HTC). Users of the new service were asked to complete a questionnaire rating the experience and exploring the barriers to HIV testing.
**Results:** 5275 participants used the service and completed the questionnaire, including 2016 Female Sex Workers (FSW), 1903 Men who have Sex with Men (MSM) and 762 Sub-Saharan Migrants (SSM). Only 32% have been already tested for HIV before (37.5% for SSM, 34.5% for MSM and 29.1% for FSW). Participants aged of 25 years old and above are more likely to have been tested in the past than younger.
Out of the first testers, 48% reported that they have never been tested before because they did not know that a free and anonymous HIV testing was available or did not know where it was available and 21% that they were afraid of the potentially stigmatizing attitude of the Health Care Professionals. This was more important for women than men (18.2% Vs 22.7%) but was not perceived as a barrier for SSM who only reported this reason by 10% of them.
**Conclusions:** Reducing the harm of stigma and discrimination inside the health care system is still a challenge and a barrier to expand HTS, as well as the information on the availability of the services. This should be taken into account by decision makers in order to scale up HTS in Morocco

## WEPEC225

### EVALUATING TESTING STRATEGIES FOR IDENTIFYING HIGH-RISK YOUTH AND LINKING YOUTH TO PREVENTION

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**Background:** In the United States, half of the estimated 62,000 youth living with HIV are unaware of their HIV status. We examined preliminary results from a pilot study of three strategies to encourage testing among high-risk racial minority young men who have sex with men (YMSM) ages 13 to 24 taking place in 13 urban United States' cities (Connecting to Testing and Prevention or C2TaP).
**Methods:** Data on 1750 adolescents were collected from 13 C2TaP sites during the second quarter of program implementation. Sites implemented one of three testing strategies: (1) routine testing in high-volume settings that attract youth such as school-based health centers (Mass Routine Testing. N=2 sites; 436 youth); (2) routine testing in addition to community-based testing events (Combination Testing. N=7 sites; 685 youth); (3) targeted community-based testing events including explicit outreach (Specific Targeted Testing. N=3 sites; 414 youth). Models were compared to one another on the proportion of YMSM and youth of color tested, proportion of HIV-positive cases identified, and proportion of youth successfully linked to community prevention services using Z-tests of differences in proportion with $p < .05$ as criterion for determining statistical significance. Eleven of twelve tests performed met this criterion.
**Results:** Specific Targeted Testing proved the superior strategy on nearly every outcome assessed in comparison to other testing models. 6% of youth tested via Specific Targeted Testing were identified as HIV-positive compared with 1% using Combination Testing and none using Mass Routine Testing. Specific Targeted Testing produced superior results for reaching youth of color (98% vs. 94% Mass Routine and 70% Combination) and linking negative youth to prevention (94% vs. 41% Mass Routine and 85% Combination). Specific Targeted Testing and Combination Testing performed equally well in reaching YMSM (53% vs 56%) and better than Mass Routine Testing (1%). Overall, Combination Testing produced superior outcomes compared to Mass Routine Testing.
**Conclusions:** Although preliminary, these early findings suggest targeted testing efforts may be worth their cost and effort for identifying HIV-positive youth and linking high-risk negative youth to prevention services. More rigorous studies to establish the promise of these strategies for reaching high-risk YMSM and youth of color are warranted.

## WEPEC226

### HIV EQUAL™ (HIV=™) ZIMBABWE: FIGHTING HIV STIGMA AND DISCRIMINATION USING A NOVEL AND INNOVATIVE APPROACH TARGETING ADULT GIRLS AND YOUNG WOMEN

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**Background:** HIV stigma and discrimination in Zimbabwe has been a significant deterrence to getting Adult Girls/Young Women (AGYW), as well as men and vulnerable populations, HIV tested. Nationwide, 11.8% of men have been tested, and the HIV infection prevalence is greatest in youth 13-24 years old. HIV=, a World Health Clinicians, Inc. (WHC) and BEAT AIDS Project Zimbabwe (BAPZ) initiative, is a testing and anti-stigma photographic campaign, launched in the US in Oct 2013, in Victoria Falls (VF), Zimbabwe in Dec 2013, and nationwide in ZIM in Oct 2015.
**Methods:** In the HIV= campaign, participants must get HIV tested and demonstrate proof of HIV-positivity to then have a free HIV= photograph taken. Each photo proclaims, "Everybody has an HIV Status. We are All HIV Equal", meaning God loves everybody, regardless of their HIV status. Each individual then chooses a "STATUS" word that describes one positive attribute about themselves. All participating individuals get a free HIV= T-shirt that stimulates conversation about what it means to be "HIV Equal".
**Results:** From Dec 2013 to June 2015, 8 HIV testing and counseling / HIV= events (2 in the Victoria Falls municipality, 6 in the Hwange district rural health clinics) were conducted. 1262 individuals (range 58-586) were HIV tested, with 41.8% men, 48.4% AGYW (13-24 yrs), 9.8% children (under 13), and 20% orphans/vulnerable children were tested and photographed.
At the request of the Ministry of Healkth and Child Care and the National AIDS Council, the HIV= campaign was nationalized, targeting AGYW and youth in two high-density suburbs of Harare with live Zimbabwean music and the most popular ZIM artists. 1564 individuals were HIV tested (1175 in one 8-hour event), 76% AGYW, and 2355 photos and T-shirts were given out. All individuals were linked immediately to care with the participating NGOs and city health departments.
A video will be shown.
**Conclusions:** The novel and innovative HIV Equal testing and photographic campaign has proven successful in targeting and testing vulnerable populations, AGYW, and men. Ten events in the 10 ZIM Provinces are planned for 2016.

## WEPEC227

### COULD PREP ENCOURAGE HIV TESTING? A QUALITATIVE STUDY OF HIV TESTING ATTITUDES AND PREP ACCEPTABILITY AMONG SOUTH AFRICAN YOUTH

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**Background:** HIV testing among South African youth is low, despite high prevalence and incidence. Studies are considering safety of pre-exposure prophylaxis (PrEP) for youth. We examined how fears of HIV testing may affect future PrEP uptake among South African young people, and how PrEP access may simultaneously shape HIV testing in a generalized epidemic.
**Methods:** We conducted focus groups and interviews exploring youth PrEP acceptability with at least 20 HIV-negative and HIV-positive adolescents, and at least 17 clinicians serving youth in Cape Town. Youth were aged 16-17, approximately 60% female, and recruited via door-to-door sampling and clinic settings. We approached clinicians through networks and snowball sampling. Adolescent focus groups and interviews discussed HIV testing attitudes, willingness to use PrEP or support partner use, and predicted user behaviors. Clinician interviews explored willingness to prescribe PrEP and predicted behaviors among young PrEP users. We analyzed qualitative data thematically using NVivo.
**Results:** Among some youth, the need for HIV testing before and during PrEP use may initially deter uptake. Teens reported stigma and fear associated with testing, and anticipated discrimination by clinicians who disapprove of adolescent sex. Teens' testing fears included concerns about testing positive, but also ongoing anxiety among people testing negative, given concern about avoiding infection in a high-prevalence population. Some teens may prefer condoms over PrEP to avoid testing. Clinicians and youth also noted that as PrEP uptake increases, PrEP access may reduce fear and stigma associated with testing, as well as violence and rejection associated with status disclosure. Youth believed PrEP access would motivate increased testing, and PrEP could alleviate anxiety associated with testing negative in a generalized epidemic. Clinicians also suggested that PrEP could reframe testing as part of a preventive intervention, rather than solely identifying status.
**Conclusions:** If PrEP becomes available for youth, the need for initial and ongoing HIV testing may deter some teens. But as PrEP access expands, its availability may motivate increased testing among youth in generalized epidemics. Future research should examine how PrEP access affects testing. If youth PrEP becomes available, efforts to increase HIV testing in South Africa may advocate testing as a gateway to PrEP.

## WEPEC228

### CAN WOMEN SAFELY DISTRIBUTE HIV ORAL SELF-TEST KITS TO THEIR SEXUAL PARTNERS? RESULTS FROM A PILOT STUDY IN KENYA

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**Background:** Studies conducted in multiple settings and populations indicate that HIV self-testing is acceptable and feasible. One study in the US reported that men who have sex with men can distribute self-tests to their sexual partners to promote partner and couples testing. A pilot study in Kenya demonstrated the feasibility of this strategy among women who were given multiple self-tests. However, there is a need to assess concerns that women may experience intimate partner violence (IPV) as a result of distributing self-tests to their sexual partners.
**Methods:** HIV-uninfected female sex workers (FSW) and antenatal clinic (ANC) and postnatal clinic (PNC) attendees were enrolled at multiple sites in Kisumu, Kenya. Women who self-reported a concern about experiencing IPV were excluded. FSW were given 5 Oraquick oral fluid-based self-tests while ANC and PNC women were given 3 self-tests. Study staff demonstrated how to use self-tests and each self-test included pictorial usage instructions. Women were also counseled to use their discretion and assess IPV risk when determining whether to introduce self-tests to their sexual partners. At 3 months, women were asked about self-test usage as well as experience of IPV and its relation to distribution of self-tests.
**Results:** 280 women were enrolled and the majority (95% FSW, 93% ANC and 86% PNC) reported distributing self-tests to their primary sexual partner. Reported IPV during 12 months before enrollment was 44%, 27% and 46% among FSW, ANC and PNC women, respectively. At follow-up, 13% of ANC, 16% of PNC and 21% of FSW reported IPV in the 3 months since study enrollment. However, the vast majority (85%) of women reporting IPV at follow-up had also reported IPV at baseline and only four of the women attributed the occurrence of IPV to distribution or attempted distribution of self-tests.
**Conclusions:** Even in a population with high underlying IPV rates, women were able to safely distribute self-tests to their sexual partners. As more women than men attend services at health facilities, providing them with multiple self-tests for secondary distribution is a safe and highly promising strategy for increasing HIV testing among men.

## WEPEC229

### HOME VISITING AS A STRATEGY TO INCREASE HIV TESTING UPTAKE AMONG VULNERABLE CHILDREN AND THEIR CAREGIVERS: RESULTS FROM A RANDOMIZED CONTROLLED TRIAL IN SOUTH AFRICA

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**Background:** Early initiation of antiretroviral therapy is recommended, but requires timely diagnosis. Fear of the outcome, lack of knowledge of the benefits and other intrapersonal concerns may prevent some adults from getting themselves or their children tested. Home visiting programs that offer one-on-one support and education from trained care workers have the potential to help mitigate some barriers to testing.
**Methods:** A randomized controlled trial was conducted to evaluate a home visiting program operating in urban townships of South Africa for its effectiveness to increase uptake of HIV counselling and testing services. Care workers made bi-weekly visits to the homes of children affected by orphanhood, poverty and adult chronic illness to connect those families with essential services, including HIV testing. Survey data were collected prior to program commencement in 2014 and after a year of service delivery. Equal numbers of households were randomized to receive or be waitlisted for services. Random effects models, stratified by age and gender, estimated program participation effects. 431 caregivers (92% female) completed both the baseline and impact surveys (90% retention rate) providing data on 1220 children under their care.
**Results:** Caregivers who received home visits were three times more likely to have been tested for HIV in the prior year at follow-up than caregivers in the control group (OR=3.3, 95% CI=1.6-6.6). Findings were particularly stark among intervention group caregivers younger than 35 years, as they were ten times more likely (OR=10.3, 95% CI=2.3-45.5) to have been tested than control group caregivers. Program effect did not vary by caregiver gender. Children whose caregiver both participated in the home visits and had been tested in the previous year, were more than four times more likely to have ever been tested at follow-up than other children (OR=4.7, 95% CI=1.2-18.3).
**Conclusions:** HCT is an essential stepping stone to care and treatment, but significant intrapersonal barriers to access exist. Our findings suggest that caregiver testing is a necessary precursor to child testing and demonstrate that community-based social service programs targeted to vulnerable populations can be effective in mobilizing caregivers to have themselves and their children tested for HIV.

## WEPEC230

### DRIVING HIV TESTING AMONG HIGH-RISK GAY AND BISEXUAL MEN IN NEW ZEALAND: NATIONAL HIV TESTING MONTH

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**Background:** HIV transmission in New Zealand is concentrated among gay, bisexual and other men who have sex with men (GBM). Although past HIV prevention efforts have kept HIV prevalence and incidence low compared to other countries, evidence suggests that sexual risk-taking may be rising among GBM and that reducing the levels of undiagnosed HIV within sexual networks is necessary to realise the preventative benefits of early treatment. As part of a combination approach to preventing HIV, the New Zealand AIDS Foundation (NZAF) developed *National HIV Testing Month*, an integrated social marketing campaign, to increase rates of HIV testing among this group.
**Description:** Formative research was used to identify lack of perceived risk as a key barrier to HIV testing among high-risk GBM. Responding to this barrier, highly relevant and engaging content was created around the frequently Googled question, "Why are gay guys more prone to HIV?" This was supported this with a video that demystified the testing process and a mobile-friendly online booking form.

Advertising was placed on bus stops, street posters, gay venues, gay news sites, social media and hook-up apps. Online advertisements were shown 2.6 million times, generating 15,492 website clicks over the campaign month.
**Lessons learned:** Appointments booked online at NZAF clinics increased 218% from a monthly average of 186 to 592 in May 2015, creating a large overflow and appointment waitlist into June. 311 and 190 GBM were tested in the months of May and June, representing an increase of 130% and 41% respectively on the previous monthly average of 135 tests. Two GBM clients were diagnosed HIV positive in each month of May and June, a slight increase on the monthly average of 1.4.
**Conclusions/Next steps:** *National HIV Testing Month* was effective at driving HIV testing behaviour among GBM, however the increase in diagnosed positives was noticeably less than the increase in tests completed, indicating that GBM who engage in sexual risk-taking may not have been effectively engaged. Future social marketing efforts to promote HIV testing should explore addressing multiple barriers to HIV testing among GBM, as well as motivations, to drive behaviour among this group.

## PEP

### WEPEC231

#### DOLUTEGRAVIR WITH TENOFOVIR DISOPROXIL FUMARATE-EMTRICITABINE AS HIV POST-EXPOSURE PROPHYLAXIS IN GAY AND BISEXUAL MEN

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**Background:** Completion rates for HIV post-exposure prophylaxis (PEP) are low. We investigated the adherence to and safety of dolutegravir (DTG) 50mg daily with tenofovir disoproxil fumarate 300mg/emtricitabine 200mg (Truvada©) as PEP in gay and bisexual men (GBM).
**Methods:** We conducted an open-label, single-arm study at 3 sexual health clinics and 2 emergency departments in Australia. One hundred HIV-uninfected GBM requiring PEP received DTG plus Truvada for 28 days. The primary endpoint was PEP failure (premature PEP cessation or primary HIV infection through Week 12). Additional endpoints were: adherence by self-report (n=98) and pill count (n=55); and safety (clinical and laboratory adverse events [AEs]).
**Results:** PEP completion was 90% (95%CI 84% to 96%). Failures comprised loss to follow-up (9%) and one AE resulting in study drug discontinuation (headache, 1%), and occurred at a median 9 days (IQR 3-16). No participant was found to have acquired HIV through Week 12. In the 55 participants with complete adherence data, adherence was 98% by both pill count and self-report. In the further 43 participants with self-report data only, adherence was 97%. The most common clinical adverse events (AEs) were nausea (25%), diarrhoea (21%), headache (10%), abdominal cramping (9%), wind (9%), and vivid dreams (7%). There were only four Grade 3-4 subjective AEs. The most common laboratory AE was raised alanine aminotransferase (25%), but there was only one Grade 3-4 ALT increase and no case of clinical hepatitis. An eGFR of < 60 mL/minBSAc occurred in 3%.
**Conclusions:** DTG with Truvada was safe and well-tolerated as once-daily PEP with high levels of adherence and completion.

### WEPEC232

#### KNOWLEDGE OF POST-EXPOSURE PROPHYLAXIS AMONG SOUTH AFRICAN MEN WHO HAVE SEX WITH MEN: RESULTS OF AN ONLINE SURVEY

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**Background:** The Soweto Men's Study (2008), demonstrated an overall HIV prevalence rate of 13.2%, with 10.1% among straight-identified Men-who-have-sex-with-men (MSM), 6.4% among bisexual-identified MSM and 33.9% among gay-identified MSM. Behavioral interventions are imperative, but insufficient to prevent new HIV infections. Biomedical prevention of HIV offers a variety of combination prevention tools, including Post-Exposure Prophylaxis (PEP). PEP studies amongst MSM have been conducted in Amsterdam, Brazil and San Francisco, but never before in Africa.
**Methods:** A cross-sectional, Internet-based survey was initiated to measure knowledge, attitudes and beliefs regarding PEP among South African MSM. Recruitment was commenced in June 2014 until October 2015. Participants were recruited through banner advertisements on Facebook.com and mambaonline.com, advertisements in the local gay media and at Health4Men (H4M) MSM-targeted clinics. Outreach workers distributed flyers advertising the study in their local communities. The survey was also made available on a computer at the H4M clinics in Cape Town and Johannesburg to reach MSM who may not have Internet access.
**Results:** 408 men completed the survey. The majority of these men were under the age of 40, identified as gay/homosexual and were employed. 51% (208/408) self identified as black or of mixed race. In multivariate analysis participants who identified as gay had greater odds of having previously heard of PEP (AOR 1.91, 95% CI 1.04, 3.51; p = 0.036), as did those who reported their HIV status as positive (AOR 2.59, 95% CI 1.47, 4.45; p = 0.001). Participants with medical insurance had greater odds of having used PEP previously (AOR 2.67, 95% CI 1.11, 6.43; p = 0.029). Bivariate analysis showed that condomless sex in the past 6 months was not significantly associated with PEP knowledge (p = 0.75) or uptake (p = 0.56) of PEP.
**Conclusions:** Our findings suggest a lack of PEP knowledge and uptake among non-gay identified, HIV negative and un-insured MSM. Focusing PEP programs on these men may potentially increase uptake. Increased knowledge needs to be provided to MSM who engage in risky sexual behaviors.

## PREP

### WEPEC233

#### ARE PRIMARY CARE PROVIDERS IN THE SOUTHEASTERN U.S. READY TO PRESCRIBE PREP?

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**Background:** The U.S. Public Health Service recently issued guidelines about daily use of medication as pre-exposure prophylaxis (PrEP) to prevent HIV infection, and recommended that physicians, including primary care physicians (PCPs), offer PrEP to high-risk patients. Although there has been an increase in PrEP uptake, the CDC cites that 34% of PCPs have never heard of PrEP. We assessed the knowledge, attitudes and beliefs regarding PrEP in a large network of primary care clinics in the Southeast, which continues to have the highest rates of HIV in the U.S.
**Methods:** An online survey using Qualtrics software was emailed to PCPs in the Duke University Primary Care Network, Duke Private Diagnostic Center, and Duke Internal Medicine Program located in Durham, North Carolina. The survey consisted of 12 multiple choice questions aimed at understanding sentiments towards PrEP and potential barriers to its implementation in primary care clinics. No incentive was provided.
**Results:** Of 389 PCPs surveyed, 115 (30%) responded representing 24 clinical sites: 44% were faculty physicians, 42% resident physicians, 7% physician assistants, and 6% nurse practitioners. 78% reported seeing patients who are men who have sex with men (MSM); 12% said they did not see MSM, and 10% were not sure. Only 17% had prescribed PrEP. In response to why providers had not prescribed PrEP, 60% cited lack of knowledge, 56% said they had no candidates, and 42% mentioned lack of comfort in prescribing PrEP. Providers said that they would be more likely to prescribe PrEP if they had additional training (74%), reference materials (56%) and an infectious disease consultation by phone or pager (26%).
**Conclusions:** PrEP is a medication that has been shown to successfully prevent HIV in high-risk populations, but is not currently being prescribed by clinicians associated with a large academic US hospital in a regional epicenter for HIV. Although the majority of PCPs state that they see MSM in their practice, most respondents still did not prescribe PrEP. Our results indicate that lack of knowledge is the primary reason for not prescribing PrEP, but providers were open to additional education and reference materials.

## WEPEC234

### UPTAKE AND PREFERENCE OF DAILY AND INTERMITTENT PRE-EXPOSURE PROPHYLAXIS (PREP) IN A DEMONSTRATION PROJECT: BASELINE CHARACTERISTICS AND HIV PREVENTION CHOICES MADE BY DUTCH MSM

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**Background:** Information on the uptake and use of Pre-Exposure Prophylaxis (PrEP) provided by a large sexually transmitted infection (STI) clinic is limited and insight into key populations' preferences for daily or intermittent, event-driven PrEP in a real-life setting is lacking. We studied the uptake and acceptability of daily and intermittent PrEP in the Amsterdam PrEP (AMPrEP) project, a demonstration project.
**Methods:** In August 2015 enrollment into AMPrEP started at the STI clinic of the Public Health Service Amsterdam, the Netherlands. Eligible were men who have sex with men (MSM) who had, in the preceding 6 months, at least one of the following risk factors for HIV infection: condomless anal sex (CAS) with casual partners, rectal or urethral STI, Post-Exposure Prophylaxis, or having an HIV-positive partner with a detectable viral load. Eligible participants choose between tenofovir/emtricitabine PrEP daily and intermittent (IPERGAY schedule) usage modalities. Data collected until 19 January 2016 were analyzed.
**Results:** During the first 24 hours after announcement of AMPrEP 350 applications were submitted and in the next 4 weeks 185 applications, totaling 535 applications. As of 19 January 2016, 237 applicants had had a screening visit. Of those, 13 were not eligible, 6 withdrew, 20 were awaiting screening results and 198 started PrEP. Median age, STI at baseline and sexual behaviour characteristics are reported in the table.

| Characteristic | Total n=198 | Daily PrEP n=144 | Intermittent PrEP n=54 | p-value |
|---|---|---|---|---|
| Median age in years [IQR] | 41 [34-50] | 38 [33-48] | 44 [36-55] | 0.015 |
| One risk factor for HIV infection in the preceding 6 months - no. (%) | 124 (63) | 83 (58) | 41 (76) | 0.018 |
| >1 risk factor for HIV infection in the preceding 6 months - no. (%) | 74 (37) | 61 (42) | 13 (24) | |
| Bacterial STI at baseline -no. (%) | 40 (20) | 30 (21) | 10 (20) | |
| Hepatitis C RNA at baseline -no. (%) | 8 (4.0) | 6 (4.2) | 2 (3.7) | |
| Median number of unique anal sex partners [IQR] | 13 [7-25] | 15 [8-26] | 10 [5-19] | 0.017 |
| Receptive CAS with a casual partner | 134 (68) | 103 (72) | 31 (57) | 0.058 |
| Median number of receptive CAS partners in preceding 3 months [IQR] | 2 [0-7] | 2 [0-7] | 1 [0-4] | 0.037 |
| Sex-related drug use of 2 or more different hard drugs | 119 (60) | 84 (58) | 35 (65) | 0.407 |

*[Baseline Characteristics of Amsterdam PrEP Project Participants]*

Hepatitis C prevalence of 4% was higher than expected. Three quarters (144) of the participants chose to start daily PrEP. Daily users were younger (38 vs. 44 years) and reported more unique anal sex partners in the preceding 3 months (15 vs. 10). The proportions using sex-related hard drugs were comparable.
**Conclusions:** In the Netherlands, interest for PrEP use among MSM is high. Most participants preferred daily PrEP. Participants choosing daily PrEP were younger and reported more anal sex partners than those who chose intermittent PrEP.

## WEPEC235

### AWARENESS AND ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS (PREP) AMONG MEN WHO HAVE SEX WITH MEN IN TAIWAN

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**Background:** Oral pre-exposure prophylaxis (PrEP) is highly effective in reducing HIV infection risk among men who have sex with men (MSM). Despite escalating HIV prevalence among MSM in Taiwan, little is known about awareness and acceptability of PrEP, or possible barriers to using PrEP. We examined factors associated with awareness and acceptability of PrEP among MSM in Taiwan.
**Methods:** From July-August 2014, we conducted a cross-sectional, self-administered paper-and-pencil (30-minute) survey among a convenience sample of MSM recruited from two LGBTQ community-based organizations in Taipei and Taichung, Taiwan. Items included socio-demographic characteristics, sexual risk behaviors, vicarious HIV stigma, anticipated PrEP disclosure, and PrEP awareness and acceptability. Multivariate logistic regression was conducted with PrEP awareness and acceptability as dependent variables.
**Results:** Participants' (n=176) mean age was 27.4 years; 87.5% self-identified as gay. Nearly one-third (31.3%) of participants reported inconsistent condom use; mean number of male sex partners was 2.3, past 3 months. Nearly half (47.2%) were aware of PrEP. The majority (72.2%) would accept PrEP if it became available in the future. In multivariate logistic regression, higher income (>30,000 TWD; $893 USD) (AOR=0.36, 95% CI=0.16-0.80) and inconsistent condom use (AOR=0.34, 95% CI=0.14-0.81) were associated with lower odds of PrEP awareness, and having heard about MSM taking HIV medications before condomless sex prior to PrEP licensure (AOR=25.27, 95% CI=7.43-85.95) was associated with higher odds of PrEP awareness. Higher vicarious HIV stigma (AOR=2.47, 95% CI=1.34-4.56), and willingness to tell sex partners about using PrEP (AOR=6.08, 95% CI=2.30-16.06) were associated with higher odds of PrEP acceptability.
**Conclusions:** Our findings suggest the need for tailored educational and social marketing efforts to prepare for the introduction of PrEP for MSM in Taiwan. Some MSM were aware of off-label use of HIV medication for prevention; however, marshalling PrEP awareness may be particularly warranted among MSM who engage in condomless sex with multiple partners. The associations of stigma and anticipated disclosure of PrEP use with acceptability may reflect the collectivistic orientation of Taiwanese culture, and suggest that social marketing efforts consider emphasizing benefits to others as well as oneself in promoting PrEP acceptability.

## WEPEC236

### OPTIMAL TIMING OF RENAL FUNCTION MONITORING DURING PRE-EXPOSURE PROPHYLAXIS

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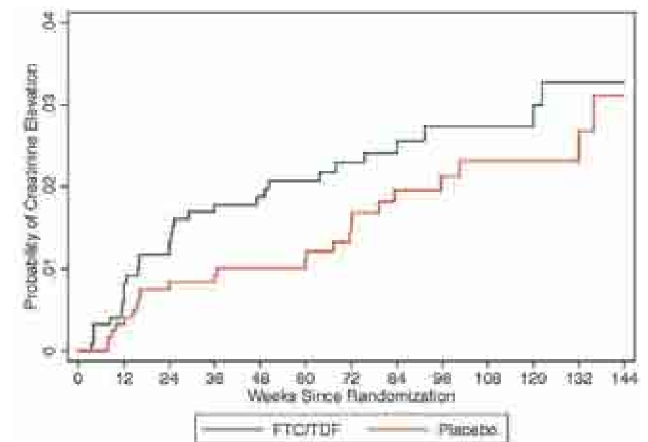
**Background:** Tenofovir disoproxil fumarate (TDF) used for HIV pre-exposure prophylaxis (PrEP) has a small effect on renal function, indicated by elevations in serum creatinine (Cr). The optimal timing of renal monitoring during PrEP has not been determined.
**Methods:** The iPrEx trial was a randomized blinded placebo controlled trial of daily oral emtricitabine (FTC) plus TDF PrEP among men who have sex with men and women, including transgender women. The active and placebo arms were compared to identify the onset and timing of Cr elevations.




*[Figure: Time on FTC/TDF PrEP and Cr Elevations]*

**Results:** Among 4553 participants screened, 96 (2%) did not enroll because of baseline renal insufficiency or proteinuria. A total of 2499 participants were randomized to receive FTC/TDF (N=1251) or placebo (N=1248). Cr elevations occurred among 32 (2.6%) in the active arm and 24 (2.2%) in the placebo arm (RR 1.35 95% CI 0.80 to 2.3). Among the placebo arms, Cr elevations occurred at a constant rate of 0.86/100 person years. The majority of excess Cr elevations in the active arm occurred between weeks 12 and 24 weeks of PrEP use (N=9, 0.7%, 95% CI -0.1 to 1.6%; see

figure), and all excess events occurred by 48 weeks. Cr elevations resolved within a median of 11 days (IQR: 7 to 24) on the active arm and 15 days (IQR: 7 to 25) on the placebo arm. Eighty percent on elevations on FTC/TDF were only for a single value and 80% never discontinued drug.
**Conclusions:** The findings support the recent World Health Organization PrEP implementation guidance suggesting Cr monitoring at 3 month intervals for 12 months and less frequently thereafter. The finding that most excess creatinine elevations occur after several months of dosing suggests that PrEP can be started in people who can be recontacted while baseline Cr testing is being performed.

## WEPEC237

### COMMUNITY- AND INDIVIDUAL-LEVEL CHALLENGES FOR HIV PRE-EXPOSURE PROPHYLAXIS (PREP) UPTAKE AMONG MSM IN MUMBAI, INDIA

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**Background:** Pre-exposure Prophylaxis (PrEP) is emerging as a new HIV prevention technology for most-at-risk groups, including MSM. HIV prevention strategies in India have focused on condom use and periodic HIV testing; however, MSM continue to be disproportionately affected. With high efficacy for preventing HIV infection, PrEP could be a significant addition to prevention programs in India.
**Methods:** From Oct-Dec 2014, we conducted five focus groups with MSM (n = 30) and five key informant interviews in Mumbai, India. MSM with diverse identities (*Kothi, Panthi*, Gay, and Bisexual) were recruited using purposive sampling. Focus groups and interviews were transcribed, translated into English, and analyzed thematically.
**Results:** Participants' mean age was 25.3 years and mean monthly income was INR 9500; 50% reported higher secondary education. Forty-three percent of the participants reported inconsistent condom use, 33% reported using water-based lubricants in the last year, and 23% were involved in sex work. Most participants (56%) were willing to use PrEP if available. The following community-level challenges emerged for PrEP uptake/implementation: affordability of PrEP, fear of PrEP users being judged by MSM community and family members as promiscuous/HIV positive/substance users, and risk of being outed as "PrEP users" (and thus as MSM) to family/wife. Key individual level challenges were fear of side-effects from long-term use and perceived lack of self-efficacy in adherence. Key informants highlighted ethical implications of providing PrEP in a scenario with frequent stock-outs of government-supplied free antiretroviral medications, risk compensation by individuals in the form of increase in the number of partners, lack of emphasis on condom use as well as concerns around disclosure of HIV status to steady partners.
**Conclusions:** Challenges identified highlight socio-cultural attitudes-particularly stigma toward homosexuality and people living with HIV. Ethical challenges around providing ARV as PrEP in resource-constrained scenarios too need to be mitigated as people living with HIV do not have adequate access to treatment. Future efforts to introduce PrEP among Indian MSM need to address social-structural as well as individual-level challenges for effective implementation and inclusion of PrEP into national HIV interventions.

## WEPEC238

### CHARACTERIZING BLACK MEN WHO HAVE SEX WITH MEN IN THE UNITED STATES WHO HAVE NEVER RECEIVED AN HIV TEST

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**Background:** Prevention and treatment responses to the high burden of HIV among Black MSM (BMSM) in the US require timely diagnosis of existing infection. Those unaware of their HIV-positivity, though a minority of BMSM living with HIV, are disproportionately represented in transmission and premature mortality. Understanding factors associated with never receiving an HIV test can inform efforts that routinize testing and link those diagnosed with HIV into care.
**Methods:** Promoting Our Worth, Equality, & Resilience (POWER) is cross-sectional observational study that recruits BMSM at Black Pride events in six US cities. Participants complete an anonymous questionnaire and are offered free, confidential HIV testing. Those who forgo testing are asked to provide an oral sample for anonymous HIV antibody testing; participants do not receive this test result. Multivariable analysis adjusted for sociodemographics, internalized homophobia, and depressive symptomatology. All analyses controlled for city and were weighted according to POWER's time-location sampling; we report unadjusted frequencies and weighted percentages.
**Results:** Our analytic sample included 2,675 BMSM who did not identify as HIV-positive. 243 (8.18%) had never received an HIV test (mean age = 29.05 years). Higher education was associated with increased odds of having received an HIV test (AOR=1.51, 95% CI: 1.33 - 1.70) and greater internalized homophobia reduced odds (AOR=0.75, 95% CI: 0.63, 0.90). Among those who never received an HIV test, greater age was associated with increased odds in assuming HIV-positivity (AOR=1.05, 95% CI: 1.01 - 1.09) and health insurance lower odds (AOR=0.19, 95% CI: 0.07 - 0.52). Though 202 (82.60%) received HIV testing through participation in POWER, a majority of those 202 testing (57.14%) elected not to receive their result. Greater age (AOR=1.07, 95%, 1.01 - 1.13), assumption of HIV-positivity (AOR=6.60, 95% CI: 1.72 - 25.23), and choosing not to receive HIV test result (AOR=2.83; 1.18 - 6.79) were all associated with increased odds of an HIV-positive test result (27.98%).
**Conclusions:** Relatively few BMSM had never received an HIV test, but this group had a high likelihood of HIV infection. Our results indicate need for alternative strategies that overcome existing barriers to providing needed HIV prevention and treatment to a group of underserved BMSM.

## WEPEC239

### PRE-EXPOSURE PROPHYLAXIS (PREP) AWARENESS AND USE AMONG A US BASED, MULTI-CITY SAMPLE OF BLACK MEN WHO HAVE SEX WITH MEN

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**Background:** Although Pre-Exposure Prophylaxis (PrEP) is an effective and available form of HIV prevention, this approach remains largely underutilized by individuals at-risk for HIV transmission. Further, there is limited empirical work that delineates what factors relate to PrEP awareness and uptake among populations in need. In this study, we sought to examine correlates of PrEP awareness and use among a large, multi-city, US-based sample of HIV negative/unknown status Black men who have sex with men (BMSM).
**Methods:** The current paper presents data from an ongoing multi-site, community-based sample of BMSM collected in 2014 (*N*=1,274) and 2015 (*N*=1,442) at Black Pride events in Atlanta, GA; Detroit, MI, Houston, TX, Philadelphia, PA, and Washington, DC. This study employed random time-location sampling to maximize representativeness of BMSM attending these events. Bivariate and multivariate generalized linear modeling were used to examine whether demographic factors (e.g. age, income, education) or sexual risk taking (frequency of condom use, receptive or insertive anal sex) factors were related to PrEP awareness and use.
**Results:** Awareness of PrEP increased between 2014 and 2015 (38%-52%), and use of PrEP increased between 2014 -2015 (4.6%-9.4%). Findings varied greatly across cities within the US. Our analyses demonstrated that greater frequencies of condom use during anal sex as the receptive partner and as the insertive partner were associated with a significantly greater likelihood of being aware of PrEP. Further, lower frequency of condom use during receptive anal sex was significantly associated with a greater likelihood of currently using PrEP.
**Conclusions:** Overall, awareness and uptake of this HIV prevention strategy continues to lag and evidence from our study suggests that PrEP may not be reaching those in greatest need of it; we found that lower frequencies of condom use were associated with less likelihood of being aware of PrEP. Importantly though, among BMSM who are using PrEP, it does appear to be reaching BMSM who could benefit most from it. In order to slow the HIV epidemic among BMSM, we must place greater emphasis on engaging all BMSM to ensure we are not missing those who are in greatest need of prevention interventions.

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## WEPEC240

### SIGNIFICANT HEALTH COMORBIDITIES IN BLACK MEN WHO HAVE SEX WITH MEN PRESENTING FOR A US PREP STUDY

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**Background:** HPTN 073 evaluated initiation, acceptability, safety, and feasibility of pre-exposure prophylaxis (PrEP) for Black men who have sex with men (BMSM) a group disproportionately impacted by the US epidemic.
**Methods:** A total of 226 HIV-uninfected BMSM in three US cities were enrolled between 8/2013 and 9/2014 and offered once daily oral FTC/TDF combined with a Client Centered Care Coordination counseling (C4) intervention. This analysis examined clinical reasons for study exclusion and pre-existing conditions among those enrolled, in order to inform programs designed to increase PrEP use among BMSM.
**Results:** A total of 118 BMSM (27.1% ≤ 25 years of age) were excluded from enrollment. Of those, 39.8% were excluded due to medical reasons, including 21.2% with abnormal liver or kidney function, 8.5% with other abnormal lab results, and 8.5% with other serious and active mental or medical illnesses. Those enrolled were younger (40.3% < 25 vs. 27.1%, $p< 0.02$) and more likely to have annual household incomes >$20,000 (50.9% vs. 36.5%, p=0.005) than those not enrolled. Among those enrolled (N=226), only 19.0% presented without pre-existing conditions. Nearly two-thirds (65.5%) had at least one clinically significant comorbidity at enrollment (Table 1). Psychiatric (29.6%), cardiovascular (15.0%), endocrine (4.9%), pulmonary (13.7%), neurologic (11.9%) and hepatic (5.8%) conditions were common. Nearly one-third (31%) had comorbidities in least two or more organ systems.

| | | Number of participants |
|---|---|---|
| Cardiovascular | Coronary artery disease, hypertension, Hypercholesterolemia, cardiomyopathy, a fib, bradychardia, heart murmur, Raynaud's Syndrome | 34 (15.0%) |
| Endocrine | Diabetes / pre-diabetes, hypogonadism, gout, gynecomastia | 11 (4.9%) |
| Renal | Proteinuria, kidney stones | 3 (1.3%) |
| Hepatic | Hepatitis C, elevated liver function tests | 13 (5.8%) |
| Pulmonary | Asthma / reactive airway disease | 31 (13.7%) |
| Psychiatric | Anxiety, depressions, attention deficit hyperactivity disorder, panic attacks, bipolar, dissociative identity disorder, post-traumatic stress disorder, schizoaffective disorder | 67 (29.6%) |
| Psychiatric | Substance abuse | 14 (6.2%) |
| Neurologic | Migraines, epilepsy / seizures, Bell's plasy, paresthesias, tremors, brain surgery (unspecified), coma, neuropathy, neuralgia, vertigo, sleap apnea | 27 (11.9%) |
| Gastrointestinal | Gastro-esophageal reflux disease, irritable bowel syndrome, proctitis, gastritis, peri-anal fistula, anal fissure, hemorrhoids, ulcer, diverticulitis | 22 (9.7%) |
| Hematology / Oncology | Neutropenia, anemia, benign tumor leg, thalassemia, Mastectomy (unknown reasons) | 12 (5.3%) |
| Genitourinary (excluding STIs) | Benign prostatic hypertrophy | 5 (2.2%) |
| Infectious disease / Rheumatologic | Skin abscess / boils, cellulitis, periodontal infections / gingival abscesses, prostate infections, sinus infections, recurrent otitis media, bacterial meningitis, staph infections, pneumonia, eye / corneal ulcers | 11 (4.9%) |
| Muskuloskeletal | Sciatica, arthritis, spinal fusion, herniated disk | 10 (4.4%) |
| Dermatologic | Eczema | 8 (3.5%) |

*[Table 1: Signficant Pre-Existing Conditions among BMSM in a US PrEP study]*

**Conclusions:** Among BMSM presenting for enrollment in this PrEP study, clinically meaningful health co-morbidities were highly prevalent. These conditions not only excluded a significant number of BMSM from study participation but also were widespread among those who enrolled. This is important given that these are relatively young men, many of whom lack insurance and are economically disadvantaged. These findings highlight the urgent need to better address the myriad health needs of BMSM to optimize HIV prevention.

## WEPEC241

### "EVERYONE'S TRYING TO MAKE SENSE OF THIS NEW REALITY": A QUALITATIVE STUDY OF THE PREP READINESS CONTINUUM AMONG GAY AND BISEXUAL MEN IN TORONTO, CANADA

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**Background:** Pre-Exposure Prophylaxis (PrEP) has not been approved in Canada, but some physicians prescribe off-label PrEP usage of daily emtricitabine/tenofovir. Given WHO recommendations to make PrEP accessible to men who have sex with men (MSM), we explored decision-making processes, experiences around PrEP access and use among MSM in Toronto.
**Methods:** PrEP users and non-users were recruited through flyers posted in community agencies and clinics in Toronto. We conducted in-depth, semi-structured interviews to explore PrEP knowledge, decision-making around uptake, access, sexual behaviors/relationships and health. Interviews were audio-recorded and transcribed. We applied thematic analysis, with open and axial coding, using a constant comparative method.
**Results:** From Oct-Dec 2015, 23 participants (mean age=37 years; 21 gay, 2 bisexual; 15 white, 2 Black, 2 Latino, 2 Asian, 2 Middle-Eastern), completed 45m-90m interviews. 12 were PrEP users, 11 non-users. Most reported sex with multiple partners and inconsistent condom use. All were familiar with and had accessed information about PrEP. Both users and non-users expressed strong views about personal responsibility and self-care, with trust and concern about HIV infection emerging as important themes: non-users made trust-based decisions about when to use condoms; PrEP users indicated they could only trust themselves, reporting decreased anxiety after condomless or serodiscordant sex. Non-users expressed concerns about long-term safety, needing to use condoms for other STIs, and barriers due to out-of-pocket cost/inadequate insurance coverage. PrEP users indicated uptake due to inconsistent condom use, and reported no longer using condoms unless requested by partners. Users reported no barriers or stigma from healthcare providers. Some openly disclosed PrEP use to friends, sexual partners, and family; others selectively disclosed due to anticipated stigma.
**Conclusions:** Rather than a binary, we identified a continuum of readiness to use PrEP among gay/bisexual men at risk for HIV infection. Some non-users considered PrEP a future option and some wanted to use PrEP but couldn't afford it; some users considered terminating PrEP, with most hoping for an HIV vaccine. Future research should explore the continuum of PrEP readiness among gay/bisexual men, with attention to social support, mental health, stigma, and geographic differences, and barriers in access due to cost and inadequate insurance coverage.

## WEPEC242

### ADHERENCE TO PRE-EXPOSURE PROPHYLAXIS AMONG LOW-FEE FEMALE SEX WORKERS IN CHINA

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**Background:** Low-fee FSWs may be good candidates for PrEP in China due to their high HIV prevalence and low consistent condom use. No published studies have investigated PrEP adherence among low-FSWs.
Our study aims to evaluate PrEP adherence among them, and determine whether PrEP is appropriate for this population.
**Methods:** First, participants underwent physical examination and those meeting inclusion criteria (HIV positive, infected with hepatitis B, or were pregnant or breastfeeding were excluded) completed a baseline survey. The outreach workers distributed 15 TDF pills and 1 portable pill box to each participant. Participants were instructed to take one TDF pill once daily; Second, follow-up visits were conducted every 15 days .Local outreach workers counted the remaining TDF pills and then administered a structured questionnaire ; Finally, after 6 follow-up visits, a second physical examination (identical to pre-study) was carried out. Two indicators, retention rate and pill-missing rate, were used to evaluate adherence to PrEP.
**Results:** A total of 105 low-fee FSWs participated in the physical examination (7 participants tested HBV positive; and 13 participants refused to participate without giving specific reasons), 85 participants were enrolled. Three months' cumulative retention rate was 58.8%. Significant differences were found among participants of different venues, 72.7% of participants who worked in self-rented rooms or "market

day" buildings remained in the cohort while 43.9% of participants in small beauty salons/massage rooms/guest houses did (P=0.015). The main reasons for dropping out were participants' intent to return to their hometown for several months and intolerance for self-reported side effects. Pill-missing rate was highest (29.8%) in the first follow-up visit, and declined to 4.0% in the final follow-up visit. The most frequently reported reasons for missing a single dose were because participants forgot to take their pill or returned to their hometown for several days.
**Conclusions:** Low-fee FSWs who work in self-rented rooms/"market days" buildings had cumulative retention rates higher than 70% and are potentially good candidates for PrEP. Targeted adherence motivation measures should be implemented to further decrease drop out and missed pill doses.

## WEPEC243

### THE ACCEPTABILITY AND FEASIBILITY OF PERIODIC PRE-EXPOSURE PROPHYLAXIS (PREP) FOR FEMALE PARTNERS OF MIGRANT MINERS IN THE GAZA PROVINCE OF MOZAMBIQUE

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**Background:** Migrant miners returning from South Africa to Mozambique are at substantial risk for HIV infection and consequently for transmission to their sexual partners. We conducted a study to assess the feasibility, acceptability and willingness for PrEP uptake among female partners of migrant miners during miners' home visits to inform a future periodic PrEP study among female partners.
**Methods:** A cross-sectional study, including quantitative surveys, in-depth interviews and focus group discussions, was conducted in Gaza Province in Mozambique. Quantitative data were analyzed using Stata. A structured coding scheme was developed and qualitative data were entered and analyzed using Atlas.ti.
**Results:** Between September to October 2015, 207 individuals were enrolled (45% female partners of miners, 18% miners and 37% others including widows, ex-wives and/or other family members of a miner). Median age was 42 years. Most participants (95%) were willing to take PrEP for a period of 8-10 weeks.
For female partners and for miners, respectively, facilitating factors for PrEP uptake were: concerns about partner sexual behavior (66% and 59%), desire for pregnancy (32% and 11%), and their own sexual behavior (19% and 41%). For female partners, the main potential barriers for PrEP uptake were: concerns regarding side effects (33%), partner/family or community disapproval (22%), and regular pill intake (21%). For miners, the main potential barriers indicated were: regular pill intake (24%) and fear of side effects (22%).
The qualitative analysis confirmed that PrEP was highly acceptable and overall participants saw potential barriers for PrEP uptake as minor obstacles that could be overcome. The miner's influence on female partner's PrEP uptake was significant and discussed as a separate potential barrier.
There was a consensus expressed that women taking medications in general, without informing male partners, was not generally acceptable and may have adverse consequences for their relationships.
**Conclusions:** We found high interest in PrEP. The need for education of communities, families and partners regarding PrEP was highlighted to achieve male partner approval and support, high adherence with PrEP and to overcome fear of potential side effects and stigma.

## WEPEC244

### DAILY ORAL TDF/FTC PREP USE AMONG MSM IN A LOS ANGELES MULTISITE DEMONSTRATION PROJECT

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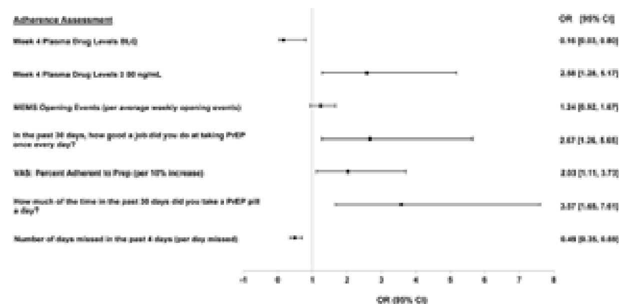
**Background:** Daily oral tenofovir-DF/emtricitabine (TDF/FTC)-based pre-exposure prophylaxis (PrEP) is effective for HIV prevention in MSM/TGW. Demonstration projects and clinical experience are informing real-world effectiveness and implementation challenges. Predictors of adherence and comparisons of self-report and objective measures were evaluated in the Los Angeles PATH-PrEP Demonstration Project.
**Methods:** HIV-uninfected MSM/TGW seeking HIV prevention services in Los Angeles were screened at two sites. Enrolled participants were assigned to PEP-based or PrEP-based cohorts based on self-reported risk. PrEP-participants were offered open-label daily oral TDF/FTC. Risk behavior and medication adherence were assessed over 48 weeks. PEP-participants were educated about PEP use and availability. If sexual risk increased, those assigned to PEP "escalated" into PrEP. Logistic regression determined predictors of PrEP adherence by self-report, MEMS, plasma TFV and DBS TFV-DP.
**Results:** Between May 2013 and June 2015, 823 individuals expressed interest; 301 enrolled. Median age was 34y; 50.7% non-Hispanic white, 12.4% non-Hispanic black, 28.1% Hispanic. Twenty-three (7.6%) were assigned to PEP, 19 (82.6%) escalated to PrEP. Intraerythrocytic TFV-DP levels were available from 274 participants (91%) at week 4; 85.8% had levels consistent with ≥4 doses/week. In multivariable analysis, non-Hispanic black participants (AOR 0.26, 95% CI: 0.09-0.78), reporting sex for trade in the past month (AOR 0.3, 95% CI: 0.09 - 0.98), and lower education (AOR 0.3, 95% CI: 0.09 - 0.97) were less likely to have protective TFV-DP levels. Other adherence measures variably predicted protective TFV-DP levels at week 4 (Figure). Predictive capacity did not differ by race/ethnicity.



*[Figure: Odds ratios for predictors of TVF-DP levels consistent with ≥4 doses/week in Dried Blood Spot (DBS) samples at Week 4]*

**Conclusions:** There is significant community interest in PrEP among diverse MSM in Los Angeles. Plasma TFV and some self-reports of adherence may offer feasible and scalable surrogates of biomarker assessments in PrEP clinical protocols. Increased understanding of barriers to PrEP use by at-risk black populations, those with less formal education, and sex workers is needed to maximize PrEP impact.

## WEPEC245

### FORMULATION OF A THEORETICALLY-BASED, PERSONALIZED HIV PREP ALGORITHM FOR GAY AND BISEXUAL MEN VISITING A COMMUNITY-BASED CLINIC IN LOS ANGELES, CALIFORNIA

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**Background:** Pre-exposure prophylaxis (PrEP) has emerged as an HIV prevention tool for populations at highest risk for HIV infection. Current CDC guidelines for identifying PrEP candidates may not be specific enough to identify gay, bisexual, and other men who have sex with men (MSM) at the highest risk for HIV infection. The primary goal of this study is to create an HIV risk score for HIV-negative MSM to inform more targeted criteria for PrEP use.
**Methods:** Behavioral risk assessment and HIV testing data were analyzed for HIV-negative MSM attending the Los Angeles LGBT Center between January 2009 and June 2014 (n = 9,981). A Multivariate Cox Proportional Hazards Model was used to determine the variables significant in HIV contraction over the follow-up period.
**Results:** Self-reported history of Chlamydia, Gonorrhea, and/or Syphilis ($p < 0.0001$); receptive anal sex ($p < 0.0001$), race/ethnicity of last sex partner ($p = 0.0002$); number of sex partners in the last three months ($p = 0.0001$); methamphetamine use ($p = 0.0004$) and nitrates use ($p = 0.001$) were all significant predictors of HIV infection during follow-up. Intimate partner violence, relative age of last sex partner and ecstasy use were not significant.

**Conclusions:** Approximately 48% of MSM were above a cut-point that we chose as an illustrative risk score to qualify for PrEP, identifying 74% of all seroconverting MSM. The use of this targeted strategy more accurately outlines PrEP candidacy criteria, subsequently allowing individuals and their medical providers to make a more informed decision before use.

## WEPEC246

### COST-EFFECTIVENESS OF PRE-EXPOSURE HIV PROPHYLAXIS DURING PREGNANCY AND BREASTFEEDING IN SUB-SAHARAN AFRICA

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**Background:** Oral antiretroviral pre-exposure prophylaxis (PrEP) for the prevention of HIV acquisition is cost-effective when delivered to those at substantial risk. Despite the high incidence of HIV infection in pregnant and breastfeeding women in sub-Saharan Africa (SSA), an increased risk of preterm birth (PTB) attributable to PrEP could outweigh the HIV prevention benefit.
**Methods:** We developed a conditional probability model to evaluate a strategy of oral PrEP during pregnancy and breastfeeding in SSA. We approached the analysis from a health care system perspective across a lifetime time horizon. Baseline estimates and ranges were derived from existing literature and local sources. The base-case scenario included an HIV incidence in pregnancy of 0.05 per person-year (range: 0.01-0.10), a risk of vertical transmission with incident infection during pregnancy of 23% (range: 10-30%), a baseline PTB risk of 12% versus 20% (range: 10-45%) with PrEP exposure, and PrEP effectiveness of 0.55 (range: 0.30-0.95). The incremental cost-effectiveness ratio (ICER) of PrEP versus no PrEP was calculated in dollars per disability-adjusted life year (DALY) averted. We evaluated the effect of uncertainty in model inputs through one-way and probabilistic sensitivity analyses.
**Results:** Daily oral PrEP administered to pregnant and breastfeeding HIV-negative women in SSA was cost-effective. In a base case of 10,000 women, the administration of PrEP averted 381 HIV infections but resulted in 779 more PTBs. The PrEP scenario was more costly per person ($454 versus $123) but resulted in fewer DALYs (3.18 versus 3.54). The ICER of $914/DALY averted met World Health Organization standards of "very cost-effective". The ICER was most sensitive to PrEP effectiveness, which we varied based on different levels of medication adherence. Probabilistic sensitivity analyses demonstrated relative robustness of the model with nearly 90% of the iterations in Monte Carlo simulation confirming cost-effectiveness of the PrEP strategy.
**Conclusions:** Providing PrEP to pregnant and breastfeeding women in SSA is likely cost-effective, although more data are needed about adherence and safety. For this population at high risk of HIV acquisition, PrEP should be considered as part of broader combination HIV prevention efforts.

## WEPEC247

### STRATEGIES FOR MAXIMIZING THE EFFICIENCY OF PREP: A COMPARISON OF THE IMPACT AND COST-EFFECTIVENESS OF GEOGRAPHICALLY-FOCUSED, SEX-FOCUSED AND AGE-FOCUSED PREP DISTRIBUTION STRATEGIES

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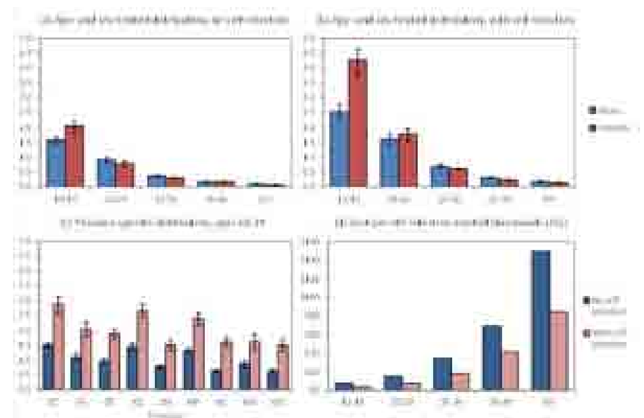
**Background:** WHO guidelines recommend the promotion of PrEP in sub-populations in which HIV incidence exceeds 3% per annum, but there may be alternative ways to identify at-risk populations, which achieve a more efficient allocation of PrEP resources.
**Methods:** To assess which PrEP distribution strategies would be most efficient and cost effective, a mathematical model of the South African HIV epidemic was developed. The model was calibrated to age-specific, sex-specific and province-specific HIV prevalence data. The model was used to predict the cumulative reduction in HIV incidence per 100 person years (PY) of PrEP, as well as the incremental cost to the HIV programme of PrEP provision per HIV infection averted, over the 2017-2027 period, under different PrEP distribution strategies. Additional scenarios assessed whether results would change in the presence of 'self-selection', assuming that high risk individuals are five times as likely to initiate PrEP as low risk individuals.
**Results:** The number of infections averted per 100 PY of PrEP are substantially higher, and the incremental cost per HIV infection averted is substantially lower, if PrEP is provided to adolescents (aged 15-19) than if PrEP is provided to other age groups (Figures 1a and d). However, limiting PrEP to one sex does not substantially alter PrEP efficiency, except in the case of adolescents if there is significant self-selection (Figure 1b). If PrEP is offered to youth aged 18-24, there are additional efficiency gains from limiting provision to provinces such as Eastern Cape (EC) and KwaZulu-Natal (KZ) (Figure 1c). Self-selection could double efficiency and cost-effectiveness.



[Figure 1: (a)-(c) HIV infections averted per 100 person years of PrEP and (d) cost per infection averted, under different distribution strategies]

**Conclusions:** The cost-effectiveness of PrEP as an HIV prevention strategy is highly dependent on the age groups in which PrEP is promoted and the degree of self-selection. To a lesser extent, PrEP cost-effectiveness may be affected by limiting access to a specific region or sex.

## WEPEC248

### CULTURALLY COMPETENT PREP CARE: INSIGHTS FROM PROVIDERS AND POTENTIAL PATIENTS (SEXUALLY ACTIVE BLACK MSM)

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**Background:** Pre-exposure prophylaxis (PrEP) could decrease HIV incidence among men who have sex with men (MSM), a population disproportionately affected by HIV. However, access to PrEP requires disclosing sexual history to a healthcare provider, which may be challenging for many given taboos surrounding sexuality and same-sex behavior. In this qualitative study, strategies and preferences for patient-provider communication surrounding same-sex behavior in the context of PrEP were examined from the perspective of both PrEP prescribers and potential PrEP patients.
**Methods:** Individual 90-minute interviews were conducted with geographically diverse, U.S.-based PrEP providers (n=18) by phone or in person (2014-2015). Six 90-minute focus groups were conducted with sexually active, HIV-negative Black MSM (n=36) in the New York City metropolitan area (2015). Interviews and focus groups were transcribed and thematically analyzed.
**Results:** Providers (94% MDs/72% men/39% White) utilized various strategies to maximize their patients' comfort and candor during sexual history discussions. Strategies included prefacing sexual history questions with acknowledgment of

their sensitivity, explaining their relevance to patient care, and providing assurance that the questions were routinely asked to all patients. Providers strove to cultivate a non-judgmental atmosphere and communicate acceptance of sexual diversity by using neutral language when inquiring about partner gender ("men, women, or both"), familiarizing themselves with colloquialisms for same-sex behaviors, and asking patients about preferred terminology. Confidentiality was also emphasized. Despite these efforts, providers recognized that patients did not always fully disclose their sexual histories. Corroborating this perception, several Black MSM receiving care from sites not specifically identified as LGBT-friendly reported limiting or modifying aspects of their sexual histories, providing only the minimum they perceived as necessary for care or indirect cues about their same-sex behavior due to discomfort with disclosure. Provider authenticity and expertise increased their comfort. They expressed a preference for PrEP to be included in routine discussions of sexual health and presented as a prevention option for a diversity of individuals vs. exclusively for MSM.
**Conclusions:** Providers may optimize PrEP care for Black MSM by clearly demarcating their practice as LGBT-friendly, communicating acceptance for sexual diversity, asking direct questions about sexual behavior, and including PrEP among the safer sex options routinely discussed.

## WEPEC249

### IMPLEMENTATION OF PRE-EXPOSURE PROPHYLAXIS (PREP) IN NEW YORK STATE

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**Background:** The New York State (NYS) Department of Health AIDS Institute convened a statewide PrEP Implementation Forum in August 2015 to provide an overview on the implementation of PrEP services in New York State. 95 participants (49 healthcare providers, 11 consumers, and 35 public health officials) attended the forum.
**Description:** At the forum, 8 clinical sites in NYS presented an overview of the structure of their PrEP programs, described the demographics of their patient populations, identified successful practices and common implementation barriers, and discussed next steps and challenges for improving implementation in NYS.
**Lessons learned:** From 2012-2015, 2577 patients enrolled in PrEP programs at 8 clinical sites throughout NYS. Sites emphasized that having a full-time PrEP specialist to handle insurance navigation, case management, and/or patient counseling was integral to program success. In addition, sites strongly recommended using a multidisciplinary team approach with a PrEP specialist, clinical providers and pharmacists, and prevention educators to provide services. Half of the sites noted that navigating insurance for under- and uninsured patients and limited PrEP knowledge among staff were the most common barriers to implementation.

| Successes (S) and Barriers (B) to PrEP Implementation | Site 1 | Site 2 | Site 3 | Site 4 | Site 5 | Site 6 | Site 7 | Site 8 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Has a PrEP coordinator **(S)** | X | X | X | X | X | X | X | X | 8 |
| Uses a multidisciplinary team approach **(S)** | X | X | X | X | X | X | X | X | 8 |
| Hosts outreach events in the community **(S)** | X | X | X | | | X | X | | 5 |
| Faces under- and uninsured roadblocks **(B)** | | | | X | X | X | | X | 4 |
| Staff has limited understanding about PrEP and insurance navigation **(B)** | | X | X | X | | | | X | 4 |
| Unable to meet demands due to limited capacity **(B)** | X | | X | | | X | | X | 4 |
| Currently trying to bridge the integration of PrEP and primary care **(S)** | | | X | X | | | | X | 3 |
| Partners with specific pharmacies or has an in-house pharmacy **(S)** | X | | | | X | | X | | 3 |
| Has challenges in reaching target PrEP population **(B)** | | | X | | X | | | X | 3 |

*[Successful practices and barriers to PrEP implementation in New York State]*

| Patient Demographics | Site 1 (n=73) | Site 2 (n=180) | Site 3 (n=1230) | Site 4 (n=473) | Site 5 (n=70) | Site 6 (n=359) | Site 7 (n=8) | Site 8 (n=186) | Total |
|---|---|---|---|---|---|---|---|---|---|
| Has over 50% MSM patients | X | X | X | X | X | X | X | X | 8 |
| Has over 50% patients between 25-34 years old | X | X | X | X | X | X | | X | 7 |
| Has over 50% white MSM patients | X | | X | | X | | | X | 4 |
| Has over 50% MSM of color patients | | X | | X | | X | | | 3 |
| Has over 50% uninsured/ underinsured patients | | X | | X | | X | | | 3 |
| Has over 50% privately/ commercially insured patients | X | | X | | | | | | 2 |
| Has over 10% transgender patients | | X | | X | | | | | 2 |

*[Patient demographics]*

**Conclusions/Next steps:** New PrEP programs are inhibited by a lack of understanding among staff about PrEP insurance programs. Prioritizing resources to fund PrEP specialists and applying multidisciplinary team approaches to services were identified as essential to the success of new PrEP programs. As PrEP programs move beyond the initial phases of implementation, it is important to identify new implementation barriers and accordingly adjust best practices to respond to changing needs.

## WEPEC250

### PREP DISCONTINUATION AND ONGOING RISK ASSESSMENT AS PART OF THE DELIVERY OF AN INTEGRATED PREP AND ART HIV PREVENTION STRATEGY FOR AFRICAN HIV SERODISCORDANT COUPLES

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**Background:** HIV-negative persons are vulnerable to HIV acquisition when HIV-positive partners have unsuppressed HIV viremia. PrEP is a proven prevention strategy that can provide protection during these times. When HIV risk is mitigated through ART use, however, PrEP can be discontinued.
**Methods:** We enrolled Kenyan and Ugandan HIV serodiscordant couples with high HIV transmission risk and delivered an integrated PrEP and ART strategy. All HIV-negative partners were offered PrEP until their HIV-positive partner sustained ART use for ≥6 months, when viral suppression would be expected. PrEP discontinuation was then encouraged. Couples were seen every three months for HIV prevention counseling, HIV testing and PrEP refills for negative partners, 6-monthly CD4 and viral load measurements for HIV positive partners, PrEP and ART adherence counseling, and interviewer-administered behavioral questionnaires.
**Results:** We enrolled 1013 high risk HIV serodiscordant couples from 4 sites in Kenya and Uganda. In 67% of couples, the woman was the HIV-positive partner. At enrollment, 65% of couples reported having condomless sex in the prior month and the median viral load of HIV-positive partners was 4.6 log copies/ml (3.8-5.0). After two years, 89% of HIV-positive partners had initiated ART and 91% of those were virally suppressed (HIV RNA < 400 copies/ml). 97% of HIV-negative partners used PrEP during the study for a median time of 12 months (IQR 9-18). 608 (62%) PrEP users discontinued PrEP following ≥6 months of ART use by their HIV-positive partner, 104 (10%) discontinued PrEP with < 6 months of ART use by their positive partner, and 273 (28%) continued PrEP until the study ended. When PrEP use overlapped with ART use for ≥6 months, the primary reasons for continuing PrEP included wanting longer ART use (30%), immediate fertility intentions (28%), and wanting additional protection against HIV (17%). Of those who discontinued PrEP, 38 (5%) re-started prior to exiting the study.
**Conclusions:** PrEP and ART can be delivered with an integrated approach to provide immediate protection against transmission within HIV serodiscordant couples. Ongoing HIV risk assessment of HIV-negative partners enables appropriate recommendations and counseling about continuation or discontinuation of PrEP.

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## WEPEC251

### DEVELOPMENT OF PRE-EXPOSURE PROPHYLAXIS (PREP) QUALITY OF CARE INDICATORS IN NEW YORK STATE (NYS)

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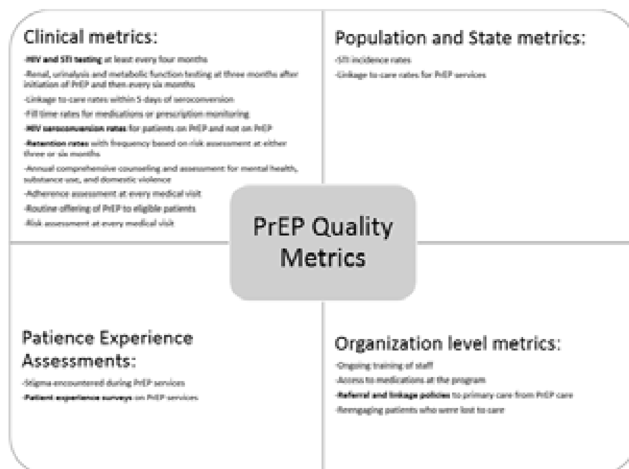
**Background:** Quality metrics specific to PrEP have not yet been created and widely used. The NYS Department of Health AIDS Institute convened a statewide PrEP Implementation Forum in August 2015 to generate recommendations to develop PrEP quality measures. 95 participants (49 healthcare providers, 11 consumers, and 35 public health officials) attended the forum.
**Description:** Prior to the forum, a modified Delphi survey was sent to Forum participants. Participants were divided into 4 groups and rotated "World-Café" style to provide recommendations for the measures.
**Lessons learned:** Despite the newness of PrEP service models, participants successfully identified key measures for monitoring their quality. The use of a formal Delphi survey and facilitated focus group discussions with consumers, providers, and policymakers serves as an effective platform for developing PrEP quality metrics.




*[Key forum recommendations for PrEP quality metrics]*

**Conclusions/Next steps:** As PrEP uptake and implementation increases, PrEP quality metrics will be an important tool in accurately assessing the quality of PrEP services. The results from the modified Delphi Survey and recommendations from the forum will be used to guide the development of PrEP quality metrics which will be stratified by the following categories: clinical, patient experience, organizational, and population.

## WEPEC252

### PREP IMPLEMENTATION IN AN URBAN HIV CLINIC: 1ST YEAR REAL WORLD OBSERVATIONS

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**Background:** Multiple high quality clinical trials have demonstrated the efficacy of pre-exposure prophylaxis (PrEP) for HIV prevention. However, the slow adoption of PrEP has resulted in low numbers of eligible individuals in the US utilizing this prevention tool. Its implementation has been hindered by lack of knowledge about or unwillingness of providers to offer the service, in part related to their concerns about cost/affordability, medication adherence and sexual risk compensation among PrEP users.
**Methods:** We reviewed the medical records of all clients attending two PrEP clinics within the Yale-New Haven Hospital system, Connecticut, USA. Data was collected on demographics, referral source, indications for PrEP, self-reported adherence, HIV test results, sexually transmitted infections (STIs), hepatitis B (HBV) immunity and anal or cervical pap smear results. Categorical and continuous variables were reported as simple frequencies and medians with interquartile ranges respectively.
**Results:** : Sixty-three clients have been enrolled, median age - 34 years, 59 (93.7%) are males. Majority of clients are MSM (76.2%), 6 (9.5%) self-identified as bisexual and 8 (12.7%) are heterosexual individuals in serodiscordant relationships. Leading referral sources were self (52%), community AIDS service organization, health department or clinic (17%), partners or friends (16%), and primary care physician (6%). No clients tested positive for HIV at screening, 43% were non-immune to HBV. All but 4 clients were able to initiate PrEP with barriers being low creatinine clearance (1), lack of insurance (1), cost(1) and 1 individual was determined to be of too low a risk for HIV. Twenty-two percent of all clients had sexually transmitted Infections (STIs) at screening or subsequent follow up visits including pharyngeal (7.9%), rectal (1.6%) and urethral (1.6%) gonorrhea; rectal (3.2%) and urethral (1.6%) chlamydia; and syphilis (3.2%). Of 21 pap smear results, 5 (24%) were abnormal. To date, 2 individuals reported suboptimal adherence,
1 discontinued PrEP due to gastrointestinal intolerance and no HIV seroconversions have occurred.
**Conclusions:** PrEP implementation is feasible with high uptake, adherence and effectiveness. In addition to HIV prevention, PrEP clinics have to be prepared to offer vaccinations, medication adherence counselling, manage STIs and refer individuals with abnormal pap smears for appropriate care.

## WEPEC253

### SCALING UP PRE-EXPOSURE PROPHYLAXIS (PREP) AS A STRATEGY TO ELIMINATE HIV TRANSMISSION AMONG MEN WHO HAVE SEX WITH MEN (MSM): A MODELING STUDY

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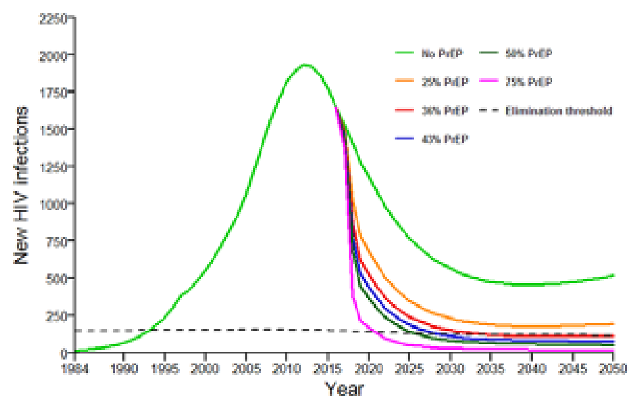
**Background:** PROUD and IPERGAY studies both demonstrated a 86% HIV risk reduction by pre-exposure prophylaxis (PrEP), nearly twice better than the 44% efficacy reported by the earlier iPrEX study. Therefore, previous modeling studies, which were based on iPrEX data, might under-estimate the actual impact of scaling-up PrEP among key population. We aimed to incorporate the newest data into evaluation of the population-level impact of PrEP and investigate the conditions under which the scaled-up PrEP program drives the HIV epidemic into elimination.
**Methods:** We constructed a dynamic model of HIV transmission and disease progression among men who have sex with men (MSM) in Taiwan, taking HIV cascades, age/risk structure, and demographic transmission into consideration. The model was fitted to HIV surveillance data from 1990 to 2014. We evaluated the impact of scaling-up PrEP to 25-75% coverage, among MSM aged 15-44, on the trajectory of the HIV epidemic among all MSM.
**Results:**




*[Figure 1. Impact of scaling-up PrEP on the trajectory of HIV epidemic among MSM in Taiwan]*

The figure shows the predicted epidemic curves under different level of PrEP scaled-up. The baseline scenario is the current level of HIV test-and-treat among MSM in Taiwan (72% knew their HIV status, 58% were prescribed highly active retroviral therapy). Without PrEP, HIV will remain endemic in MSM by 2035 and beyond, with 500 new infections annually (green line). Scaling up PrEP to 36% coverage will drive the HIV into elimination among 15-44 year-old MSM (incidence< 1/1000 person-years; dash line) by 2035 (red line), even though HIV test-and-treat remains at the current level. Increasing coverage of PrEP to 43% will achieve the goal of HIV elimination by 2030, with prevention of 17,584 new HIV infection (64%) during 2016-2050 (blue line).
**Conclusions:** Scaling up PrEP to 36% or more coverage among key population is an effective strategy to eliminate HIV transmission. Higher PrEP coverage will accelerate the achievement of the goal.

## WEPEC254

### PERCEPTIONS OF HIV PRE-EXPOSURE PROPHYLAXIS (PREP) IN KWAZULU-NATAL PROVINCE, SOUTH AFRICA

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**Background:** Despite a large treatment program, South Africa continues to have high adult HIV prevalence and incidence. New prevention strategies such as oral pre-exposure prophylaxis (PrEP) for HIV using a fixed dose of tenofovir disoproxil fumarate and emtricitabine are needed to reduce HIV incidence. Previous studies, however, have shown that PrEP efficacy is highly dependent on medication adherence. Little is known about interest in PrEP and the factors that may affect adherence in rural South Africa.
**Methods:** In 2015, 200 interviews were conducted with self-reported HIV-negative community members in the rural Msinga subdistrict of KwaZulu-Natal province. Participants were recruited from community settings such as: taxi ranks, pension pay points, and municipality events. A quantitative anonymous questionnaire was used for the interview to assess demographics, HIV knowledge, PrEP knowledge and perception, and personal interest in PrEP. Fifty health care workers were also interviewed at their respective primary health care clinic within the subdistrict.
**Results:** Of the 200 community members interviewed, median age was 27 (IQR=22-34) years, 56.5% were female, 88.5% knew that condom use would protect against HIV acquisition, but 20% reported never using a condom; 30% reported at least 2 sexual partners in the last month. Both male (89.7%) and female respondents (92.9%) expressed interest in PrEP. Stigma assessments indicated 51.3% believed HIV positive individuals were infected because of their own carelessness, 59.3% believed that others would think they have HIV if they were taking PrEP, and 21.6% believed that others would avoid them if they were taking PrEP. Stigma was not associated with gender. Health care workers (90%) were interested in working with PrEP, but expressed concerns about adherence, discontinued condom use, discontinued HIV testing, and an increase in number of sexual partners.
**Conclusions:** Community members in this rural South African community are engaged in substantial HIV risk behaviour and along with health care workers, expressed great interest in and potential benefit from PrEP. However, stigma against those with HIV may influence adherence to the PrEP regimen. Further efforts are needed to engage and educate community members about PrEP and to determine its optimal implementation strategy in rural communities.

## WEPEC255

### USE OF BEHAVIOURAL ELIGIBILITY CRITERIA TO IDENTIFY HIGH-HIV RISK GAY MEN FOR ENROLMENT IN A PRE-EXPOSURE PROPHYLAXIS (PREP) STUDY IN NEW SOUTH WALES, AUSTRALIA

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**Background:** Pre-exposure prophylaxis (PrEP) is a highly effective HIV prevention strategy in high-risk individuals. Australian criteria for determining eligibility for PrEP focus on individuals who report high-risk behaviours, and were first trialled in the PrEP demonstration project *PrELUDE*. We assessed the risk profile of participants to evaluate how these behavioural risk criteria performed.
**Methods:** *PrELUDE* is an ongoing, open-label, single-arm demonstration study of oral Truvada as PrEP. Participants are predominately gay and bisexual men (GBM), with a small number of transgender individuals and women in serodiscordant relationships. Here, we present descriptive statistics of behavioural and demographic data from a 20-question, self-administered pre-screening form (n=295 GBM). Participants identified as medium risk were eligible to enter the study based on the prescriber's clinical judgement.
**Results:** Median age of participants was 36 years (range: 20-69 years); 64% were born in Australia. The majority (82%) were employed, and 81% had attained post-secondary education. Overall, 249 GBM (84%) met at least one, and 48% met two or more of the four high-risk eligibility criteria. Two-thirds of participants were enrolled in *PrELUDE* based on meeting the highest-risk criterion, HR2 (Table 1). Of all high-risk participants, 51% who met the criterion 2, and 78% of participants who met criterion 4, also met at least one other high-risk criterion. Furthermore, participants had a high ongoing risk of contracting HIV, with 95% believing they were likely to have multiple events of condomless intercourse in the next 3 months.

| High Risk (HR) Criteria (in last 3 months) | Number (%) |
|---|---|
| HR1: Condomless sex with a regular HIV-positive partner | 92 (31%) |
| HR2: Receptive sex with a casual male partner of HIV-positive or unknown HIV status | 198 (67%) |
| HR3: Rectal gonorrhoea or chlamydia diagnosis | 54 (18%) |
| HR4: Methamphetamine use | 110 (37%) |

*[Table 1: Distribution of high risk behavioural eligibility criteria at enrolment in PrELUDE]*

**Conclusions:** Australian behavioural eligibility criteria for PrEP can help identify GBM who are at the highest risk of HIV acquisition, whilst allowing patients with more complex needs the opportunity to access PrEP on a case-by-case basis. In PrEP demonstration studies or in settings where PrEP access is limited, PrEP can be targeted to the highest-HIV risk individuals maximising cost-effectiveness and potential prevention benefits.

## WEPEC256

### PREP INTEREST, ELIGIBILITY AND INITIATION BY MSM AND TRANSWOMEN IN CAPE TOWN AND PORT ELIZABETH, SOUTH AFRICA

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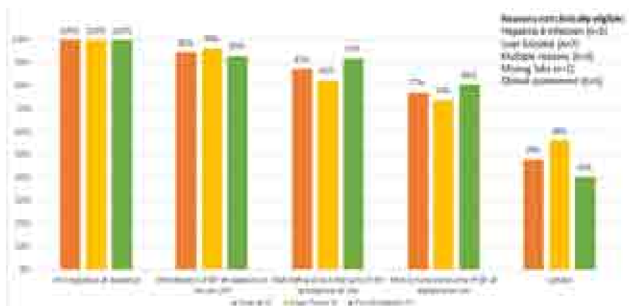
**Background:** Men who have sex with men (MSM) and transgender women (transwomen) experience high rates of HIV infections globally. Pre-exposure prophylaxis (PrEP) is an efficacious prevention modality, and Truvada is approved for PrEP in South Africa. However, PrEP implementation for MSM in South Africa has been largely limited to randomized clinical trials.
**Methods:** The Sibanye Health Project is a study of MSM/transwomen in Cape Town (CT) and Port Elizabeth (PE), South Africa, recruited by outreach in community settings. At baseline, participants were tested for HIV. If HIV-negative, PrEP was offered as part of a comprehensive HIV prevention package, including prevention counseling, STI testing and condom and lubricant distribution. Demographic, behavioral, and clinical data were collected through tablet-administered surveys and by study staff. Overall and by city, we describe the proportions of MSM/transwomen who were interested in initiating PrEP, met behavioral criteria, met clinical criteria, and started PrEP. Initiation by age, race, and city were assessed using chi-square tests.
**Results:** We enrolled 292 participants (115 in CT and 177 in PE) of whom 167 (57%) were HIV-negative. Overall, 95% of HIV negative participants were interested in PrEP; 87% met behavioral criteria; 77% met clinical criteria; and 48% initiated PrEP (Figure). Eighty of 129 eligible participants initiated PrEP (62%). Of 17 ineligible for clinical reasons, most had hepatitis B infection (5) or elevated liver enzymes (7). PrEP initiation did not differ by age or race, but was higher in CT (p=0.04).
**Conclusions:** Levels of interest and eligibility for PrEP were high among MSM/transwomen in PE and CT. About two thirds of those eligible initiated PrEP. These data illustrate that interest in PrEP is high, behavioral and clinical screening for PrEP is feasible in diverse urban settings, and high PrEP coverage is possible when it is offered as part of a comprehensive package of HIV prevention services.



*[Interest, eligibility and uptake of PrEP]*

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## WEPEC257

### BASELINE CHARACTERISTICS AND SUITABILITY OF PARTICIPANTS ENROLLED IN AN OPEN-LABEL ORAL PRE-EXPOSURE PROPHYLAXIS STUDY FOR HIV-NEGATIVE ADOLESCENTS IN SOUTH AFRICA

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**Background:** Adolescents in sub-Saharan Africa are at high-risk for HIV, with up to 45% of heterosexual transmissions in South Africa occurring in young women. While Truvada as pre-exposure prophylaxis (PrEP) has been well established in adults, there are no data on PrEP in adolescent populations in sub-Saharan Africa. We aimed to describe the baseline characteristics and suitability for oral PrEP of participants enrolled in an open-label adolescent PrEP study.
**Methods:** PlusPills is an ongoing open-label study examining the use, feasibility and acceptability of daily oral Truvada as PrEP in HIV-negative adolescents. Female and male participants aged 15-19 years were recruited in two peri-urban settings in Johannesburg and Cape Town. Study staff collected demographic, behavioural and clinical data. Those who were not sexually active, and those who were found to be HIV positive or pregnant at screening were excluded. Eligible female participants willing to use hormonal contraception, and eligible male participants were consented for daily oral PrEP as part of a combination HIV prevention package which included condoms and sexually transmitted infection (STI) screening and treatment. Baseline characteristics recorded included age, gender, sexual behaviour, pregnancy, HIV and STI screening.
**Results:** To date, 154 adolescents were screened, and 100 participants have enrolled (recruitment target =150). Of those screened, three were HIV positive (2%) and eight girls (9%) were pregnant. Sixty females and forty males were enrolled, with a mean age of 18 (range 15-19) and 17 (range 15-17) years respectively. Of these, 57 (57%) tested positive for sexually transmitted infections (STIs) at baseline. Thirty-two participants tested positive for chlamydia, 16 for herpes simplex-2, and 9 for gonorrhoea. Participants reported high-risk sexual behaviour, with 24 of 52 (46%) participants surveyed reporting previous condomless sex, 14 (27%) reporting multiple concurrent sexual partners, and 7 (13%) reporting intergenerational sex.
**Conclusions:** The high numbers of STIs and pregnancies amongst participants indicate that we have successfully recruited from a population of adolescents engaging in high-risk sexual activity in a community with high HIV prevalence. Adolescents in this setting are therefore a key population in whom to investigate oral PrEP use and one that would derive significant benefit from pre-exposure prophylaxis.

## WEPEC258

### PREP-30: AN INNOVATIVE MODEL OF FEE-BASED PRE-EXPOSURE PROPHYLAXIS FOR HIGH-RISK INDIVIDUALS IN BANGKOK, THAILAND

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**Background:** Pre-exposure prophylaxis (PrEP) has been proven to be effective at preventing HIV infection for men who have sex with men (MSM) and other high-risk groups. However, awareness about PrEP and knowledge about its efficacy is still low among high-risk populations in Asia. In the region there is little experience providing PrEP and very limited availability of this new HIV prevention method.
**Description:** The Thai Red Cross Anonymous Clinic (TRCAC) has implemented the PrEP-30 project since December 2014 as part of a combination HIV prevention package. The PrEP service is operated as a fee-based model without any subsidy. Regular follow-up includes clinical examination, risk-reduction counseling, provision of condoms and lubricants, monitoring renal function, and HIV testing every 3 months. User fees total 30 Thai baht (less than US$1) per day, which include facility/physician fees, laboratory testing, and medication (local generic tenofovir/emtricitabine) costs.
**Lessons learned:** Through January 2016, a total of 231 people started PrEP. Referrals came mainly from the Adam's Love website and TRCAC HIV testing counselors. Clients were 98% biological male, 91% MSM, and 1% transgender women. Median age was 32 years (range 19-67). Risk factors as indications for PrEP included condomless anal intercourse (42%), multiple sex partners (35%), known HIV-infected sex partner (22%), previous non-occupational post-exposure prophylaxis use (14%), and/or sex work (4%). After 14 months, among those who completed follow-up HIV testing no new HIV infections have been detected.
**Conclusions/Next steps:** PrEP can successfully and sustainably be provided through a cost-sharing model that does not require public or private subsidy. Most individuals accessing PrEP in Bangkok are male and MSM. More awareness and education is needed to inform at-risk groups in Thailand and other Asian countries that PrEP is both highly efficacious and available.

## WEPEC259

### ACCEPTABILITY OF PREP FOR ADOLESCENTS IN SOUTH AFRICA, A KEY TARGET POPULATION FOR HIV PREVENTION

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**Background:** Oral antiretroviral pre-exposure prophylaxis (PrEP) holds enormous potential for expanding prevention strategies for adolescents, who account for 39% of all new global infections. Little is known about how unique developmental milestones of adolescence might influence PrEP acceptability. Research is needed to explore PrEP acceptability among adolescents in generalized epidemic settings driven by heterosexual transmission and with high prevalence of serodiscordant relationships.
**Methods:** We conducted an exploratory mixed-methods study in Cape Town, South Africa from 2015-2016. HIV-negative and HIV-positive adolescents, 16-17 years of age, were recruited from an urban township using systematic door-to-door sampling and an HIV-treatment clinic using convenience sampling. A computerized, cross-sectional survey, along with semi-structured focus groups and in-depth individual interviews, were used to gather socio-demographic data, quantify perceptions of PrEP efficacy, and investigate PrEP acceptability and predicted behavioral outcomes among adolescents. *Clinicians completed a computerized survey and in-depth individual* interviews. We conducted descriptive analysis of quantitative data using SPSS and thematic analysis of qualitative data using NVivo. Brown University and University of Cape Town provided ethical approvals.
**Results:** Adolescents (n=20) were black African, completed grade 8 or higher, and spoke primarily isiXhosa. The majority (90%) reported that they would want to use PREP if they had a partner who was HIV-positive or of unknown status, or would support use of PREP by a partner. All clinicians (100%) reported they would prescribe PREP for adolescents who were sexually active and 62.5% reported they would support PREP for intravenous drug users. Message framing influenced acceptability, in that clinicians were more likely to definitively support prescription of PREP if told it had a 90% success rate (100%) as opposed to a 10% failure rate (50%). Both adolescents and clinicians voiced concerns about partial efficacy, side effects, adherence, off-label use, and potential behavioral impacts. Participants also reported conflicting opinions about which adolescents should be prescribed PrEP, with support for adolescents in serodiscordant partnership and concerns for adolescents using substances.
**Conclusions:** Findings identify key concerns that may affect PrEP acceptability among adolescents in South Africa. Future research should integrate mixed-methods to further explore potential outcomes of adult PrEP in adolescents.

## WEPEC260

### NAVIGATING PEP TO PREP TRANSITION: IMPORTANT CONSIDERATIONS AND EXPERIENCES OF A NEW YORK CITY LGBT CLINIC

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**Background:** Callen-Lorde Community Health Center (CLCHC) in New York City is a non-profit facility that predominantly cares for the LGBT communities. In addition to primary health and HIV services, the clinic has a robust HIV prevention and outreach department. CLCHC has provided Post-Exposure Prophylaxis (PEP) services since 2006. In 2012, after state and federal guidelines were released, the center also implemented a Pre-Exposure Prophylaxis (PrEP) program, currently the largest of its kind in NY State serving over 1,400 clients. A major challenge has been moving clients with ongoing HIV risk from PEP to PrEP seamlessly.
**Description:** In 2015 CLCHC provided 881 PEP interventions to 816 ethnically and socio-economically diverse LGBT-identified patients. 212 (26%) of these patients transitioned to PrEP. This required streamlining the usual PrEP process to ensure

no gaps in antiretroviral coverage and minimize risk of seroconversions. Challenges included working with clients who were often uninsured or underinsured. Interventions included: PrEP dedicated staff, clinic-wide patient and staff education campaigns (PrEP information was displayed in public spaces and posters placed in all exam rooms) and a telephone hotline. PrEP discussions were initiated for all clients during all PEP visits.
**Lessons learned:** PEP is an important entry point for PrEP. Successful PEP-to-PrEP navigation requires identifying people at ongoing HIV risk, doing assessments for acute HIV, increasing availability of HIV 4th generation and viral load testing, ensuring dedicated staff to assist with medication access and insurance barriers and streamlining of services (timely follow-up appointments, rapid assessment for acute HIV, monitoring of labs and adherence). Having PrEP transition available reduced the number of clients returning for multiple PEP interventions.
**Conclusions/Next steps:** The PEP to PrEP program was possible because adequate resources were allocated for dedicated staff to assist patients navigating the complicated insurance and medication assistance process. PrEP empowers patients to make informed decisions about sexual health and HIV risk reduction. Implementing PEP-to-PrEP programs must be systematic and utilize innovation and flexibility. For this reason, multi-disciplinary teams of providers, social workers, and HIV counselors must work together in order to support patients along the prevention continuum of care.

## WEPEC261

### ARE WE REACHING THE PREP TARGET MARKET? EXPLORING THE RISK AND DEMOGRAPHIC PROFILE OF EARLY ADOPTERS IN A SOUTH AFRICAN PREP DEMONSTRATION PROJECT FOR MSM

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**Background:** As PrEP is being considered for broader scale up in South Africa, understanding how best to appropriately target this intervention to those who most need it is of vital importance. In 2015, the South African PrEP Demonstration Project launched in Cape Town and will offer 300 eligible MSM free access to PrEP within standard clinic settings. This project provides an opportunity to inform future roll out by assessing the profile of MSM interested in PrEP.
**Methods:** Eligible MSM received PrEP information during a standard visit to their MSM-sensitized clinic in Cape Town. Per existing guidelines, men initiated PrEP after screening and returned for periodic follow up. They received a standard package of care inclusive of risk reduction counseling. Demographics for all men were collected by a nurse using standard clinic stationary and men self-reported risk behavior through a survey not seen by clinic staff.
**Results:** Thus far 52 men have initiated PrEP and 34 have completed 1 month of PrEP use. The majority have sex exclusively with men (94%, 49/52), are white (73%, 35/48) and have a median age of 33 (IQR 31-40). Within three months before their PrEP initiation, men reported a median of 5 (IQR 2-8) sexual partners and 81% (42/52) reported having condom-less sex with at least one of these partners (median 2, IQR 1-3). After 1 month of PrEP use, men (n=34) reported a median of 3 (IQR 1-6) sexual partners and 76% (26/34) reported having condom-less sex with at least one of these partners (1.5, IQR 1-3) during this period.
**Conclusions:** The majority of MSM who have initiated PrEP through this project reported condom-less sex with multiple sexual partners both before and after PrEP initiation, although longer follow up is needed to identity significant changes in behavior and adherence. These initial findings suggest that this population are in need of, interested in, and able to use PrEP and may inform population targets for future PrEP roll out. Participant demographics may shift over time but current racial demographics suggest that targeted efforts are needed to reach a more equal distribution.

## WEPEC262

### PREFERENCES FOR LONG-ACTING PRE-EXPOSURE PROPHYLAXIS (PREP), DAILY ORAL PREP, OR CONDOMS FOR HIV PREVENTION AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN THE U.S.

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**Background:** We addressed if long-acting PrEP delivery options now in development would be acceptable to users. Aims were to: a) document levels of awareness and uptake of PrEP among MSM; b) identify preferences for HIV prevention options; and c) explore reasons for preferences among HIV prevention options.
**Methods:** This mixed method study of an online sample of MSM (N=512; median age=22 years) conducted paired preference tests among five potential HIV prevention methods: condoms and four PrEP options - daily oral pill, a long-acting injectable, or two long-acting subcutaneous implants that differed in visibility to others. After this, we asked about preferences among only the four PrEP options.
**Results:** Of the 237 men who ever heard of PrEP (46.3%), only 6 (2.5%) used PrEP in the last 3 months. Paired preference tests indicated that while condoms were most frequently preferred (33.8%), the majority preferred a PrEP-related HIV prevention option. Kruskal-Wallis Tests indicated significant differences in the distribution of age (p=0.01) and education (p=0.01) across preferences. Participants who preferred condoms were significantly younger than those who preferred the non-visible implant (21 and 24 median age, respectively; p=0.01, DSCF multiple comparisons analyses). Those who preferred condoms and oral PrEP had lower educational attainment than those who preferred injections (p=0.04 and p=0.02, respectively, DSCF multiple comparisons analyses). Individuals who preferred the non-visible implant reported a higher percentage of condomless anal sex than those who preferred condoms (68.2% vs 47.4%; p< 0.001; Fishers Exact). In follow-up questions assessing preferences among the four PrEP options only, daily oral pills and non-visible implants were most frequently preferred (35.5% and 34.3%, respectively), followed by injections (25.2%) and visible implants (4.3%). Qualitative analyses revealed that convenience, protection duration, and privacy were the most important attributes for selecting an HIV prevention method.
**Conclusions:** MSM who engage in HIV risk behaviors report being receptive to using PrEP for protection. Aligning development with user concerns and preferences, such as the one for privacy found here, could enhance development and future uptake of long-acting PrEP with less-frequent adherence requirements. Further research is warranted to evaluate PrEP acceptability, awareness, and use.

## WEPEC263

### REPORTED CHANGES IN PREP AND CONDOM USE IN MSM DURING THE OPEN-LABEL EXTENSION OF THE ANRS IPERGAY STUDY

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**Background:** Following the favorable results of the double-blinded phase (DBP) of the ANRS Ipergay trial, an open-label extension study (OLE) was implemented where all participants received TDF/FTC for on demand PrEP. We wished to assess whether PrEP and condom trajectory uses changed in the OLE.
**Methods:** Follow-up in OLE was performed every two months and included online questionnaires collecting sexual behaviour and PrEP adherence during the last anal intercourse. A longitudinal multi-trajectory model was implemented for two out-

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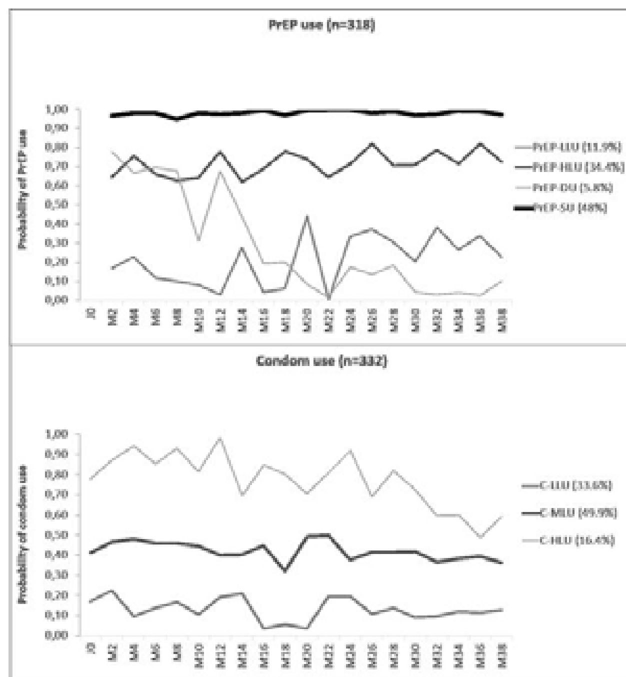
comes: PrEP use (correct/sub-optimal *versus* no PrEP), and condom use for anal sex (yes/no) and we compared DBP to OLE.

**Results:** 333 participants who participated to both study phases were analyzed. Four trajectories of PrEP use and three trajectories of condom use were identified in the DBP (Figure). During OLE, there was no change in PrEP trajectories. However, there was a decrease of condom use in the "high-level users of condom (C-HLU)" trajectory that most participants compensated by using PrEP: among participants in this trajectory 62% used PrEP systematically (PrEP-SU) and 33% used PrEP progressively (24% and 9% respectively for PrEP-HLU and PrEP-LLU). For the two remaining condom use trajectories (C-MLU and C-LLU) there was no change during the OLE, and most of participants continued using PrEP: 54% used PrEP systematically, and 35% used PrEP progressively.

**Conclusions:** In the OLE of the ANRS-IPERGAY trial, the reported decrease in condom use was compensated by high PrEP use. However, special attention must be paid to the remaining subgroup of MSM with declining use of condom that did not compensate by using PrEP.




**PrEP-LLU:** Low-level users of PrEP
**PrEP-HLU:** High-level progressive users of PrEP
**PrEP-DU:** Declining users of PrEP
**PrEP-SU:** Systematic users of PrEP
**C-LLU:** Low-level users of condom
**C-MLU:** Medium-level users of condom
**C-HLU:** High-level users of condom

*[Trajectories of PrEP and Condom use]*

## WEPEC264

### PERCEPTIONS OF BARRIERS AND BENEFITS TO ADOLESCENT PRE-EXPOSURE PROPHYLAXIS (PREP) UTILIZATION AND CLINICAL TRIAL PARTICIPATION: A STUDY OF AFRICAN AMERICAN MOTHERS AND THEIR DAUGHTERS

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**Background:** Compared to their racial/ethnic counterparts, African American adolescent girls are disproportionately impacted by HIV. Accordingly, innovative methods are needed to thwart the negative effects of HIV among this population. Approved by the Food and Drug Administration in 2012, PrEP has proven highly efficacious for HIV vulnerable adults. Yet, PrEP's potential as an HIV prevention strategy for adolescent populations is currently unknown. This study sought to assess: 1) perceptions of barriers and benefits related to African American girls' (ages 14-17) participation in PrEP clinical trials, and 2) perceptions related to potential utilization of various modes of PrEP delivery such as vaginal rings, microbicide gels, and injectables.

**Methods:** Fifteen African American mother/daughter pairs (N=30) were recruited from a two-armed, family-based randomized controlled trial. Knowledge, beliefs and attitudes related to adolescent PrEP utilization and clinical trial participation were assessed through a focus group discussion and questionnaire. The questionnaire also evaluated mother-daughter communication, sexual risk behavior, and HIV knowledge and attitudes. The focus group discussion was guided by a fifteen minute PrEP educational module which included a hypothetical clinical trial informed by two local community advisory boards.

**Results:** There was a general lack of knowledge and awareness about PrEP among both mothers and daughters. However, after receiving information about PrEP, participants carefully weighed the potential harms and benefits related to adolescent PrEP utilization and clinical trial participation. Overall, most mothers expressed a willingness to allow their daughters to take PrEP once approved, but indicated concerns about clinical trial participation primarily due to a lack of available evidence related to the long-term effects of PrEP for adolescents. Conversely, daughters expressed a willingness to participate in PrEP clinical trials and described both individual and societal level benefits associated with potential participation. Daughters additionally indicated a willingness to take PrEP, but expressed concerns surrounding PrEP acceptability, adherence and stigmatization.

**Conclusions:** Study findings uncover the need to:
1) develop PrEP clinical trial participant protection procedures specific to African American adolescent girls and guardians, and
2) implement ethically-sound strategies to strengthen the availability, accessibility and acceptability of new scientific advances in HIV for HIV vulnerable populations.

# MICROBICIDES (INCLUDING VAGINAL AND RECTAL MICROBICIDES)

## WEPEC265

### KEY INSIGHTS INTO ACCEPTABILITY AND USE OF THE VAGINAL RING: RESULTS OF THE MTN-020 ASPIRE TRIAL QUALITATIVE COMPONENT

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**Background:** The MTN-020/ASPIRE trial evaluated the safety and effectiveness of the dapivirine vaginal ring for prevention of HIV infection among African women. Participants' acceptability of and use-adherence to novel biomedical study products are essential for assessing their true effectiveness and yield important insights regarding future uptake, sustained use, and potential public health impact.

**Methods:** The qualitative component of ASPIRE was conducted at 6 of 15 study sites in Uganda, Malawi, Zimbabwe and South Africa. Qualitative study participants (n=214) were enrolled into one of 3 interview modalities: single in-depth interview (IDI; n=34), up to 3 serial IDIs (n=80), or exit Focus Group Discussion (n=100). Using semi-structured guides administered in local languages, 280 interviews were audio-recorded, transcribed, translated, coded and analyzed with Nvivo using matrices and code summary reports. Guided by a conceptual framework, we evaluated how well the ring was liked, used and integrated into participants' lives.

**Results:** Participants were on average 26 years, 45% were married, and 73% had completed secondary school. The majority disclosed trial involvement (72%) or ring use (59%) to male partners. We identified three key findings: 1) Participants liked both the ring and trial participation. Using the ring felt like being part of a "team" and doing something for a broader, communal good. They valued study benefits (e.g. free healthcare) and were encouraged by study-supported participant engagement activities and feedback about site-level adherence performance. 2) Despite initial fears about the ring's diameter and thickness and potential side effects, participants found the ring easy to use and used it consistently. Fears were overcome with ongoing group discussion, counseling and gradual familiarity with ring use through trial progression. 3) The actual or perceived dynamics of participants' male partner relationship(s) were the most consistently described influence (which ranged from positive, negative and neutral) on participants' acceptability and use of the ring.

**Conclusions:** Participants liked the ring and found it easy to use. Initial concerns with the physical attributes of the ring and perceived side effects could be proactively addressed in future activities. Factors beyond the level of the individual woman, like partners and peers, were important for encouraging positive attitudes and adherence behaviors.

## WEPEC266

### PROJECT GEL: MICROBICIDE SAFETY AND ACCEPTABILITY IN YOUNG MEN

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**Background:** The purpose of Project Gel was to determine the safety and acceptability of rectal microbicides in young men who have sex with men (MSM) and transgender women (TGW).
**Methods:** MSM/TGW aged 18-30 years were enrolled at three sites; Pittsburgh, PA; Boston, MA; and San Juan, PR. Stage 1A was a cross-sectional assessment from which a subsample of participants was enrolled in Stage 1B, a 12-week evaluation of a placebo rectal gel. This was followed by the final phase of the study (Stage 2) in which a subsample from Stage 1B was enrolled into a placebo controlled Phase 1 safety and acceptability evaluation of a reduced glycerin tenofovir (TFV) 1% gel.
**Results:** 248 participants were enrolled into Stage 1A. Participants' average age was 23.3 years. The most prevalent sexually transmitted infection (STIs) at baseline were Herpes simplex (HSV)-2 (16.1% by serology) and rectal *Chlamydia trachomatis* (CT) (10.1% by NAAT). 134 participants were enrolled into Stage 1B. During the 12-week period of follow-up 2 incident HIV, 7 rectal CT, and 5 rectal *Neisseria gonorrhea* infections were detected. The majority of adverse events (AEs) were infections (N=56) or gastrointestinal (N=46) and were mild (69.6%) or moderate (28.0%). Of the participants who completed Stage 1B, 24 were enrolled into Stage 2 and randomized (1:1) to receive TFV or placebo gel. All participants completed Stage 2. The majority of AEs were gastrointestinal (N=10) and mild (87.2%) or moderate (10.3%). Acceptability ratings for TFV gel did not differ in any case from ratings for the placebo gel. Most average ratings on gel characteristics, applicator and applications process, product use, and liking the product were on the higher end of 10-point scales, indicating high acceptability.
**Conclusions:** In this study we were able to enroll a sexually active population of young MSM/TGW who were willing to use placebo and antiretroviral rectal microbicides. TFV gel was safe and acceptable and should be further developed as an alternative HIV prevention intervention for this population, given their high rate of incident anogenital infections consisted with condomless sex.

## WEPEC267

### COMPARING THE ACCEPTABILITY AND CORRECT VAGINAL PLACEMENT OF TWO MICROBICIDE FILMS

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**Background:** Film formulations of topical microbicides may provide efficient drug delivery while minimizing the disruption of innate immune defenses. Vaginal film technology for the delivery of antiretrovirals is in phase 1 studies. Understanding application challenges and acceptability of different film types is integral to product development. We compared women's experiences with two films which differed in size and base polymer.
**Methods:** Study participants received either 1" x 2" polyvinyl alcohol (PVA) based films (n=30 women) or 1" x 2" cellulose (CELL) based films (n=47 women). All participants received standardized insertion instructions and used the films daily for 7 days. Two hours after self-insertion of the final dose, correct film placement (defined as placement inside the hymenal ring) was noted on pelvic exam, but not shared with the participant. Participants completed an acceptability questionnaire. Demographic and behavioral factors as well as answers to acceptability questions were compared using Fischer's exact test.
**Results:** Women who used both film types did not differ with respect to demographics or previous vaginal product experience with >80% of participants having used tampons and 40% vaginal cream. Five (17%) of 30 PVA users were noted to have incorrectly placed film at the time of pelvic exam as compared to 2 (4%) of 47 CELL film users. Compared to PVA film users, more CELL film users described insertion as "easy" (51% vs 30%, p= 0.10) and were significantly less likely to note any concerns with using the product (17% vs 48%, p=0.005). Problems identified by PVA users centered around difficulties with insertion. Seventy-two percent of CELL film users reported that the product was easier to use with subsequent doses. There was no difference in comfort nor odor associated with film use; women reported that they would be likely to use either film product should it be found effective in preventing HIV acquisition.
**Conclusions:** Both films were comfortable and acceptable. The larger CELL based film was associated with fewer insertional challenges than the smaller PVA film. Both size and polymer type may impact correct film placement. Future studies are needed to evaluate which film attributes enhance correct usage.

## WEPEC268

### SELF-REPORTED RING REMOVALS AND EXPULSIONS OF THE DAPIVIRINE VAGINAL RING: QUALITATIVE DATA FROM THE RING STUDY (IPM 027)

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**Background:** Under-reporting of non-adherence to women-initiated prevention technology is a risk during Phase III microbicide trials. A female initiated, self-administered long-term prevention agent such as the dapivirine vaginal ring could offer women an option to prevent HIV infection and is being tested in The Ring Study. In order to determine efficacy of the ring, participants need to use it as instructed and demonstrate adherent ring-use behaviour. We explored participants' and their male partners' discussions on accidental expulsions and purposeful ring removals during this study.
**Methods:** Individual interviews (IDIs) and group discussions (FGDs) were conducted across six research centres in South Africa and one in Uganda. Data were collected 24-36 weeks after research centre activation and again after last product use visits. Participants were purposively selected to include some who reported ring expulsion/removal. Qualitative data was organized into key themes using a theoretical framework (Mensch framework, 2012), and NVivo used to facilitate the analysis.
**Results:** Fifty-five female and 72 male IDIs and 9 female FGDs were conducted. Although most felt it was impossible for accidental ring expulsion to occur, 15 participants reported an accidental expulsion. Reported expulsions occurred mainly during sex, some during bathing and some on the toilet. There were more reports (n=25) of purposeful ring removal. The majority of expulsions/removals were reportedly for a short time. Reasons for self-reported purposeful removal included: to clean the ring or during bathing, for male partners (once-off curiosity to see the ring, or test if partners could feel it during sex), because of menses, due to discomfort, or removal when unwell. Some reported that other participants removed their rings - mainly because of fear of a partner finding out about ring use, or because of lack of commitment to The Ring Study.
**Conclusions:** The number of self-reported ring expulsions and removals were low. More women reported purposeful removals than accidental expulsions. Women were willing to discuss their own ring removal practices. These results are based on self-reported data and will need to be compared with actual ring adherence data. However, discussions provide insight into possible reasons for ring expulsion/removal which can be addressed in future user training.

## WEPEC269

### THE MANAGEMENT OF HIV DISCORDANT RESULTS AT MADIBENG CENTRE FOR RESEARCH ON A PHASE III HIV MICROBICIDE CLINICAL TRIAL

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**Background:** End-point assessments for an HIV prevention trial are crucial in ascertaining the safety and efficacy of study product; therefore the methodology used must be accurate and free of bias.
The IPM 027 Study, conducted at the Madibeng Centre for Research (MCR), used a set HIV rapid testing algorithm, consisting of 3 different rapid tests, performed in sequence. A first reactive test followed by two consecutive non-reactive rapid tests indicated that the participant had a discordant HIV test result.
**Methods:** The HIV rapid testing algorithm used the following tests:
1. Determine HIV1/2.
2. FDA approved OraQuick Advance HIV1/2
3. Uni-Gold HIV 1/2
All HIV rapid testing after enrolment was performed on whole blood (drawn into a 4ml EDTA test tube).
If a participant's HIV test result was discordant, repeat testing was performed 2 weeks later. A repeat discordant result was escalated to the sponsor for guidance on further testing required to establish a conclusive result. A quantitative HIV RNA PCR was performed for all discordant cases. An undetectable HIV RNA PCR result indicated the participant was not infected. A detectable HIV RNA PCR result indicated HIV-infection.
**Results:** At MCR, 16 of 482 (3%) participants had one or more discordant HIV rapid test result at some point during their trial participation [64 (0.5%) discordant results out of 11 712 tests performed]. In all these participants no HIV RNA was detectable. None of these participants seroconverted during the trial.
Though the total percentage of HIV discordancy was low, it initially caused anxiety throughout the research centre:
**Laboratory staff** expended much additional time to troubleshoot and confirm the result's validity. No external influencing factors were identified.
**Investigators** were challenged to make clinical decisions based on an inconclusive laboratory result.
**Counsellors** experienced difficulty counselling the participant regarding her HIV result and her actual status.
**Participants** were anxious due to a reactive test 1.
**Conclusions:** Since test 1 was highly sensitive it could gave a false positive HIV result, therefore discordant HIV test results could be expected with on-site HIV rapid tests. Research centre teams should be prepared and equipped to manage discordant HIV test results.

## WEPEC270

### EFFECTIVENESS OF TENOFOVIR 1% GEL IN PREVENTING HSV-2: RESULTS FROM FACTS 001

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**Background:** We assessed the effectiveness of tenofovir (TFV) 1% gel in preventing HSV-2 acquisition in women enrolled in FACTS 001, a phase III, multi-centre, double-blind, randomised, placebo-controlled trial.
**Methods:** From October 2011- August 2014, 2059 participants were enrolled. Participants who were HSV-2 seronegative at enrolment were included in this analysis. HSV-2 serostatus was determined by HSV-2 type-specific IgG enzyme-linked immunoassay (Kalon ™). Incident cases were identified at study exit, and further testing performed to identify the time of first positive result (index value ≥0.9). HIV seroconvertors were censored at the time of HIV seroconversion and HSV-2 status assessed. Confirmatory testing using HSV-2 Western Blot (WB) was performed. TFV effectiveness was assessed using a log-rank test, stratified by site. We assessed the association between TFV detection in quarterly cervico-vaginal lavage (CVL) and HSV-2 infection in a random sub-cohort (n=221).
**Results:** Of the 2059 enrolled participants, 1183 (57%) were HSV-2 seronegative at enrolment (TFV n=577; placebo n=605). HSV-2 seroprevalence at sites ranged from 32%-52%. 58 (5%) participants were censored prematurely because they seroconverted to HIV first; 43 were HSV-2 seronegative at the time of censoring. Overall 150 incident HSV-2 infections were observed during 1649 person-years of follow-up (HSV-2 incidence: 9.1/100 women years); 67 in the TFV group and 83 in the placebo group (incidence rate ratio [IRR], 0.81; 95%CI: 0.58 - 1.13). Similar results were observed for HSV-2 WB confirmed cases. Living with parents (adjusted hazard ratio [AHR] 0.52 95% CI 0.28-0.99) and site (AHR 0.27 95% CI 0.08-0.99) were associated with a lower risk of infection. Among participants included in the nested case-cohort (49 cases, 172 controls), a median of 5 CVL samples per participant were analysed. Tenofovir detection in CVL was not associated with reduced risk of HSV-2 acquisition (AHR 1.39 95% CI: 0.77-2.50), even when assessed amongst those that reported sex in the past 7 days (AHR 1.02; 95% CI 0.45-2.29).
**Conclusions:** Contrary to other findings, pericoital vaginal application of TFV 1% gel was not effective in this trial in preventing HSV-2 acquisition, irrespective of adherence levels.

# TREATMENT AS PREVENTION

## WEPEC271

### THE EFFECT OF HIV TESTING AND SAME DAY ENROLMENT INTO CARE ON LOSS TO FOLLOW-UP AMONG HIV PATIENTS: A COHORT STUDY FROM LUKAYA, UGANDA

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**Background:** One of the ambitious UNAIDS 90-90-90 targets is to test at least 90% of the population and to initiate on antiretroviral therapy (ART) at least 90% of those diagnosed HIV positive. To achieve this, it has been recommended to test and immediately enroll positive testers into care. The effect of this instant enrollment on loss to follow-up (LTFU) is unknown. We evaluated the effect of same day HIV testing followed by instant enrollment into HIV care on LTFU.
**Methods:** Using routinely collected data for HIV-infected patients (≥14 years), tested and enrolled into HIV care between 1 January 2013 and 30 June 2015 at Lukaya Clinic, Uganda, we compared cumulative incidence of LTFU between those enrolled on the day they were tested for HIV to those enrolled later after testing. We used survival methods accounting for the competing risk of death to compare time to LTFU and the Fine and Gray hazards regression to assess for factors associated with LTFU.
**Results:** We studied 2,104 patients, the majority 1,233 (58.6%) were female, with median age at enrollment of 30 (Inter Quartile Range (IQR): 26 to 38) years. Over the study period, 1,227 (58.3%) tested and were enrolled instantly, and 373 (17.7%) were LTFU. The cumulative incidence of LTFU at 24 months was 18.4% (95% CI; 15.5%-21.7%) in the group that delayed enrollment and 15.8% (95% CI: 13.2%-18.7%) in the group that enrolled instantly (p=0.2). After adjusting for age at enrollment, sex, baseline CD4 at enrollment, baseline WHO stage, and ownership of a telephone, same day testing and instant enrolment was not associated with LTFU (adjusted Hazard Ratio (aHR): 0.85, 95% CI: 0.7-1.0), accounting for the competing risk of death.
**Conclusions:** We found that HIV testing and instant (same day) enrollment was not associated with LTFU. This study therefore suggests that instant enrollment into care after a positive HIV test is a viable option and henceforth, a strategy to take on to expedite achievement of the 90-90-90 testing and enrollment targets.

## WEPEC272

### WHEN WILL COUNTRIES MOVE TO 'HIV TREATMENT FOR ALL'? TIME LAG IN WHO TREATMENT GUIDELINES ADOPTION IN SUB-SAHARAN AFRICA

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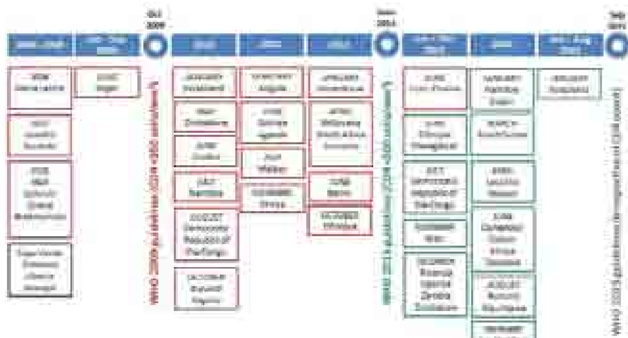
**Background:** The World Health Organization (WHO) HIV treatment guidelines have been used by countries to revise their national guidelines. Our study looks at the national policy response to the HIV epidemic in Sub-Saharan Africa (SSA) and quantifies delays in the adoption of the WHO guidelines published in October 2009, June 2013, and September 2015, respectively.

**Methods:** From the Internet and www.hivpolicywatch.org, we collected 85 published guidelines from 37 countries in SSA (68% global HIV burden), and abstracted date of publication and antiretroviral therapy (ART) eligibility criteria. Four countries recommending ART at CD4 ≤200 cells/mm$^3$ were excluded from further analysis. Number of months taken to adopt the WHO 2009, 2013, and 2015 guidelines were calculated for the remaining 33 countries (97% of 2014 burden in SSA) to determine the average time lag in WHO guidelines adoption.
**Results:** Even five months after release of WHO 2015 guidelines, none of the countries have adopted the new 'treatment for all' recommendation. Of the 37 countries, 21 (71% SSA burden) are recommending ART at WHO 2013 CD4 criteria (≤500 cells/mm$^3$), 12 (26% burden) at WHO 2009 CD4 criteria (≤350 cells/mm$^3$), and four (< 1% burden) at WHO 2006 CD4 criteria (≤200 cells/mm$^3$).
The average time lag to WHO 2009 guidelines adoption in 33 countries was 24 [3-56] months. The 21 countries that have adopted WHO 2013 guidelines took an average of 9 [0-19] months, a number that will increase as the remaining countries move to CD4 ≤500 cells/mm$^3$. If the trajectories for the adoption of WHO 2009 and 2013 guidelines are followed, it may take many years for the new WHO 2015 guidelines to become national policies.



*[Timeline showing the date of release of WHO guidelines and national guidelines from 37 countries in Sub-Saharan Africa (January 2004 - February 2016)]*

**Conclusions:** There is an urgent need to shorten the time lag in adoption and implementation of the new WHO guidelines that recommend 'treatment for all' to achieve the 90-90-90 targets by 2020.

## WEPEC273

### FACTORS ASSOCIATED WITH THE ACCEPTANCE OF IMMEDIATE ANTIRETROVIRAL THERAPY AFTER HIV DIAGNOSIS AMONG HIV-POSITIVE CLIENTS OF THE THAI RED CROSS ANONYMOUS CLINIC

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**Background:** Thailand started to recommend antiretroviral therapy (ART) immediately after HIV diagnosis, regardless of CD4 count, in 2014. Willingness and readiness of people recently diagnosed with HIV are the key to successful ART initiation and long-term adherence. We studied factors associated with the acceptance of ART among Thai people immediately after their HIV diagnosis.
**Methods:** Self-administered questionnaire and in-depth interview were used to collect data from clients of the Thai Red Cross Anonymous Clinic which is the largest HIV testing and counseling center in Bangkok. HIV testing clients who received HIV-positive test results were consecutively enrolled during July to December 2015. Demographic data, HIV knowledge, acceptance of immediate ART if offered, incentives and barriers towards ART acceptance were assessed. Binary logistic regression was performed to assess factors related to immediate ART acceptance.
**Results:** Of 216 HIV-positive participants were enrolled, 62% were men who have sex with men, 16% were heterosexual men, 2% were transgender women, 6% were bisexual men, and 15% were women. Median (IQR) age was 29 (24-36) years, median (IQR) CD4 count was 274 (168-396) cells/mm3, 72% had unprotected sex over the past 6 months, and 7% had HIV-associated symptoms/AIDS-defining illnesses. Median (IQR) HIV knowledge score was 12 out of 15 (11-13.5), 85% were aware of possible adverse health outcomes and 74% knew about resistance development, both as a result of poor ART adherence. 95.4% indicated immediate ART acceptance. Multivariable analysis showed that the awareness that poor ART adherence could cause adverse health outcomes increased immediate ART acceptance (aOR 4.40, 95%CI 1.16-16.71, p=0.03). Awareness of the relationship between poor ART adherence and resistance development was not significantly associated with ART acceptance (aOR 3.90, 95%CI 0.99-15.41, p=0.052).
**Conclusions:** Acceptance of immediate ART after HIV diagnosis was very high among newly diagnosed HIV-positive clients in Bangkok. Awareness that poor ART adherence could cause adverse clinical consequences influenced ART acceptance. More efforts are needed to make newly diagnosed clients in Thai community aware of the very few side effects and small adherence burden of the currently recommended first-line ART regimens in order to support their decision to start ART.

# VACCINES

## WEPEC274

### URBAN AMERICAN WOMEN'S WILLINGNESS TO PARTICIPATE IN HIV VACCINE TRIALS

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**Background:** Women, especially women of color, are markedly underrepresented in clinical trials. Nearly 80% of incident HIV infections among American women occur in Black and Hispanic women, underscoring the importance of understanding the factors that affect their willingness to participate (WTP) in prevention studies. We describe factors associated with women's WTP in future HIV vaccine trials.
**Methods:** Between 2008 and 2011, we enrolled HIV-negative women aged ≥18 years from the waiting rooms of seven urban community health clinics in Indianapolis, Indiana, USA. Racial and ethnic minority women were oversampled. Women were asked about their sociodemographic characteristics, sexual behaviors, health beliefs, and WTP in an HIV vaccine trial if offered the chance. All questions were answered via audio computer-assisted self-interview. We evaluated factors associated with WTP using mixed-effects multivariable, adjusted logistic regression.
**Results:** Among 1,919 women aged 18-65 years (mean=42.7), 67% of whom were women of color, 22% expressed WTP in an HIV vaccine trial if offered the chance. Black women were less likely to express WTP compared to white, non-Hispanic women (OR=0.45; 95%CI=0.25,0.80). Women were more likely to express WTP in a vaccine trial if they had lower average scores on a perceived obstacles scale (OR=0.13; 95% CI=0.08, 0.20) and on a scale measuring fear of injections (OR=0.72; 95% CI=0.57, 0.91). Women with higher average scores on a perceived benefit scale (OR=16.01; 95% CI=9.32, 27.5) and on a perceived norms scale (OR=3.39; 95% CI=2.08, 5.52) were also more likely to express WTP. Women were less likely to express WTP in a trial involving 3 injections compared to single injection (OR 0.42; 95% CI=0.35,0.50). Sexual behaviors, worry about becoming infected with HIV, and other sociodemographic characteristics (e.g. education, income) were not significantly associated with WTP.
**Conclusions:** In this sample of urban adult women, few expressed WTP in an HIV vaccine trial. The strong association between health beliefs and WTP suggests that interventions that highlight the benefits of participation, create or enhance social norms favoring participation, and reduce perception of obstacles may be successful for recruitment of adult women volunteers, particularly those from minority groups.

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## APPROACHES TO IMPROVING ADHERENCE TO PREVENTION INTERVENTIONS

### WEPEC275

#### STIGMATIZATION, STATUS DISCLOSURE AND SUPPORT AMONG HIV-POSITIVE WOMEN IN THE KUMASI METROPOLIS, GHANA: A MIXED METHOD STUDY

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**Background:** HIV-related stigma and discrimination have been acknowledged as an impediment to mitigating the HIV epidemic. HIV-positive women are at a higher risk of being stigmatized. This parallel mixed methods study unravel issues of stigmatization and disclosure of status and how this influence adherence to ART among HIV positive women.
**Methods:** This study was conducted in three ART centers in the Kumasi metropolis of Ghana between January and June 2012. The study population consisted of 206 HIV positive women on ARVs for treatment or prophylaxis, aged 18-49 years and on ART >3 months and 14 health workers at the ART centers. Quantitative data were collected using semi-structured questionnaires. A logistic regression analysis was done to estimate the influence of socio-demographic characteristics and health worker support on the odds of disclosing HIV status or defaulting ART. The qualitative study involved 3 focus group discussions and 14 in-depth interviews and data were collected using discussion guides and audiotape recorder.
**Results:** The mean (SD) age of the HIV positive women in this study was 35 years (7.2) and most of them were married. About 88% had disclosed their status to either a partner of family member and 24% of those who had not disclosed status had no support. Being single decreased and not knowing whether partner has tested decreased the likelihood to disclose HIV status. HIV-positive women who had disclosed their status were less likely to miss ART appointment (AOR=0.3; 95% CI=0.1-0.9). In the FGDs, stigmatization and fear of divorce, rejection or abandonment were major reasons for not disclosing HIV status.
**Conclusions:** Stigmatization and fear of rejection impedes status disclose of HIV, which in turn militate against support seeking and optimal adherence to ART. Psychosocial support for HIV-positive women, especially the newly diagnosed and the unmarried is advocated.

### WEPEC276

#### THE IMPACT OF DISTANCE TO HIV CARE ON ADHERENCE TO TREATMENT: ADJUSTING FOR POPULATION AND GEOGRAPHICAL HETEROGENEITY USING ADVANCED SPATIAL ANALYSIS

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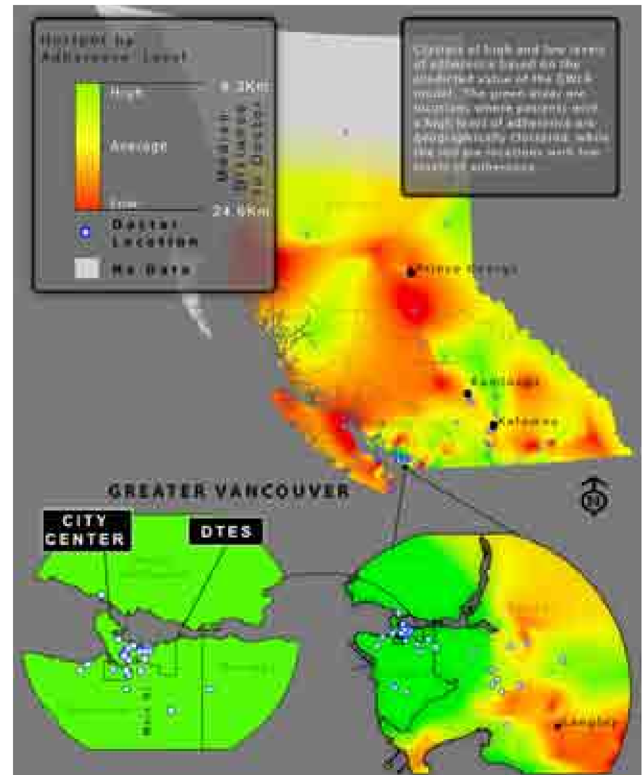
**Background:** Several studies have shown a direct relationship between spatial access and health outcomes. However, measuring access is complex and it is influenced by several spatial and non-spatial factors.
The objective of this study was to examine the relationship between distance to HIV care and adherence to treatment by controlling for various individual and geographical characteristics.
**Methods:** Data from the Drug Treatment Program (DTP) of the BC Centre for Excellence in HIV/AIDS was used for this analysis. Driving distance was calculated from patient's place of residence to their doctors and it was used as the primary exposure. Adherence to treatment (< 95% and ≥95%) was used as main outcome variable. Potential confounding variables, measured at ART initiation included: gender, age, CD4 counts, viral load, history of injection drug use, having an AIDS-defining illness. We also examined the number of viral loads performed in the first 12 months. We fitted both a multivariate logistic regression and geographically weighted logistic regression (GWLR) to address our study objective.
**Results:** There were 1,528 patients who drove at least 5km to a doctor's office, for a median distance of 17.85 km (Q1=8.8km - Q3=47.2km). After adjusting for all confounding variables, patients who drove more >17.85 km to receive treatment had a 34% higher (AOR: 1.34; 95% CI 1.06 - 1.70) chance of not adhering to the treatment than their counterparts. GWLR, adjusting for spatial dependency, provided a slightly better model (Fig. 1).



*[Fig. 1]*

**Conclusions:** The results of this study clearly show that patients who travelled further to the place of treatment were more likely to not be adherent to treatment. Mapping of the results shows hotspots where spatial access plays an important role in hindering access to care.

### WEPEC277

#### RELIABILITY AND VALIDITY OF THE HOPKINS SYMPTOM CHECKLIST-25 AMONG HIV-POSITIVE PERSONS IN RURAL UGANDA

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**Background:** Depression is highly comorbid among persons living with HIV (PLWH) with a prevalence range of 23% to 63% across different countries in sub Saharan Africa. However, lack of validated instruments for use in these settings further complicates mental health research in this population. All studies in sub-Saharan Africa have focused exclusively on validating the 15-item depression subscale of the Hopkins Symptom Checklist-25 (HSCL-25). Therefore, the objective of this study was to determine the reliability and validity of both the depression and anxiety subscales of the HSCL-25 among persons living with HIV in rural Uganda.
**Methods:** We conducted a cross-sectional sub-study nested within an ongoing population-based cohort of all residents living in Nyakabare Parish, Mbarara District, Uganda. Self-reported HIV status (positive, negative, or unknown) was elicited as part of the study. All persons who self-reported that they were HIV positive were administered the depression and anxiety subscales of the Hopkins Symptom Checklist. We performed factor analysis on the scale items and estimated reliability using Cronbach's alpha. To assess construct validity we compared the depression and anxiety sub-scales to related constructs, including happiness (single item scale) and food insecurity (3-item hunger scale). We used multivariable regression to identify socio-demographic and other predictors of depression and anxiety.
**Results:** A total of 158 adults self-reported that they were HIV positive (prevalence rate of 8.7 percent). These adults had a mean age of 40.5 years, and two-thirds were women. The Pearson correlation between the depression and anxiety subscales was 0.68. Cronbach's alpha was 0.81 for the depression subscale and 0.87 for the anxiety subscale. Participants scored as having greater happiness as depression and anxiety scores declined (P for trend < 0.001 for both). Persons with moderate to severe hunger had both greater depression symptom severity (P=0.001) and greater anxiety

(P=0.001). In multivariable regression models, statistically significant predictors of greater depression included female gender (P=0.003) and happiness (P=0.001); statistically significant predictors of greater anxiety included female gender (P=0.01), happiness (P=0.005), and hunger (P=0.03).
**Conclusions:** This population-based study provides strong evidence of the reliability and construct validity of the HSCL-25 among persons with HIV in rural Uganda.

## WEPEC278

### PRISONS BASED HIV PREVENTION AND CONTINUUM CARE OF HIV POSITIVE EX-PRISONERS IN TAJIKISTAN

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**Background:** Prisons are a high-risk environment for HIV transmission with drug use and needle sharing, tattooing with homemade and unsterile equipment, and high-risk of unsafe sex. In Tajikistan HIV prevention programs are rarely made available in prisons.
By the data of Penitentiary System for 2015 in 18 correctional facilities of Tajikistan 132 (59,4%) out of 222 HIV(100%) positive prisoners are provided by ART; 115 (51,8%) of all PLHIV including those who get ART had released from prisons; only 22(19,1%) from 115 released HIV positive prisoners continued treatment and registered in civilian AIDS centers; 80,9% of released PLHIV suggested as lost patients.
**Description:** During 2014-2015, *AFEW*-Tajikistan together with Penitentiary System introduced "START Plus" program in two pilot colonies. START Plus is a program ensuring prisoners access to HIV education and counseling in prison and continuity of ART during the transition period: 2 months before and 4 months after release. START Plus offers HIV mini-trainings for prisoners and provision of comprehensive package of services for pre and post release prisoners. These services are include discharge planning, health information and referring to doctors,VCT of prisoners with unknown HIV status, adherence support to PLHIV on ART and assistance on restoring the relationships with families after release. Ex-prisoners participating in START Plus supported in adherence to ART, provided by temporary accommodation and meal, restoring IDs and provision of legal support. Also program provides ex-prisoners with assistance in employment and social welfare.
**Lessons learned:** In 2015, 1359 prisoners participated in HIV education mini-trainings and provided by VCT. As result 14 new cases of HIV were detected and 27 earlier detected cases were confirmed. 26(61,9%) out of 42 released prisoners those who need social and medical support were reached by START Plus. 100% (6) of post release prisoners with HIV timely registered in civilian AIDS Centers and continuing ART after release.
**Conclusions/Next steps:** The START Plus program was recognized by Penitentiary System of Tajikistan as effective and productive approach ensuring health and social provision of prisoners and ex-prisoners. On 25 of August by its Order (№89) Head Administration of Penitentiary System is approved START Plus for introducing in correction facilities.

## WEPEC279

### FACTORS ASSOCIATED WITH RETENTION IN MULTI-SESSION EVIDENCE-BASED INTERVENTIONS: FINDINGS FROM CDC-FUNDED EVALUATION PROJECTS CONDUCTED AT 19 COMMUNITY-BASED ORGANIZATIONS

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**Background:** Evidence-based interventions (EBIs) focus HIV prevention efforts among populations at risk for HIV transmission and acquisition. Retention is critical for the successful implementation of multi-session EBIs at community-based organizations (CBOs), and is an important consideration during the design, delivery, and adaptation of EBIs. From 2006-2015, CDC provided supplemental funding to 19 CBOs across the country to monitor outcomes and process indicators for 5 multi-session EBIs. Participants were those who agreed to participate in an evaluation of the EBI; data on intervention session attendance, demographics, and HIV risk behaviors were collected.
**Methods:** Data from each EBI were analyzed separately to identify factors associated with completing all intervention sessions. Differences between CBOs with respect to participant attributes and retention were also explored. Bivariate analyses were conducted, using Chi-Square, negative binomial models, and regression models depending on the variable type. Log-binomial multivariable models were constructed to assess the adjusted associations between attending all intervention sessions and a number of attributes, including race/ethnicity, age, sex at birth, education, reporting any sex without a condom, and number of sex events without a condom reported.
**Results:** Completion of all intervention sessions was achieved by 84%, 80%, 79%, 61%, and 60% of participants for 3MV, RESPECT, Healthy Relationships, WILLOW, and SISTA, respectively. Reporting sex without a condom prior to the intervention was associated with completing all intervention sessions for both SISTA (PR=1.19, p< .05) and Healthy Relationships (PR=1.08, p< .01) in a multivariable model. For SISTA, higher educational attainment was also associated with a higher proportion completing all intervention sessions (high school graduate/GED:PR=1.40, p< .0001; some college:PR=1.28, p< .05, referent:less than high school graduate).
**Conclusions:** The analysis of evaluation data from 2006-2015 offers the unique opportunity to compile retention data from 19 CBOs and examine patterns of retention in real-world settings. Findings suggest that individual factors such as baseline HIV risk behaviors and educational attainment are associated with retention, but the associations may differ by intervention. There was not a clear association between losses to retention and EBIs with more sessions or longer participation periods. This information may inform retention practices, and/or interpretation of retention indicators collected for monitoring purposes.

## WEPEC280

### AN EXPLORATORY STUDY ON ADHERENCE TO EXCLUSIVE BREASTFEEDING WITH ANTIRETROVIRAL THERAPY INTERVENTION AMONG HIV-INFECTED MOTHERS IN SOUTH AFRICA AND NIGERIA

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**Background:** Even in the presence of HIV infection, exclusive breast feeding (EBF) is recommended for the first six months of an infant's life. However, formula-feeding or mixed feeding is still common. We aimed to assess breast-feeding practices among HIV-positive mother-infant pairs in South Africa and Nigeria.
**Methods:** Data for this analysis was drawn from the INFANT Study, a longitudinal cohort study of HIV-infected breastfeeding mothers and their HIV-exposed uninfected infants (April 2013 to March 2015). Mothers were recruited from site B Clinic in Khayelitsha, South Africa and Plateau State Specialist Hospital, Nigeria. Descriptive statistics were used to characterize breastfeeding practices and logistic regression using odds ratios (OR) and 95% confidence intervals (CI) was used to identify factors associated with EBF for the first 6 months.
**Results:** Overall 110 (32.7%) of 336 mothers practiced EBF up to 6 months. Among the sample, 246 (40%) of mother in Nigeria and 90 (18%) in South Africa EBF their infants. Compared to peri-urban South African women, more rural Nigerian women (n=246) EBF ((OR: 1.60, 95% CI: 0.84-3.32). The mean age of the mothers was 30 years (SD 5.02) and most of them had access to amenities such as running water, electricity and refrigerators. The majority (86%) of mothers had more than one baby and 62% of them had previously breastfed their last baby. Multigravidas 87% comprised of the sample in Nigerian and 82% in South Africa. The mean birth weight for was 3024g (SD 404) with a gestational age mean of 39 weeks (SD 2.9).No standard baseline demographic or clinical characteristics were significantly associated with EBF.
**Conclusions:** Despite recommendations to promote EBF for HIV-infected mothers and their exposed infants, many HIV-infected mothers do not EBF for the first six months of life. There is an urgent need to understand factors that may influence, develop strategies that improve HIV-infected women's adherence to EBF.

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## Use of the internet, social media, mobile phones and other e-devices for prevention (mHtealth)

### WEPEC281

#### Crowdsourcing condom promotion videos: a non-inferiority randomized controlled trial (RCT) in China

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**Background:** Crowdsourcing, the process of shifting individual tasks to a large group, may help health media interventions to promote condom use. We conducted a non-inferiority RCT to compare condom use between those who viewed a crowdsourced or a social marketing condom promotion video.

**Methods:** MSM and transgender participants (n=1173, ≥16 years old, engaged in condomless sex in the last three months) were recruited through a nationwide MSM web portal and randomly assigned into 1 of 2 video interventions. The crowdsourced video was developed by the public through an open contest while the evidence-based social marketing video was designed by experts. Participants were followed up 3 weeks (online survey) after watching the video and the main outcome was any condomless sex in the 3-week period.

**Results:** Among 1173 eligible participants who entered the study, 907 (77%) individuals from 32 provinces in 269 Chinese cities completed the 3-week follow-up. Socio-demographic, sexual risk behaviors, and non-intervention health media exposure were similar between the 2 groups. Condomless sex was reported for 146/434 (33.6%) in the crowdsourcing group and 153/473 (32.3%) in social marketing group. The crowdsourced video met the pre-specified 10% margin for non-inferiority (estimated difference: 1.3%, 95% confidence interval: -4.8% to 7.4%). The two groups also had similar proportions of condom self-efficacy, HIV testing, and condomless sex with male partners, and with female partners. The crowdsourced intervention cost substantially less than the social marketing intervention, both for total video cost (10,159 USD savings) and cost per person who reported no condomless sex (58 vs. 84 USD/person).

**Conclusions:** Our nationwide study demonstrates that crowdsourcing may be an effective tool for designing media to promote condom use. Crowdsourcing contests may help spur more creative intervention tools that promote HIV prevention and control.

### WEPEC282

#### The Women's Health Intervention using SMS for Preventing Pregnancy (WHISPER): development of a mobile phone-based health promotion intervention for female sex workers in Mombasa, Kenya

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**Background:** Female sex workers (FSWs) in many HIV-endemic settings are at high risk of unintended pregnancy. HIV prevention programs, while critical for promoting condom use, tend not to address broader sexual and reproductive health (SRH) needs. Due largely to poor knowledge and misconceptions about available options, FSWs in Kenya have high unmet need for dual methods and more effective and longer-acting methods of contraception.

WHISPER is an mHealth intervention aiming to reduce unintended pregnancy among FSWs. We report the intervention development process and results from workshops with FSWs.

**Methods:** Intervention development was an iterative process that included: literature review identifying key SRH domains and barriers; mapping these to cognition strategies from behaviour change theory; and involving the target population in message development. Stand-alone messages and multiple-episode 'role model stories' about FSWs adopting healthy behaviours were drafted. These were tested with FSWs in six workshops to improve relevance, cultural appropriateness and acceptability. Notes and recordings were translated into English and analysed thematically.

**Results:** Forty-two women aged 16 to 44 participated. Most had at least one child and a boyfriend or husband, in addition to clients. Despite Swahili being widely spoken, English was the preferred language for SMS because of its perceived simplicity. Participants reported that most messages were easy to understand, positive in tone, and addressed topics important to them. They found the role model stories inspiring and realistic, and identified with the characters. The intervention was modified based on participants' feedback, e.g. using text rather than voice messages, timing messages to different work schedules, and adding specific Swahili terms to improve relevance. A risk that participants may use WHISPER to seek emergency assistance was identified and an automated response message providing local emergency numbers was added to address this. Overall, participants felt they could trust the content and that it made them feel cared for and valued.

**Conclusions:** A strong basis in theory and evidence resulted in an mHealth intervention that was perceived as engaging and relevant by FSWs. Active participation of FSWs enabled intervention refinements and improvements in acceptability, appropriateness, and the potential to reduce unintended pregnancy and HIV in this high-risk population.

### WEPEC283

#### Predicting intentional barebacking by analyzing the dating profiles of the popular gay chat rooms in Taiwan

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**Background:** In 2015, men who have sex with men (MSM) accounted for 84% of newly diagnosis HIV/AIDS cases in Taiwan. Intentional condomless anal sex ("barebacking") and recreational drug use in MSM are the major concerns of transmission of HIV and other sexually transmitted infections. The study purpose was to analyze personal dating profile posted on the popular gay chat rooms and we developed linguistics-driven prediction models to estimate the factors associated with intentional barebacking among MSM online users.

**Methods:** UT Home is the most popular Internet site provides free online information, social networking and communication services for Taiwanese MSM online users. We downloaded all messages posted in the Message Board during October 1st to 31th in 2015 under the topic "Gay Chat Rooms." We analyzed personal dating profiles included the name, ID, nickname, and/or other interaction information openly displayed on the chat room. The data was analyzed using a machine-learning algorithm to generate predictive models. The models were constructed by converting the free-text records into words or word phrases datasets in which identified the combination of words that were associated with barebacking.

**Results:** We analyzed 290,242 interactions in the UT chat rooms. Of them, 11% were identified as the requests for sexual intercourse directly, 0.6% requested for barebacking, only 0.6% disclosed their HIV positive status, 8.0% requested for using drugs, including 3.5% for methamphetamine, followed by ecstasy (0.8%), and ketamine (0.6%). Intentional barebacking were associated with: hock on line during early morning after 1:00 am (AOR: 1.38, 95% CI: 1.22-1.56), using methamphetamine

(OR: 3.08, 95% CI: 2.65-3.59), requests for sex (OR: 6.02, 95% CI: 5.48-6.61), and self disclosure as HIV positive (OR: 2.58, 95% CI: 1.71-3.89).

**Conclusions:** Crystal methamphetamine users and self-identified as HIV positive were associated with being sexually active and intentional condomless anal sex. Future STI and HIV prevention strategies should emphasize on harm reduction advice and support to HIV-diagnosed MSM who use recreational drugs.

## WEPEC284

### DIGITAL PARTNER NOTIFICATION SERVICE AT A COMMUNITY-BASED VOLUNTARY COUNSELLING AND TESTING CENTRE FOR MEN WHO HAVE SEX WITH MEN: CHECKPOINTLX, LISBON, PORTUGAL

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**Background:** Access to partner notification (PN) services should be offered in all sexual transmitted infection (STI) testing sites, especially in those tailored for HIV priority groups. PN approaches and implementation do vary across Europe Region, but recently web-based solutions, such as electronic PN for men who have sex with men (MSM) were endorsed. PN is recommended when participation is both voluntary and anonymous. CheckpointLX is a Portuguese, peer-led, community-based voluntary counselling and testing centre for HIV and other STI screening and linkage to care tailored for MSM. This centre started CheckOUT in June 2015: a web-based, free, voluntary, anonymous, confidential, client-led PN service, designed according to current recommendations.
**Methods:** CheckOUT is intended to be a tool for anonymous and client-led disclosure of a recent STI diagnosis or reactive test acknowledged at CheckpointLX, therefore only accessible to MSM attending this centre. CheckOUT runs on a reserved area of the centre official website. User logins are given to all MSM with recent STI diagnosis or reactive test. User login expires after 30 days and can only be used once. After CheckOUT service instructions page, users do login and then choose the STI to notify, insert partners phone or email, agree with disclaimers and pre-defined notification wording and submit. Service statistics are stored at website backoffice (number of users and notifications sent). Since June 2015 all people attending CheckpointLX are asked if they come for testing due to CheckOUT. Data and outcomes were collected from 20th June 2015 to 20th of January of 2016.
**Results:** CheckOUT access was granted to 78 MSM. 17 used it (22% of index cases) and informed 98 partners (≈6 notifications per person). In this period, 10 people sought CheckpointLX for STI`s screening reporting CheckOUT notification, 2 of them had a reactive HIV and syphilis rapid tests (20% reactive cases overall). All 10 attending had been tested for HIV in the previous 12 months.
**Conclusions:** Almost a quarter of MSM used CheckOUT. All people with HIV reactive test had syphillis coinfection and a recent previous nonreactive test for HIV. PN allowed early diagnosis and linkage to care and potentially prevented new HIV infections.

## WEPEC285

### ASSESSING THE EFFICACY OF HARNESSING MOBILE INTERNET TECHNOLOGY TO PROVIDE LOCALIZED AND LANGUAGE-SPECIFIC MSM HEALTH INFORMATION IN CHALLENGING AFRICAN CONTEXTS

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**Background:** Numerous barriers exist to providing MSM in East African countries with targeted, accurate and context-specific sexual health information. Legal barriers and broader community-censure hinder dissemination of MSM-focused safer sex materials. Security, logistical and financial barriers limit the geographic reach of what printed local materials are available. Language barriers limit the efficacy of most online materials. MSM-focused HIV information that is easily accessed, context-relevant to East Africa and cost-effective is needed.
**Description:** Anova Health Institute and the International HIV/AIDS Alliance have designed and implemented the first online information platform for MSM in East Africa in both Swahili and English. Designed as a low bandwidth site for mobile phones, *afya4men.info* offers rapid access to holistic information that enables MSM to look after their health. It includes information on male sexuality, HIV prevention and testing, living with HIV, risks and symptoms of other STIs and the effects of alcohol and other substance use.
**Lessons learned:** In just over 12 months, over 10,000 pages of information have been viewed. Site access from across the region continues to increase significantly every month. Pages in Swahili, specifically concerning HIV transmission and STIs are by far the most popular and should be expanded upon. Traditional advertising in Uganda, Kenya, Zimbabwe and Tanzania via fliers and other promotional material had marginal impact on site uptake. Conversely, limited but targeted online advertising via social media platforms has proved extremely effective in terms of cost, reach and translation into site visits.
Cost benefit analysis highlights significant cost savings generated by using online platforms for information dissemination across the region, especially when compared to existing outreach models. However, start up costs for translation and site development must be acknowledged, as should defraying costs of access onto users via expenditure for online data.
**Conclusions/Next steps:** Success in implementation has led to translation of the site into French for access in Francophone Africa. Feedback from MSM highlights sometimes very limited knowledge regarding male biology and sexual risk. Consideration should now be given to developing language specific interactive elements whereby localized concerns can be speedily addressed.

## WEPEC286

### ECASCADE: REAL-TIME MONITORING TO MEASURE AND IMPROVE THE HIV CASCADE FOR MSM/TG POPULATIONS IN THAILAND

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**Background:** Mobile applications that automate data collection and track individuals through the HIV cascade can facilitate real-time monitoring to improve HIV program performance. The USAID LINKAGES Project (managed by FHI 360) constructed a comprehensive, easy-to-use smartphone app to capture data related to client flow at outreach, HIV testing, and ARV treatment points.
**Description:** The smartphone application guides outreach and clinical staff through the steps of a multi-faceted HIV cascade model in four project sites. The app tracks individuals across multiple engagements, manages UIC codes and incentive coupon systems, ensures confidentiality and consent, and leverages SMS messaging to reduce a client's potential loss-to-follow-up. This tool both guarantees adherence to essential procedures and extracts cleaner data for cascade tracking. After a phased rollout from July 2015 to February 2016, the app registered 1257 individual clients, of which 1039 (83%) were successfully tested for HIV. Among those tested, 96 were confirmed positive (9.2% HIV yield), and 63 of these individuals initiated ARV treatment (66% treatment initiation uptake within a short time period).
**Lessons learned:** The application's recruitment coupon data resulted in a direct view of the structure of clients' social networks and indicated networks with higher numbers of positives for increased outreach focus. The application's GPS function made possible a geospatial visualization of outreach, providing greater analysis of the strategies undertaken by outreach implementers. Furthermore, among the workers operating the smartphones, clinical staff require greater facilitation of application use than outreach staff, as clinical facilities' logistics and existing systems present more constraints than outreach. Finally, the important task of integrating the app with government data systems requires sustained engagement.
**Conclusions/Next steps:** Client flows through diverse outreach, HIV testing, and treatment sites require more complex cascade analyses than originally envisioned but the tool can still be valuable to measure 90-90-90 goals of the HIV cascade. Furthermore, joint HIV cascade data ownership and use by government and NGOs is key to promoting complimentary and mutually respected community-based and government services for key populations.

## WEPEC287

### A PILOT RANDOMIZED CONTROLLED TRIAL OF A MOBILE PHONE DELIVERED COUNSELING INTERVENTION TO REDUCE HIV RISK AMONG MALE SEX WORKERS IN CHENNAI, INDIA

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**Background:** Men who have sex with men (MSM) are at increased risk for HIV infection in India, particularly those who engage in transactional sex with other men (i.e., male sex workers; MSW). Despite this, HIV prevention efforts for Indian MSW are lacking. Traditional face-to-face interventions may present important challenges that may limit MSWs participation, including time spent and costs associated with transportation. The use of mobile phones among MSW are widespread; employing these technologies as part of an HIV prevention strategy may mitigate these challenges and prove to be effective.
**Methods:** MSW (N = 100) were equally randomized to:
(1) A behavioral intervention integrating HIV risk reduction counseling delivered via mobile phones, and daily, personalized text messages as motivating cues for reducing risky sexual behavior, or
(2) A standard of care (SOC) comparison condition.
Both groups received HIV counseling and testing at baseline and 6-months, and completed ACASI-based behavioral assessments at baseline, 3-, and 6-months. A mixed-effects regression, specifying a Poisson distribution, was estimated to assess the intervention effect on the primary outcome: condomless anal sex (CAS) acts with male clients.
**Results:** The mean age was 28 (SD=9.1). Half of participants completed secondary education or less, and one-third completed undergraduate college. A reduction in the reported number of CAS acts with male clients in the past month was seen overall. MSW in the intervention condition reported a faster rate of decline in number of CAS acts with male clients in the past month from baseline to 3-month follow up (p< 0.0001) and 6-month follow up (p< 0.00001) compared to the SOC condition. Post hoc contrasts indicated that differences in CAS acts with male clients were seen at both 3- and 6-months.

| | Baseline | Month 3 | Month 6 |
|---|---|---|---|
| Intervention | 7.67 (1.15) | 1.43 (0.29) | 0.24 (0.09) |
| Enhanced Standard of Care | 7.79 (1.17) | 4.85 (0.87) | 2.79 (0.79) |
| p-value | 1.000 | 0.0003 | <0.0001 |

*[Poisson-Adjusted Mean (SE) Number of Condomless Anal Sex Acts with Male Clients, Past Month by Study Condition at baseline and follow-up assessments]*

**Conclusions:** The use of mobile phone technologies to deliver an HIV prevention intervention that supports harm reduction for MSW in India was feasible and acceptable, and showed preliminary efficacy in reducing sexual risk when compared to a SOC condition. Future testing of this intervention in a fully powered, randomized controlled efficacy trial is warranted.

## WEPEC288

### POTENTIALS OF USING SOCIAL MEDIA: USE OF INTERNET, MOBILE PHONES AND OTHER E-DEVICES IN REACHING MEN WHO HAVE SEX WITH MEN WITH HIV-PREVENTION MESSAGES IN AN ERA OF RESTRICTIVE LEGISLATION

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**Background:** In Nigeria there has been a consistent rise in HIV prevalence over the years amongst the Men Who Have Sex with Men (MSM) accounting for about 10% of new Human immunodeficiency virus (HIV) infections. The same sex law operationalized in Nigeria has made it challenging for MSM to participate in HIV prevention programming and less likely to seek for HIV and sexually transmitted infections (STI) services for fear of public stigma and discrimination, hence increased challenges in programming for this population.
**Description:** In response to the prevailing legal and policy environment in Nigeria, the capture and re-capture methodology was used to estimate MSM key population in Lagos state, Nigeria, 2015. The survey was conducted across the 20-LGAs. A total of 2,422 and 1,079 MSM were interviewed at the first count and second count respectively across hot spots.
**Lessons learned:** This study revealed among other things that MSM are dynamic and highly mobile as evidenced by the difference in the community members enumerated in the two counts. This study also found that the most commonly used means of communication by the MSM was social media (2go Chat, Instagram, and MSM parties, SMS, Whatsapp and Twitter) during capture (86.2%) and recapture phase (87.8%). The three most common means of communication among MSM in the two phases respectively were identified as social media (86.2%; 87.8%); phone calls (83%; 81.7%) and with other friends (78.6%; 84.9%).
**Conclusions/Next steps:** Higher percentages of the MSM are educated and highly mobile. HIV prevention programs for MSM should explore the potential use of social media interventions such as development of APPS that seeks to provide relevant and appropriate messages on condoms, HTS and HIV related concerns. Development of mobile APPS that works to answer frequently asked questions that addresses HIV/AIDS needs to KPS and policies and programs that seeks to include social media as a medium of BCC messaging to intended audience.

## WEPEC289

### CYBER-EDUCATORS, A NEW BEGINNING ON THE HIV INTERVENTIONS

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**Background:** Central America, a region with a concentrated HIV epidemic in populations of men who have sex with men (MSM) and transgender women (TW), faces challenges to reach these populations due to high levels of stigma and discrimination. The evolution of the internet has led to revolutionary approaches in various public health interventions, including HIV, and has become an indispensable partner in expanding access to HIV-related services in the region.
**Description:** With USAID financial support, the Pan American Social Marketing Organization (PASMO) has implemented a 5-year program in Central America, except Honduras, combining prevention messages for behavior change communication, products, services, and referrals for HIV prevention. An online intervention targeting MSM was created to expand accessibility to and coverage of HIV-related services among this demographic. “Cyber-educators” reach out to MSM through social media and local chat room websites where they gradually introduce educational health topics through conversation and eventually refer MSM to HIV testing and counselling.
**Lessons learned:** The results of the program are increasingly encouraging. Using a unique code to track participants, educators were able to reach a total of 12,198 individuals online in 2015, five times the number reached in the first year of the program (2012) when 2,444 individuals were reached. The online component has consistently grown and now 41% of the total MSM interventions of the program are those implemented online, up from just 20% in 2012. PASMO has also been able to reach a younger and more diverse group of MSM than those reached through face to face interventions.
The program has been so popular that conversations are now transcending HIV to include other health topics, and countries outside the region have also begun to replicate the strategy. The further step is to conduct a study to determine the impact of these interventions.
**Conclusions/Next steps:** The internet’s influence on the modern world makes including online services almost mandatory for programs to succeed. The cyber-educators initiative started only as a complementary activity but has quickly come to represent almost half of all MSM activities in the region, and its potential is changing the way PASMO approaches program implementation in Central America.

# SOCIAL AND BEHAVIOURAL CONCEPTS AND THEORIES

## WEPED290

### EVALUATION OF THE HIV-RELATED SOCIAL SUPPORT SCALE AND ITS CORRELATIONS WITH QUALITY OF LIFE

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**Background:** Although social support is increasingly recognized to be important in treatment of HIV infection, no validated, disease-targeted instruments are currently available. We sought to develop and validate the first disease-targeted social support scale instrument in Chinese: the HIV-related Social Support Scale (HSSS).
**Methods:** We established content validity for HSSS and administered the resultant questionnaire to 310 persons living with HIV (PLWH). We used correlation analysis to test hypotheses regarding HSSS domains and measured construct validity by comparing WHOQOL-HIV scores across several subscales. Descriptive statistics were generated for each of the variables of general characteristics. And we also used student *t* test to compare the different groups.
**Results:** The HSSS demonstrated a high level of internal consistency, both within each subscale and with the overall higher-order scale; all Cronbach's α values exceeded our a priori threshold of ≥ 0.70. The HSSS cores were positively correlated with WHOQOL-HIV total scores (Pearson correlation: 0.39, $P < 0.001$). We also found that higher educational level, personal income, CD4 cell count, and shorter duration of antiretroviral therapy are significantly associated with a higher level of social support ($P < 0.05$).
**Conclusions:** The HSSS is a valid and reliable measure that captures differences in social support and may be useful in clinical practice or in future clinical trials.

## WEPED291

### HIV/AIDS POLICIES AND THE REDEFINITION OF CITIZENSHIP IN CAMEROON

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**Background:** Inequalities related to class, gender, sexual orientation, place of residence, etc. increase the risk of HIV infection. The links between the fight against HIV/AIDS and LGBT mobilizations around the world have been extensively demonstrated. However, there are few empirical studies on the effects of new strategies based on performance on LGBT claims in Africa. The New Funding Model of the Global Fund for example is based on an inclusive "country dialogue" process that includes all stakeholders, but especially key affected populations such as Men who have Sex with other Men (MSM). The aim of this paper is to show how the new overall global strategies and discourses on HIV/AIDs policies influence the design of practices and critical statements on human rights issues in homophobic contexts.
**Methods:** Our research is based on content analysis: conceptual notes, reports, strategic documents, press releases. We also referred to interviews with national stakeholders engaged in the Fight against HIV/AIDS, gay rights activists and journalists.
**Results:** New funding models of international donors force the State to open new channels of participation to minorities groups. They allow sexual minorities to exercise a form of citizenship linked to their biological condition. Homosexuals or men who have sex with other men for example are given a special attention within national AIDS policies. They can have access to medical care and psychosocial support. They even have a voice in decision-making through their delegates at the Country Coordination Mechanism. Paradoxically, these new strategies crystallize postcolonial tensions, by forwarding "western values" on same sex sexualities. They also enclose the recognition of LGBT rights within a *pathologized identity*, the HIV epidemic.
**Conclusions:** Biological citizenship defines better these new rights for LGBT in Cameroon. This specific citizenship appears to be a temporary and marginal citizenship. In order to give way to full citizenship, LGBT mobilizations need to be more political than technical. They must use HIV/AIDS platforms (the only platforms where they are officially recognized) to claim more political and social rights. The political environment is unfortunately not appropriate for such claims, since most civil societies organizations feel powerless before the centrality of the State power.

## WEPED292

### PERCEPTIONS OF HIV REMISSION ("CURE") TRIALS AND TRIAL INTENTIONS AMONG POTENTIAL PARTICIPANTS TREATED IN ACUTE HIV INFECTION

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**Background:** A series of HIV remission trials are being conducted in the Thai Red Cross AIDS Research Centre. Prior to trial invitation, we surveyed eligible, acute HIV individuals on ART in the SEARCH cohort, exploring trial interest, perceived benefits and risks, and factors associated with intentions to participate.
**Methods:** A paper survey was provided in-clinic. Data collection is ongoing; results from Nov-Dec 2015 are presented. Analysis includes descriptive statistics and backwards elimination regression.
**Results:** Among 165 participants the large majority (97%) are male. 139 (84.2%) were somewhat/very interested in learning about HIV remission trials. On open-ended questioning about key factors in decision making, those somewhat/very interested most often referenced anticipated personal and altruistic benefits; those less interested most often referenced risks of harm and personal benefit. Most (n=148, 89.7%) reported that trial decision-making would be theirs alone. For personal benefit, more than half endorsed "a big chance" (n=60, 36.4%) or "definitely would benefit" (n=45, 27.3%). For risk, 59 (36.0%) chose "no chance" or "small chance of harm" and 96 (58.5%) chose "about a 50/50 chance." Most (n=118, 72.4%) chose "a big chance" or "definite" for scientific benefit. Factors associated with intentions to participate in a trial that includes stopping ART (n=96, 58.9% somewhat/very likely) were higher perceptions of scientific benefit (beta= .27, p< .001) and higher personality trait optimism (beta= .26, p< .001), $R^2$= .16 (F (2, 159)= 15.58, p< .01). Factors associated with intent to participate in a trial with an experimental drug and stopping ART (n=110, 68.3% somewhat/very likely) were higher perceptions of scientific benefit (beta= .35, p< .001) and lower perceived impact of HIV (beta= -.07, p=.03), $R^2$= .16 (F (2, 157)= 14.37, p< .01).
**Conclusions:** This cohort indicated high interest and intention to participate. Though they anticipate personal benefits and frequently described these factors as important to their decisions, the common factor associated with stated intentions was anticipated scientific benefit. Risks were less described, which may reflect uncertainty about types and magnitude of risks, and optimistic bias. The results suggest that informed consent should target the potential for and uncertainty about risks and how the trial design maximizes scientific benefit.

## WEPED293

### UNDERSTANDING COERCION IN THE CONTEXT OF SEMI-SUPERVISED HIV SELF-TESTING IN URBAN BLANTYRE, MALAWI

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**Background:** HIV self-testing (HIVST) offers great potential to increase knowledge of HIV status since it uniquely addresses tensions between convenience and confidentiality. However, the high rate of gender based violence (GBV) in Sub-Saharan Africa generates concerns over the possibility that HIVST may trigger coercive testing at household level. This paper is drawn from a study exploring the social impacts of introducing HIVST in resource-poor settings. This presentation will explore the concept of coercion in the context of HIVST in Malawi and argues that coercion is a culturally relative concept, interpreted differently in different contexts.
**Methods:** Data on coercion was collected using mixed methods but the focus in this paper is on 60 serial biographical interviews (15 men, 15 women and 15 couples) collected at two time points with individuals aged 16-49 years who collected the HIVST kit in Blantyre. Data was organised, coded and themes developed using Nvivo 10.
**Results:** HIVST kit was an empowering tool especially for women by bringing test kits into the household. Coercive testing was considered acceptable in some contexts where people were in a stable relationship or had a history of infidelity and had never disclosed HIV status. Coercive testing was often considered as a benefi-

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cent act that helped people to control their future. In other cases, coercion was viewed as an infringement of human rights but actual impacts of coercive testing did not reflect perceived impacts of coercive testing.

**Conclusions:** Underlying social contexts such as power and gender imbalances informed male and female responses to coercion. In cases where coercion was considered acceptable actual realities of coercion were not considered unethical. The impact of methodological approaches needs to be understood in researching complex concepts such as coercion.

## STRENGTHENING SOCIAL AND BEHAVIOURAL DATA COLLECTION AND ANALYSIS

### WEPED294

### IMPROVED EXPECTATIONS OF HEALTH AND LONGEVITY AFTER IMPLEMENTATION OF UNIVERSAL TEST-AND-TREAT STRATEGY IN THE SEARCH TRIAL

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**Background:** Expectations about future health and longevity are important determinants of individuals' decisions to invest in physical and human capital. Few population-level studies have measured subjective expectations about longevity and examined how they are affected by scale-up of antiretroviral therapy (ART). We assessed these expectations in communities receiving annual HIV testing and universal ART.

**Methods:** Longitudinal data on expectations were collected in two waves, at baseline and year 1, in 16 intervention communities participating in the SEARCH trial of the test and treat strategy in Kenya and Uganda (NCT01864603). A random sample of households with and without an HIV-infected adult was selected following baseline HIV testing. Expectations about survival to 50, 60, 70, and 80 years of age were measured using a Likert scale. Logistic regression analyses were used to examine the association between reporting being very likely or almost certain to survive to advanced ages and HIV status, including CD4 cell count, and to determine trends in these expectations over time.

**Results:** Data were obtained from 2,932 adults at baseline and 3,726 adults in wave 1, with 2,748 adults participating in both waves. At baseline, adults reporting favorable expectations about survival to advanced ages were more likely to be male, have completed secondary education, and have higher wealth. HIV-negative adults were more likely to have favorable expectations about survival to 60 years than HIV-positive adults with CD4≤500 (adjusted odds ratio [AOR] 1.76, p< 0.001), as were HIV-positive adults with CD4>500 (AOR 1.20, p< 0.05). Favorable expectations about survival to 60 years were significantly more likely among all adults in year 1 (AOR 1.59, p< 0.001).

| | Baseline | | | Year 1 | | |
|---|---|---|---|---|---|---|
| | *HIV+, CD4≤500* | *HIV+, CD4>500* | *HIV-uninfected* | *HIV+, CD4≤500* | *HIV+, CD4>500* | *HIV-uninfected* |
| Very like or almost certain to survive to: | | | | | | |
| 50 years, % | 50.0 | 49.0 | 56.5 | 58.7 | 56.0 | 68.7 |
| 60 years, % | 35.7 | 36.3 | 46.2 | 51.4 | 44.6 | 57.6 |
| 70 years, % | 21.6 | 23.2 | 32.0 | 35.4 | 28.6 | 41.3 |
| 80 years, % | 15.3 | 17.3 | 23.7 | 24.4 | 21.3 | 30.1 |

*[Percentage of participants reporting they are very likely or almost certain to survive to advanced ages]*

**Conclusions:** Significant variation was found in expectations about survival to advanced ages in study communities, and these expectations improved considerably in a one year period. Future research from the SEARCH trial will help determine whether these changes are driven by the provision of universal ART.

## MIXED METHODS, INTEGRATED APPROACHES AND SYNERGIES IN HIV RESEARCH AND INTERVENTION

### WEPED295

### MAPPING 'HABITUS' AND HIV INFECTION OF DRUG USERS: THE COLLISION OF PHYSICAL SPACES OF EVERYDAY LIFE, RISK NETWORKS AND HEALTH

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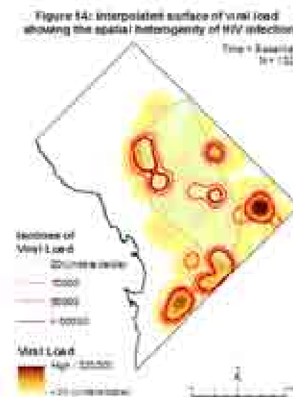
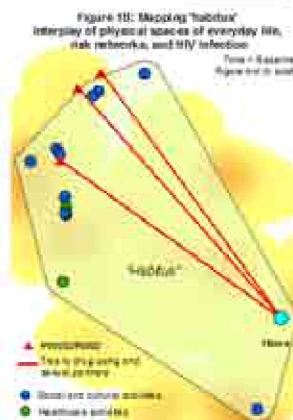
**Background:** Neighborhood and risk network factors have been linked to drug use and HIV prevalence. However, it is not clear how the interplay of risk networks and individuals' daily activities within their everyday physical and social spaces affect HIV transmission and treatment. Using French sociologist Pierre Bourdieu's framework of 'habitus', we sought to visualize micro neighborhoods mediating spaces and activities and understand their association with HIV. The study population is PWUD/PWID living with HIV in Washington-DC.

**Methods:** Demographic and egocentric risk network data were obtained from a longitudinal study (n = 152). The geographic location of participant's and network members' homes and a set of daily activities (e.g. work, worship, eating and healthcare) were recorded. Outcome measures were HIV treatment (viral load VL, CD4-count) and adherence to ART 30-days prior to baseline. Next, the habitus of participants were mapped using bounding polygons that enclosed the locations of everyday activities. The area, density, and direction of the habitus were calculated. Subsequently, network analysis and GIS were used to overlay risk networks and calculate its positionality with respect to the habitus. Finally, Universal Kriging was used to model the spatial pattern of HIV infection though VL.

**Results:** The PWUD/PWID were predominantly black (98%) male (54%) with a median age of 52. 45% had suboptimal (< 85%) ART-adherence and 35% exhibited detectable VL (>400). Fig1A shows a concentration of high VL in the southeastern and southwestern neighborhoods. For a participant (VL >4000) living in these neighborhoods, everyday activities, including healthcare, were located almost 5-miles away from home (Fig1B). The average size of risk networks was 3, comprised primarily of friends (77%) and generally clustered around participants' home in high-VL neighborhoods.





*[Figure 1A-B: Mapping 'habitus' of drug users with HIV infection]*

**Conclusions:** Our unique approach visualizes the habitus to explain spatial heterogeneity of HIV in micro neighborhoods. This can inform geographic targeting of tailored HIV prevention and care interventions.

## WEPED296

### HEALTH-RELATED QUALITY OF LIFE (HRQL) AMONGST PEOPLE LIVING WITH HIV IN MATABELELAND SOUTH PROVINCE OF ZIMBABWE

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**Background:** Health Related Quality of Life (HRQL) is an important measure to evaluate the efficacy of various health related interventions targeted towards a specific population. People living with HIV fall under the category of hard to reach populations given the sensitivity of HIV/AIDs in marginalized rural communities. Despite the magnitude of support rendered towards ensuring utilization of HIV/AIDs-related healthcare, there is dearth of scholarly evidence to assess changes in health related quality of life. Main objective of this study was to assess HRQL of amongst PLWHIV. This paper is part of a wider research that focused on examining 'Social Capital & Utilization HIV/AIDs related Healthcare in rural Matabeleland South province in Zimbabwe.'
**Methods:** A mixed method design was used for the study. A random sample of 403 adults above 18 years was reached using Time Location Sampling procedure. Demographic, health related and socio economic data was collected through one-on-one interviews. Informed consent and ethical clearance was done for the study. HRQL was operationalized using the SF-36 tool consisting of 36 items. Kolmogorov-Smirnov test for normality was done for the central study variables. Reliability tests for the HRQL scales were done and correlations between HRQL and central study variables such as Healthcare utilization were conducted in SPSS.
**Results:** The study showed that amongst 399 PLWHIV interviewed 65% reported high health related quality of life with average absolute scores above 50. Cronbach's alpha coefficients for the HRQL scales were above 0.7. 80% of those who reported low HRQL had low Personal Social Capital Scale scores. A chi-square test of independence was performed to examine the relation between Health related quality of life and healthcare utilization. The relation between these variables was significant, X2 (2, N = 399) = 14.14, p<0.5.
**Conclusions:** Health Related Quality of Life is associated with Personal Social Capital and health care utilization among PLWHIV. These findings are consistent with previous studies which linked social capital to positive health outcomes implying a need to promote social cohesion for better health related quality of life in rural areas.

## QUALITATIVE AND ETHNOGRAPHIC METHODS IN HIV RESEARCH

## WEPED297

### USING POETIC NARRATIVE INQUIRY IN HIV-RESEARCH WITH, FOR AND BY PAN-AFRICAN COMMUNITIES

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**Background:** Social science researchers are revolutionizing methodological approaches that are grounded in the ways people living with HIV make meaning of their social worlds. Notably, scholars in continental Africa and the African diaspora have incorporated culturally responsive approaches to knowledge production, including performance-based narrative methods reverential to emotive, embodied expression.
**Description:** The *Because She Cares study* used poetic narrative inquiry to explore African immigrant women's experiences of HIV-related employment. Informed by transnational feminist epistemologies and decolonizing thought, this methodology draws upon performance narrative methodologies, and critical narrative inquiry. Using poetic transcription, paralanguage (speech intonation, pitch, and speed, pauses, and body language) was incorporated into narrative transcripts. Select passages from each participant (narrator) were refashioned into data poems that illustrated salient aspects of HIV and work "found" through oral narrative performance such as: tonal shifts, emotive expression, and narrator declarations. Drafted poems were then workshopped with each narrator who reviewed them alongside their original transcript and then contributed to the poems.
**Lessons learned:** Poetic narrative inquiry is a novel way of engaging participants in research. Presenting the poems before dissemination gave participants greater control over the process, and the opportunity to discuss what poems to share, how to share them, and to whom. Narrators used the poems to reflect back on their original narratives which typically generated further reflections of how they make meaning of their work in the HIV response. Concerns about using poetic narrative inquiry include matters of confidentiality and anonymity, the tensions of authenticity, control and ownership, and the potentially painful emotional resonance of poetry
**Conclusions/Next steps:** Poetic narrative inquiry offers a social science methodology that is congruent with pan- African narrativization of experience. Poetic representation is a rational and emotional expression of research evidence that can disrupt the empirical dualism of mind-body, art-science, and researcher-participant. Currently, the researcher is working with narrators to develop dissemination activities that incorporate data poems such as text installations, oral performances, and audio/video displays. Using arts-informed methodologies creates an opportunity to critically reflect on knowledge production in HIV research: who produces knowledge, what ways of knowing are valued, and what messages are conveyed through knowledge production and dissemination.

## WEPED298

### TRANSITION CARE OF THE YOUTH FROM ADOLESCENTS' TO ADULTS' ART CLINIC: LESSONS FROM UGANDA. A QUALITATIVE STUDY

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**Background:** Antiretroviral therapy (ART) and improved care have enhanced survival of HIV-infected infants into adolescents and young adults in many settings including Uganda.
Nsambya Home Care (NHC) is a specialized HIV/TB Department of St. Francis Hospital Nsambya, in Kampala, Uganda. In 2011, NHC initiated Youths' Transition Care Counselling to prepare youths living with HIV and their caregivers for transfer of care to a user fee applying adults' ART clinic. We aimed to explore challenges, barriers and enabling factors associated with the process.
**Methods:** We conducted a general qualitative descriptive study to examine enabling factors, barriers and challenges to the transfer of the youth from the adolescents' clinic to the adults' ART clinic at NHC. The study covered 12 months (September 2014-August 2015), and the participants included all youths living with HIV aged 17-28 years, attending the adolescents' clinic over the study period. We used semi-structured face-to-face and telephone interviews to collect data that was complemented by chart reviews. Data was analysed using techniques from thematic and framework analysis.
The Uganda National Council for Science and Technology approved the study, and we obtained informed consents for the interviews.
**Results:** We studied 132 youths; mean age 20.1 (range 17-28 years), the majority were female (60.6%), on ART (96%), education level above primary (66%). Sixty-five percent accepted a transfer from the adolescents' to the adults' clinic, but only 12% eventually transferred to the adults' clinic. Even though 85% were paying user fees, just 35% were earning incomes.
**Enabling factors:** Included perceptions of maturity, having financial security and other support structures, and feeling in a safe and secure environment (e.g. same clinic or staffs and peer support networks).
**Barriers and Challenges:** Comprised of financial insecurity, no support structures, user fees, stigma from adults and unfavourable adults' clinic appointments. Others were breaking up of peer support networks and emotional and psychological unpreparedness.
**Conclusions:** Organized transfer of the youth from adolescents' to adults' ART clinics is an added health system challenge in Uganda. Our findings provide vital considerations for securing a smooth transition care for this population.

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## WEPED299

### A DAY IN THE ANTIRETROVIRAL CLINIC: USING ETHNOGRAPHY TO UNDERSTAND RETENTION IN HIV CARE

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**Background:** South Africa has achieved remarkable results by initiating more than an estimated 2.5million people on antiretroviral treatment (ART). Most ART users access their treatment from public healthcare facilities that are often overburdened and ill-equipped to handle such a large number of clients.
The purpose of this study was to understand the everyday challenges that the users experience in their attempt to access life-saving treatment and in so doing capture the lived experiences of ART users and the factors influencing their disengagement from care.
**Methods:** Between January and December 2013 a mixed methods ethnography was conducted in a public health care ART clinic in Durban, South Africa. In-depth interviews (10), focus group discussions (4) and 150 questionnaires were used to collect information. Seven months of participant observation was also done in the ART clinic. The data was triangulated for disagreements and concurrence between the qualitative and quantitative data and thematic analysis allowed for the data to reveal the most important aspects of the results.
**Results:** Invisible violence and inequality are embedded within the everyday routines and procedures of the ART clinic. Commonly reported barriers included long waiting times, poor staff attitudes, repeated monthly visits, staff shortages, and lack of information. ART users reported feeling disempowered to address these challenges due to the restrictive nature of the programme and the power imbalance that exists between healthcare providers and users. The inability of ART users to negotiate their own treatment regimens to suit their needs resulted in some cases of disengagement from care.
**Conclusions:** The everyday struggle that people have to endure to access ART was highlighted by this study. Using ethnography allowed us to identify hidden challenges that exist within the health care system that is not captured by other means of investigation in HIV research. Ethnographic findings provide key insights and understanding in health seeking behaviour and specific needs, especially in the area of continued access to HIV care.

## WEPED300

### ASCERTAINING SEXUAL RELATIONSHIP TYPES (ASERT) AMONG YOUNG FEMALES IN TANZANIA

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**Background:** Despite research on age-disparate sexual relationships in Africa, few studies have explored non-age characteristics of partners, and almost none has clearly articulated young females' motivations for pursuing different types of sexual partners.
**Methods:** The *Ascertaining Sexual Relationship Types* (ASERT) method uses anonymous, group-based reporting to discern the diversity and range of sexual partner types, the criteria used in making partner choices, and partner-specific relationship attributes ranked by order of importance.
**Results:** Based on a pilot exercise in Tanzania with young out-of-school females grouped by age, the tool revealed 13 distinct sexual partner types among adolescent girls (aged 15-19) and young women (aged 20-24), as well as the motivations for pursuing each type, ranked by order of importance. Nine partner types were common to both age groups; three were distinct to 15-19s and one to 20-24s.
The 13 varieties of sexual partners lie along an economic-socioemotional continuum. Among the eight age-disparate types, all were primarily for financial assistance. Two were only for big money or fast money; six were for a mix of cash gifts combined with one or more of the following: parent-like care, transportation access, health care access, or freedom to have other sexual relationships. The five similar-age partner types were mainly for sexual satisfaction, social status, or love and future plans.
**Conclusions:** Results show that 15-19-year-olds named more sexual partner types (12) than did 20-24-year-olds (10), and that economic and structural barriers were more frequently described as motivations among the 15-19-year age group, possibly due in part to their out-of-school status. The findings emphasize the need for reaching young adolescent girls before such relationships start with age-adapted HIV prevention and social protection interventions that include school retention and economic strengthening. Data from this tool can allow HIV prevention programs to better understand the ranked criteria that adolescent girls and young women use in making sexual partnership choices.

# KNOWLEDGE TRANSLATION AND DISSEMINATION OF RESEARCH AND PROGRAMME OUTCOMES

## WEPED301

### DESPAIR AND OPTIMISM: REFLECTIONS ON MY EXPERIENCE OF RESEARCHING AND PUBLISHING SEXUALITY IN ETHIOPIA

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**Background:** Sexuality is sensitive and sometimes taboo issue to discuss, practice, research and disseminate openly in many societies. Leave alone in relatively conservative societies like Ethiopia, Irvine's (2014) article shows that sex research remains socially problematic even in the western world. I have been engaged in researching and publishing sexuality and HIV/AIDS since 1990s. I have undertaken a number of studies , both published or not, related to sexuality and HIV/AIDS in Ethiopia (including MSM study). Some of these studies were perceived as incriminating, exceedingly intimate or 'discrediting' to the researcher and the researched. Such topics pose not only difficulty in accessing informants but also include wider issues regarding the ethics and politics of research. The objective of this paper is to identify, discuss and implement strategies for conducting and publishing research on sexuality topics
**Methods:** This paper used extensive literature review, self-reflective accounts such as personal recollections and correspondence as primary source of data to explore the intricacies, challenges and identify better strategies of researching and publishing sexuality topics.
**Results:** Amidst the 'conservative' sexual ethics, politics, standards, and practices of Ethiopian society, researching and publishing about sexuality topics continues to pose considerable challenges and controversies, which may hamper serious scientific investigations as well as create extreme frustration for potential investigators and authors. There is a moral panic among academics and publishers (who act as gate keepers rather than as producers of knowledge), implementers (NGOs and GOs) and the public at large and feeling of insecurity among key populations such as MSM. Our intervention to improve sexuality research and publication/dissemination should target all these different groups of stakeholders.
**Conclusions:** Some of the studies I conducted on uncharted territories however seem to have given insight and courage to other researchers and the public at large and it is encouraging to see a few other studies emerging on the sensitive and hitherto taboo topics. The significance of such studies, therefore, cannot be overstated in prompting future researchers to dare engage in such sensitive topics and equipping them to better navigate the inevitable challenges associated with them.

## WEPED302

### BUDGET TRACKING, TRANSPARENCY AND ACCOUNTABILITY: THE MISSING LINK IN THE NATIONAL HIV RESPONSE IN ZIMBABWE

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**Background:** SAfAIDS and the Zimbabwe National Network of People Living with HIV/AIDS (ZNNP+) with funding support from the AIDS and Rights Alliances for Southern Africa (ARASA) are implementing a two-year human/health rights training and advocacy programme on ensuring that people living with HIV and TB and other key populations access acceptable, affordable and quality sexual reproductive health rights (SRHR), HIV and TB prevention, treatment and care services. One of the objectives of the programme is to advocate for the provision of quality health care services through enhanced transparency and accountability among health care providers on the resources provided for improvement of the health care delivery system in Zimbabwe.

**Description:** The programme is being implemented in five out of the country's ten provinces (i.e. Harare and Bulawayo Metropolitan, Manicaland, Masvingo and Matebeleland North). The programme works through community based volunteer health advocates who in turn engage health centres and their constituent health centre committees with the latter assisted to monitor how people access health services at the health centres.
**Lessons learned:** One of the key lessons drawn from the programme through a rapid assessment study conducted is that knowledge and information on the domestic public resources allocated towards the improvement of the health sector and how the resources are being used is not readily available among the Zimbabwean public. This has led to citizens who are disconnected from mainstream participation on health issues. In return, government is failing to close this gap in citizens' engagement. Yet knowledge on how the national health budget is spent against what was planned provides opportunities for communities to monitor and hold to account the health service provider(s).
**Conclusions/Next steps:** Citizens' access to information on the domestic HIV financing is a fundamental human right. It has empowerment effects, and facilitates the effectiveness of the national HIV response framework. It obligates citizens to take an active and participatory role in the demand and provision of quality healthcare services. It is thus the duty of government to ensure that information on domestic healthcare including HIV financing is made readily available, and in reader friendly formats to all citizens.

## WEPED303

### THE POSITION OF AFRICAN AUTHORS IN ACADEMIC COLLABORATION NETWORKS IN HIV/AIDS IN PUBLIC ADMINISTRATION AND GOVERNANCE AND THE RESILIENCE OF THE NETWORK TO POTENTIAL WITHDRAWAL OF INTERNATIONAL AUTHORS

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**Background:** Academic co-authorship networks are the visible manifestation of academic collaborations and reveal structural features of intellectual capital and knowledge generation systems. This paper uses social network analysis to map the position of African scholars in the field of HIV/AIDS in public administration and governance. Of particular importance is (1) the extent to which African authors are embedded into the global community of scholars; and (2) the extent to which the networks of relationships between African scholars across Africa is mediated by relationships with authors from developed countries. If the African scholarship networks are bridged or mediated by international authors, then the removal of international authors from the network as international funding priorities shift will have disproportionate effects on the stability of the academic network and the ability of African scholars to maintain their productive collaborations.
**Methods:** This study exploits bibliographic data from the Thompson Web of Knowledge (formerly ISI) database to geomap the co-authorship network of international scholarship on African governance and public policy related to HIV/AIDS. Social network methods are applied to analyse patterns of relations between African and international scholars and between African scholars from different African countries.
**Results:** While African scholars are well positioned in the global collaboration network according to several key network metrics, direct links between African scholars in different African countries are less common than links between Africans and non-Africans. International authors play key bridging roles in the collaboration network, making the inter-African collaboration network vulnerable if these authors dropped out.
**Conclusions:** The African collaboration network in the field of HIV/AIDS in public administration and governance is thriving, and African authors are active and well positioned in the network. However, inter-African links are frequently mediated by international authors who have bridging functions in the network. The African academic network is therefore sensitive to shifts in funding priorities that may cause these network bridges to reduce their African collaborations. Thus if international donors plan to shift funding priorities they should first aim to increase direct inter-African collaboration to improve the resilience of the thriving African academic research network and thus facilitate African HIV/AIDS research into the future.

## WEPED304

### ACCEPTABILITY OF THE DAPIVIRINE VAGINAL RING TO FEMALE PARTICIPANTS AND MALE PARTNERS INVOLVED IN 'THE RING STUDY'

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**Background:** HIV infection in women remains a global health concern. A female initiated, self-administered prevention agent, such as, the dapivirine vaginal ring could offer women a critically needed option to prevent HIV infection and is being tested in The Ring Study (IPM 027). Correct and consistent use as well as acceptability by participants and their male partners is essential for it to be effective. Qualitative socio-behavioural data was collected as part of the Ring Study. This paper explores acceptability of the ring and experiences of participants and their male partners when using the ring.
**Methods:** Individual in-depth interviews (IDIs) and focus group discussions (FGDs) were conducted across six research centres in South Africa and one in Uganda. Data was collected 24-36 weeks after research centre activation and again after last product use visits. Qualitative data was organized into key themes using the Mensch theoretical framework (2012) and NVivo to facilitate analysis.
**Results:** Fifty-five female, 72 male IDIs and 9 female FGDs were conducted. Many factors were identified as influencing ring use and acceptability, including gender and power dynamics, vaginal attitudes and practices, motivations to join the study, partner support and awareness of own HIV risk. Women initially had concerns with ring use, which diminished over time. These concerns were commonly related to male partner's reaction to ring use, rather than physical attributes of the ring. Most women reported not feeling the ring once in-situ during day to day activities or during sexual intercourse. Very few women felt that it was uncomfortable using the ring during menses. Women preferred the low-maintenance monthly dosing regimen as opposed to an ARV gel. Male partners main concerns were initially related to physical injury to their penis or impact on sexual pleasure, but the majority reported no negative effect on sexual pleasure or physical injury following their partner's ring use.
**Conclusions:** The dapivirine vaginal ring was well accepted by both female participants and male partners and initial concerns dissipated with ring use over time. The Ring was seen as a low maintenance HIV prevention method and acceptability is promising for future use of the ring as such a method.

## COMMUNITY ENGAGEMENT IN RESEARCH AND RESEARCH DISSEMINATION

## WEPED305

### SCIENCE OR MEDIA CAFÉS: WHERE SCIENTISTS MEET THE MEDIA

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**Background:** The Health Journalists Network in Uganda (HEJNU), an independent organization with 80 members who report on heath regularly, brings journalists together to improve the quality, accuracy and visibility of health journalism in Uganda. In 2015, HEJNU and AVAC, a global HIV prevention research advocacy organization, began the Media Science Café programme, with the aim of increasing informed and accurate reporting of HIV prevention research in Uganda.
**Methods:** The premise of the Cafés is that many minds brought together achieve a more powerful end result than what one would have otherwise reach working in isolation. 20-25 journalists meet monthly with researchers and advocates to explore the science behind research results, new research studies and other timely topics. Journalists also critique each other's work and work collaboratively. The informal format of the Cafés helps journalists, scientists and advocates meet as equals and makes it easier to freely ask questions and foster discussion.
**Results:** The Cafés created new avenues to update the media about research milestones and discuss emerging issues and have helped build lasting trust between researchers and journalists. HEJNU analyzes each café looking at what worked and what needs improvement and monitors resulting coverage and any public debates. In surveys we found that speakers liked the relaxed environment that prompts many questions from journalists and creates lively debates. They value the chance to provide more in-depth information about their work. Journalists found the small num-

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bers help them interact freely and absorb topics better. Journalists appreciate the opportunity to continuously improve their understanding of research, hone health reporting skills and create a supportive network beyond their own newsrooms.
**Conclusions:** The Cafés have created a sustained platform ensuring consistency of media coverage on HIV prevention, reaching new health journalists and supporting positive relationships between media and scientists. HEJNU helped mentor new café conveners when the program was replicated in Zimbabwe and Zambia. HEJNU and AVAC will continue to work together to support a growing café network in Africa. We also plan to expand the cafés in Uganda to other issue such as SHRH and attract additional partners.

## WEPED306

### SPACES LIKE THESE: CREATING MEANINGFUL OPPORTUNITIES FOR CAPACITY BUILDING IN COMMUNITY BASED-RESEARCH AMONG SOUTH ASIAN WOMEN IN TORONTO, CANADA

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**Background:** In 2015 the Alliance for South Asian AIDS Prevention (ASAAP) initiated a Community Based-Research (CBR) Study to test the effectiveness of culturally relevant stories as an educational tool in HIV and sexual health among South Asian women. A large emphasis of the study was placed on building our collective capacity as South Asian and racialized women to meaningfully lead research. While the primary goal of the study was to determine the impact of stories on HIV knowledge, attitudes and risk perception, peer engagement and capacity building constituted a core component. The study design included structured roles for peers in facilitation, leadership and dissemination.
**Methods:** The study design included facilitated focus groups with participants who received either stories or traditional fact sheets as an HIV educational tool. Eight (8) female peer leaders representative of the South Asian diaspora in Toronto were recruited for the capacity building components of the study and extensively trained in topics such as the 'Principles of Community-Based Research', 'Research Design', 'Focus Group Facilitation and Recruitment', 'Consent and Confidentiality' and 'Referrals and Participant Support.' Peer leaders then facilitated all 11 of the study focus groups and were provided opportunities to vary their roles as lead facilitator, support facilitator or note taker.
**Results:** Peer leaders gained critical CBR skills, including outreach and recruitment, data collection and collective data analysis. Feedback from peer leaders indicated that connecting with peers to explore topics of sexual health, stigma and HIV/AIDS was empowering. They also identified the creation of a safe space for learning, growth and community building through research as critical. Peers leaders also engaged in developing a knowledge dissemination video and presented on their experiences to ASAAP's wider membership.
**Conclusions:** Since structural and systemic impediments often restrict access of racialized women to research spaces, studies that build opportunities to increase access are imperative. In traditional research spaces however, community involvement and collective capacity building is often not the norm and still debated. Sharing models that have achieved demonstrated success in this area can inspire future HIV research with, for and by communities impact by HIV.

## WEPED307

### BUILDING STAKEHOLDER ENGAGEMENT CAPACITY: A MIXED METHOD DISTANCE LEARNING APPROACH TO IMPLEMENTING THE GOOD PARTICIPATORY PRACTICE GUIDELINES

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**Background:** As the Good Participatory Practice Guidelines for biomedical HIV prevention research (GPP) continue to be rolled out across research programs there is a need to build and sustain capacity of engagement staff. The *GPP Online Training Course* is a web-based, multimodal learning approach dedicated to strengthening understanding and application of GPP among implementers and key stakeholders. The primary audience for the course is research team members who design and/or implement community engagement programs. The course offers two tracks, implementers and non-implementers, with varying levels of intensity.
**Description:** The course uses a customized, Wordpress-based learning management system and combines synchronous and asynchronous strategies such as:
1) Narrated, interactive modules with animations, case studies, practice activities, quiz questions and supplementary GPP resources;
2) Forum discussions and webinars related to module content and learners' real-world experiences, aimed at creating a GPP community of practice and culture;
3) Written work assignments in which learners critically analyze their research context, identify and prioritize key stakeholders, and develop a strategic stakeholder engagement work or action plan. Learners receive extensive individual feedback from facilitators with GPP expertise. Course modules can be accessed and viewed on a computer, iPad, or offline.
**Lessons learned:** As of December 2016, three courses have been conducted in nine countries across Africa, Southeast Asia, the U.S and Europe. A total of 54 learners have completed the course with positive learning outcomes. All learners reported gains in knowledge, self-efficacy and commitment to implementing GPP. Aspects of the course described as most valuable were its interactivity, opportunities to share perspectives with other learners through forum discussions, and facilitators' feedback on work assignments. Some learners indicated that the course required a significant time commitment; most learners in the implementer track spent five to seven hours per week completing requirements.
**Conclusions/Next steps:** Future GPP online courses are being designed with consideration of needs and interest of other audiences, including CABs, Ethics Committees, and other research fields, such as TB and Ebola. Courses will encompass a blended learning approach, with varying combinations of video webinars, e-learning and peer moderation, aimed at creating the most efficient and innovative educational approach for each audience.

# ROLE OF SOCIAL AND BEHAVIOURAL SCIENCE IN BIOMEDICAL RESPONSES

## WEPED308

### PERCEIVED BENEFITS OF HIV CURE-RELATED RESEARCH PARTICIPATION IN THE UNITED STATES

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**Background:** We assessed perceptions of benefits in HIV cure clinical research in the United States. We hypothesized that perceived personal benefits, clinical benefits and social benefits affect willingness to participate in research.
**Methods:** An extensive, online cross-sectional survey was conducted among 400 American adults (22% females; 77% males; < 1% transgendered) in 2015. The sample was ethnically diverse (65% Caucasian, 17% African-American/Black, 12% Hispanic, 4% mixed and 2% Asian) and 38 U.S. states were represented. We also conducted extensive key informant interviews with 36 people living with HIV, researchers, bioethicists, members of IRBs and regulatory agencies to assess perceptions of benefits.
**Results:** The psychological benefit of feeling good about contributing to HIV cure research (80%, 95% CI: [75-85%]; n = 396) and gaining knowledge about one's health (78% [73 -83%]; n = 385) were the potential personal benefits most likely to motivate participation in HIV cure research. Increasing one's ability to fight HIV (92% [87 - 97%]; n = 381) and reducing one's HIV reservoir (85% [80 - 90%]; n = 380) were the potential clinical benefits most likely to motivate participation. Helping find a cure for HIV (95% [90 - 100%]; n = 382), helping others with HIV in the future (90% [85 - 95%]; n = 384) and contributing to scientific knowledge (88% [83 - 93%]; n = 380) were the most important perceived social benefits. We delved deeper into these perceived benefits in the key informant interviews. Potential volunteers reported feeling empowered, contributing to stigma reduction, , hope, education, bolstering one's advocacy work, financial compensation and ensuring participation of under-represented populations. Regulators and clinicians-researchers concurred that early HIV cure studies are unlikely to provide any direct clinical benefit, but indicated that participants may experience other types of indirect benefit. Demographic differences in perceived benefits were also evaluated.
**Conclusions:** Despite no expectation of direct clinical benefit from participating in early Phase I HIV cure clinical studies, the majority of potential volunteers value the societal benefit of furthering science, and believe they will experience psychosocial benefits from their participation. Results highlight the importance of managing expectations and thoroughly exploring potential for therapeutic misconception.

## WEPED309

### FACTORS ASSOCIATED WITH SOCIAL GROUP MEMBERSHIP AMONG HIV-POSITIVE AND -NEGATIVE WOMEN IN TABORA, TANZANIA

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**Background:** The interaction of people in groups (social capital)—utilized as an indicator of empowerment—is associated with positive health outcomes and behaviors. There are few studies examining the factors associated with social capital among women attending prevention of mother-to-child HIV transmission (MTCT) and maternal and child health services in rural communities of developing countries.
**Methods:** The SAFI study in Tabora, Tanzania is a facility-based trial evaluating the effect of SMS appointment reminders and cash transport payments on attendance and facility delivery among pregnant women from 27 antenatal clinics. This 2015 baseline analysis of eligible HIV-positive and HIV-negative pregnant women (n=1,329; age≥18,) utilized a multivariable logistic regression model to describe factors associated with social capital, defined as membership of a community-based group/club who have met at least once in the past three months. Variables in the model included education (woman and partner), partner work, knowledge that ARVs reduce sex transmission of HIV, and MTCT, knowledge of partner status, joint decision-making on health care for self, being formerly employed in the past year and ever delivering in a facility.
**Results:** Overall, 12.6% (172/1,329) women were group members, with comparable HIV prevalence among group and non-group members (26% vs. 27%). Comparable proportions of group and non-group members reported joint decision-making on health care for self, partner work, were married, knew ARV decreases HIV sexual transmission, knew partner HIV status, ever delivered in a facility. However, greater proportions of group members (and their partners) completed secondary school (p=0.001, and p=0.003 respectively), were formerly employed in the past year, (p< 0.001), and knew antiretrovirals (ARVs) reduced MTCT (p=0.009). In the multivariate analysis being formally employed in the past year (adjusted odds ratio [AOR] 3.04, 95% confidence interval [CI]: 1.99, 4.65); knowing that ARVs reduced MTCT (AOR 2.65, 95% CI: 1.32, 5.33) and knowing partner HIV status (AOR 1.79; 95% CI: 1.18, 2.72) were significantly associated with social capital.
**Conclusions:** Irrespective of HIV status, women who earned an income, had enhanced MTCT knowledge, and knew their partners' status were more likely to be in social groups. Group membership may enable gains in health knowledge and facilitate partner disclosure.

## WEPED310

### PERCEIVED RISKS OF PARTICIPATING IN HIV CURE-RELATED RESEARCH THE UNITED STATES

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**Background:** We investigated perceptions of risks in HIV cure clinical research in the United States. We hypothesized that perceived clinical risks, including study procedures, side effects, and social risks affect willingness to participate in research.
**Methods:** We implemented a cross-sectional survey with 400 American adults living with HIV (22% female; 77% male; < 1% transgender) in 2015. The sample was ethnically diverse (65% Caucasian, 17% African-American, 12% Hispanic, 4% mixed and 2% Asian). Most U.S. states were represented. We also conducted extensive key informant interviews with 36 people living with HIV, as well as numerous researchers, bioethicists, members of IRBs and regulatory agencies to assess perceptions of risks.
**Results:** Increased cancer risk (49% [95% CI: 42, 52%]; n = 358), developing resistance to ARVs (37% [32, 42%]; n = 358), toxicities (30% [25, 35%]; n = 358) and known risks of stopping HIV medications (30% [25, 35%]; n = 358) were the potential clinical risks most likely to discourage participation. Procedures presenting the greatest barriers were lumbar punctures (26%), bone marrow biopsies (22%), lymph node biopsies (13%), and rectal biopsies (13%). Risk of transmitting HIV in case of unsuspected viral rebound (28% [23, 33%]; n = 358) was the most concerning potential social risk to participation. Additional risks discouraging participation included various clinical risks such as side effects, pain, debilitation, irreversible harm or death, scientific uncertainty, and failure to achieve a cure. Dissuading financial risks included loss of disability insurance or employment. Social risks included disclosure of HIV status, stigma/discrimination, and media attention. The burdens of finding transportation and parking were also significant deterrents to participation. Overall, key informants agreed that the riskiest HIV cure research modalities were stem cell transplants/gene therapy, latency-reversing agents, and combination approaches.
**Conclusions:** Understanding perceptions of risks is important to inform study design, informed consent, and recruitment and retention strategies for HIV cure-related research. HIV cure clinical researchers should minimize risks to study participants while maximizing scientific knowledge gained. Community and participant confidence regarding the safety of a scalable cure should be a compelling driver for discovery and progress towards a cure.

## WEPED311

### STRUCTURAL BARRIERS TO PRE-EXPOSURE PROPHYLAXIS (PREP) ENGAGEMENT AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN VIETNAM: DIVERSITY, STIGMA, AND HEALTHCARE ACCESS

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**Background:** Men who have sex with men (MSM) in Vietnam are in urgent need of effective HIV prevention: from 2006-2009, prevalence among MSM in Hanoi rose from 11% to 20%. MSM are the only group in Vietnam whose prevalence is increasing. Pre-exposure prophylaxis (PrEP), presents a potential strategy, but little is known about PrEP-related barriers in Vietnam.
**Methods:** We conducted interviews (n=32) and six focus groups (n=42) with MSM in Hanoi. The sample varied by age, income, birthplace, and sexuality. Data were taped, transcribed, translated, and analyzed within and across cases to explore themes relevant to structural barriers to PrEP uptake in Vietnam.
**Results:** Three primary factors emerged that would influence MSM's ability to engage with PrEP: diversity, stigma, and healthcare access.
Diversity: Participants described Vietnamese MSM as segregated into Bong Kin (hidden, often heterosexually-identified MSM) and Bong Lo ('out,' transgender, or effeminate MSM), and by birthplace, occupation, age, and income. Lower-income, 'hidden' MSM from rural areas were reluctant to access services targeted to MSM. This finding demonstrates the need for multiple strategies in order to reach diverse types of MSM. Furthermore, Bong Kin perceived themselves at low risk for HIV infection because they did not identify as gay, which could affect engagement with biomedical prevention.
Stigma: MSM reported being stigmatized by the government, healthcare system, family and friends, and even other MSM; Bong Lo reported the most stigma. The extremely stigmatized nature of same-sex sexual practices represents barriers to service access and social support; it would also limit MSM's willingness to carry PrEP and to present for regular HIV testing.
Healthcare access: Because of social discrimination and labor market exclusion, many Vietnamese MSM faced economic barriers to healthcare access; MSM-friendly services only existed in large urban settings. This poses further barriers to MSM's ability to access or even learn about PrEP.
**Conclusions:** Vietnamese MSM described barriers around diversity, stigma and healthcare access that have implications for their engagement with PrEP, particularly their openness to PrEP-related messaging and services. Vietnam provides an example of the substantial structural-level barriers that must be addressed to achieve the meaningful and effective scale-up of PrEP for MSM worldwide.

## WEPED312

### EARLY INITIATION OF ART LEADS TO MAINTAINING SOCIO-ECONOMIC STATUS FOR PLHIV AND THEIR HOUSEHOLD: EVIDENCE FROM TWO NEIGHBOURHOODS IN LUSAKA, ZAMBIA

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**Background:** Discussions surrounding the best time to start ART have been long on going. In the US, ART treatment is advised for everyone who is HIV positive regardless of their CD4 count. In 2013, the WHO published new guidelines for ART arguing that early initiation of ART is beneficial to the physical well-being of PLHIV and additionally may lead to fewer new infections. This paper provides a third dimension and argues that early initiation of ART leads to maintaining socio-economic status for PLHIV and their households.

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**Methods:** The study used a mixed method model whereby quantitative and qualitative data was collected simultaneously. Research was conducted in in two urban areas in Lusaka, namely: Kalingalinga and Roma N'gombe (2010 - on-going). The research focused on the trajectories that PLHIV (18 years and above who had been on ART for a minimum of 12 months) typically go through (pre-HIV: before illness, start ART, and post-ART: current situation).
**Results:** The study shows the importance of the temporal context of PLHIV and their households and allows for an examination of the recovery process after the initiation of ART. The individual trajectories of PLHIV impact the individual recovery process and success. It was found that for those who start with ART at a late stage of infection their well-being (for example: income levels, job type, and mental- and physical-health) is lower than for those who start with ART in an earlier stage of infection. In addition, not only are the recovery processes more difficult and longer for people who start with ART in a late stage of infection but also their overall socio-economic outcomes remain lower (even years after starting with ART).
**Conclusions:** This paper adds a dimension to the already existing reasons to start with ART in an early stage of infection. The main conclusion of this research is that early initiation of ART leads to maintaining socio-economic status for PLHIV and their household and additionally leads to overall better socio-economic outcomes on the long term.

## SEXUALITIES AND SEXUAL CULTURES: MEANINGS, IDENTITIES, NORMS AND COMMUNITIES

### WEPED313

#### UNDERSTANDING EXPERIENCES AND ATTITUDES RELATED TO SEXUAL AND GENDER-BASED VIOLENCE AMONG MILITARY PERSONNEL SERVING IN SUB-SAHARAN AFRICAN MILITARIES

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**Background:** While sexual and gender-based violence (SGBV) is recognized as an important factor driving the HIV epidemic in sub-Saharan Africa, attitudes toward and prevalence of SGBV within sub-Saharan African military populations are unknown.
**Methods:** Data on SGBV were collected from military service members of nine sub-Saharan African militaries through convenience samples. Attitudes related to SGBV and characteristics of those who committed and/or experienced forced sexual activities were collected from 2009 to 2014. Data were collected on 8815 service members (8165 men and 650 women) aged 18 years or older who voluntarily participated in the Seroprevalence and Behavioral Epidemiology Risk Surveys. Data were collected on demographics, SGBV attitudes, and forced sexual activities. Descriptive and bivariate statistical analyses are reported.
**Results:** Five percent of men and 9% of women reported ever experiencing a forced sexual activity. Men and women who had experienced a forced sexual activity were significantly more likely to agree with negative gender attitudes about SGBV. The majority of those who reported experiencing a forced sexual activity reported it was committed by someone outside of the military.
**Conclusions:** This is the first study to examine SGBV in sub-Saharan military populations in nonconflict settings. It provides evidence that SGBV is experienced by both male and female service members at rates not typically found in previous research examining SGBV in other military populations. A better understanding of SGBV in sub-Saharan military service members is necessary to ensure appropriate services and interventions are part of the military infrastructure.

### WEPED314

#### UNDERSTANDING THE RELATIONSHIP BETWEEN COUPLE DYNAMICS AND ENGAGEMENT WITH HIV CARE SERVICES: INSIGHTS FROM A QUALITATIVE STUDY IN A RURAL TANZANIA SETTING

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**Background:** Social norms that drive the formation and dissolution of sexual partnerships are likely to influence the HIV care-seeking trajectories of people living with HIV/AIDS (PLHIV). However, with the exception of couple-counselling and prevention of mother-to-child transmission programmes, HIV care strategies tend to ignore the role of sexual partners. We sought to explore the interplay between couple dynamics and the engagement of PLHIV with HIV care in rural Tanzania.
**Methods:** A qualitative study was conducted involving 47 in-depth interviews with PLHIV with a range of HIV care experiences, including current users of HIV clinics, and diagnosed persons not enrolled in care. Four seeded focus group discussions were also conducted with HIV diagnosed persons not enrolled in care. Topic guides explored experiences and expectations of providing or receiving HIV services. Thematic analysis was conducted with the aid of NVIVO 10.
**Results:** PLHIV were often motivated to be in marital unions or sexual partnerships in order to secure economic or emotional support, as well as to fulfil societal expectations, and these concerns were often manifest in HIV care-seeking decisions. Relationship issues undermined disclosure of HIV status and engagement in care, with fear of abandonment by partners cited by men and women as reasons for not attending HIV clinic appointments. Conversely, being in a relationship where there were expectations or suspicions of partner infidelity often triggered a decision to undergo HIV testing, thus initiating the process of accessing HIV care. Furthermore, the desire to be healthy enough to attract a new partner, or have a baby with a new partner, was often cited as driving ongoing engagement with HIV care and treatment. Some PLHIV actively sought out new partners of the same positive HIV status as a strategy to maintain a relationship whilst mutually and openly engaging in HIV care and treatment.
**Conclusions:** Fulfilling social norms surrounding adult unions could both promote and undermine PLHIV engagement in care. Greater focus on devising couple-friendly HIV care and treatment programmes, including ongoing supportive counselling beyond an initial HIV test, could help to promote long-term retention in care and adherence to antiretroviral therapy.

### WEPED315

#### A QUALITATIVE STUDY OF PEER NETWORK INFLUENCE ON THE PERPETRATION OF INTIMATE PARTNER VIOLENCE AMONG URBAN TANZANIAN MEN

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**Background:** Intimate partner violence (IPV) has been shown to be strongly associated with HIV infection. Research suggests that peers may influence IPV perpetration among men in sub-Saharan Africa. Understanding how men's IPV perpetration is shaped by their interactions and conversations with peers may provide valuable insight into future intervention efforts aiming to change network norms to reduce violence.
The purpose of this study is to examine the mechanisms through which peer networks of mostly urban men, locally referred to as "camps", influence men's perpetration of IPV.
**Methods:** Men were recruited from the control arm of an ongoing camp-randomized HIV prevention trial in Dar es Salaam, Tanzania. We collected and analyzed qualitative interviews (n=40) with 20 men who previously reported perpetrating physical IPV within the last year. We wrote narrative summaries for each participant and coded transcripts using both inductive and deductive codes.
**Results:** Men described societal and peer network-level norms that reinforce expectations that men hold dominant positions within their relationships. The camp-based peer networks were described as close-knit groups through which information spread quickly. Our results suggest that men are influenced by their peer networks in several ways. First, men reported talking openly about women and about conflicts that occur within relationships. Men described reaching a consensus within these discussions and also gave examples of their peers convincing them and other men to take specific actions. Men also described seeking advice formally from leaders within their networks when responding to conflicts. Participants also

provided rich examples of how new camp members adopted new behaviors and attitudes, particularly with regard to their views towards women, after joining the camp.
**Conclusions:** Men described being influenced by the normative environment of their peer networks. Conversations about women and dealing with conflicts were common, as were examples of peers pressuring others to act in a certain way. Men also noticed changes in the way members viewed women after joining the camps. These results suggest that gender norms are socially influenced and can be changed by working within social networks. This work highlights the importance of interventions that transform gender norms within social networks.

## RELATIONSHIPS, PARTNERSHIPS, CONCURRENCY AND SEXUAL NETWORKS

### WEPED316

### IMPLICIT INEQUITIES IN SERODISCORDANT RELATIONSHIPS: THE SOCIAL CONSTRUCTION AND MANAGEMENT OF *SERO-IMBALANCE* BY HIV-NEGATIVE AND POSITIVE PARTNERS IN CANADA

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**Background:** As PLHIV are enjoying longer, healthier lives in many high-income settings, long-term intimate sexual relationships with HIV-negative partners are increasingly commonplace. The impact of serodiscordance on relationship quality is thus a key area of study. This qualitative study aimed to shed light on the ways in which serodiscordant partner dynamics enable and constrain intimacy and wellbeing within HIV serodiscordant relationships.
**Methods:** In 2013, we conducted in-depth interviews with individuals who were recently engaged in a serodiscordant relationship of ≥6 months. HIV-positive participants were recruited through community-based organizations, and referred us to their HIV-negative partners. Our analysis was grounded in participants' narratives, and sought to extend current understandings of HIV disclosure, 'HIV talk', 'serosilencing', and the invisibility of HIV-negativity.
**Results:** Participants included four HIV-positive and two HIV-negative persons, aged 35-59 years, and both partners of two couples. They were experienced in a diversity of relationships, ranging 0.5-15 years' duration: monogamous (6), same-sex (2), heterosexual (3), and both same-sex and heterosexual (1). Participants reported engaging in unprotected sex more frequently as their relationships matured, despite their awareness of HIV transmission risk. Participants' narratives suggested that serodiscordance introduced an imbalance into their relationships, or 'sero-imbalance', related to sexual, material and emotional needs, access to resources, and sense of control over the relationship, which were perceived differently by each partner. 'Sero-imbalance' was dynamic, and experienced with variable intensities throughout the relationship lifecourse, according to how and when HIV was emphasized or silenced in the relationship and to external networks. Consequences included continuous disharmony, temporary moments of distress, and in extreme cases, termination of the relationship. Partners managed 'sero-imbalance' in overt and covert ways that reflected a mutual desire to distance themselves from narratives of disparity and distinction, in an effort to experience their relationships as balanced and 'normal'.
**Conclusions:** The theoretical construct of 'sero-imbalance' offers a unique lens to examine relationship dynamics between HIV serodiscordant partners. Further work can inform HIV prevention and wellbeing of serodiscordant couples by enabling them to manage perceived relationship imbalances as a means to sustain emotional closeness and embrace their HIV difference.

### WEPED317

### ACCOUNTING FOR HIGH VULNERABILITY AND LOW RISK FOR HIV AMONG TRANSGENDER MEN: A SEXUAL FIELDS ANALYSIS

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**Background:** Despite sharing structural and psychosocial vulnerabilities with transgender women and cisgender (non-transgender) men who have sex with men, HIV prevalence and risk appear comparatively low among transgender men who are gay, bisexual, or have sex with men (TMSM). In Ontario, Canada 10% of TMSM had any past-year HIV risk, and none self-reported HIV infection. This paradox suggests the existence of protective meso-level factors, such as socio-sexual networks. Drawing on qualitative interview data, we explore how TMSM navigate sexual fields (stratified structures of erotic relations and their corresponding sites of sexual sociality) and the potential impact on HIV risk.
**Methods:** As part of a Canadian community-based participatory research project, 40 TMSM completed demographic questionnaires and participated in individual, semi-structured, qualitative interviews in 2013. Interviews were audio-recorded and transcribed, and coded using a qualitative grounded theory approach.
**Results:** Participants were 18-50 years old and were racially diverse (43% racialized and/or Aboriginal). TMSM engaged with three overarching sexual fields: gay fields were only accessible to those who had medically transitioned sex/gender; queer fields were distinguished by trans-inclusiveness, egalitarian socio-sexual norms, and limited presence of cisgender men; and online classified sites were largely populated by non-gay-identified cisgender men explicitly interested in transgender men. Participants in gay fields described strategies for navigating or circumventing disclosure of transgender status that coincidentally facilitated safer sex, including negotiating sex through apps or websites, or avoiding genital-genital sexual activity.
**Conclusions:** Results help to contextualize recent epidemiologic findings of relatively low levels of HIV infection and sexual risk among transgender men. Overall, TMSM's sexual opportunities with cisgender gay men were limited, due in part to anticipated and enacted stigma. Further, their adaptive strategies for navigating gay sexual sites, and socio-sexual norms carried across fields (e.g., varying norms regarding consent) may further reduce their HIV risk. Sexual field characteristics and associated risks and resiliencies should be considered in designing and recruiting for TMSM HIV prevention research and interventions. TMSM may benefit from interventions that challenge anti-transgender stigma and increase their confidence navigating gay men's communities, while building on the potentially protective adaptive behaviors we have identified.

### WEPED318

### "IF SHE IS DRUNK, I DON'T WANT HER TO TAKE IT": PARTNER INFLUENCE ON ALCOHOL USE AND ART ADHERENCE WITHIN SOUTH AFRICAN COUPLES

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**Background:** Hazardous alcohol use has been linked to poor ART adherence, worsening of HIV disease, and progression to AIDS and death. Not only does South Africa have one of the largest ART programs globally, but has some of the highest rates of alcohol consumption and heavy episodic drinking. As part of a qualitative study on relationship factors and ART adherence within South African couples, we examined how primary partners may shape each other's alcohol and ART use.
**Methods:** Twenty-four adult heterosexual couples (48 individuals) with at least one HIV-positive partner were recruited from local healthcare sites using maximum variation sampling. HIV-positive partners were sampled based by gender and length of time on ART. Semi-structured interviews were conducted separately, but simultaneously, with each partner between November 2014 and March 2015. Topics discussed included relationship history and dynamics, experiences with HIV care and treatment including adherence, and HIV-related social support. Data were analyzed using an iterative thematic approach in Dedoose.
**Results:** Twelve couples spontaneously raised concerns related to alcohol and ART. Discussions fell into two main categories: partner beliefs and partner influence. There was a widespread belief among partners that "alcohol and ART don't mix",

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which could result in death, disease, and reduced effectiveness of ART. Partner beliefs shaped the ways partners influenced each other. Forms of partner influence included encouraging partners to:
(1) abstain from drinking;
(2) limit frequency of drinking;
(3) drink, but take pills another time to avoid drug interactions;
(4) take pills when drinking—no matter what. Encouraging partners to deviate from their normal dosing schedule was common; the effect of missing pills was believed to be less harmful than the mixing of alcohol and ART itself.
**Conclusions:** The significant role of partner beliefs and influence suggests a need for integrated alcohol and HIV services tailored towards couples. One framework to consider is a harm reduction approach, particularly when abstinence may be difficult for ART patients to achieve. Partner beliefs and influence could also have negative effects on ART adherence; thus it may be necessary to revisit messages about alcohol and ART in treatment literacy courses with couples.

## WEPED319

### ALCOHOL USE AND RELATIONSHIP QUALITY AMONG SOUTH AFRICAN COUPLES: IMPLICATIONS FOR COUPLES-BASED HIV INTERVENTIONS

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**Background:** Alcohol has been labeled as the “forgotten drug” of the HIV epidemic given that high levels of consumption co-occur with high HIV prevalence across sub-Saharan Africa. Alcohol use, particularly by male partners, has been associated with an increased risk of HIV infection and poorer HIV-related outcomes in Africa; however the role of alcohol use in relationships has been largely ignored. Research on the association between alcohol use and relationship quality is needed in order to inform ongoing couples-based approaches to HIV treatment and prevention.
**Methods:** We examined the association between alcohol use and relationship quality among 448 heterosexual couples participating in the baseline visit of *Uthando Lwethu*—a couples-based HIV-intervention trial in South Africa. Consistent with patterns of alcohol use in the region, women did not report alcohol use in our sample and thus we focused on male partner alcohol use only. We used the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) to categorized men as: abstainers (score = 0), non-hazardous drinkers (score = 1-3), or hazardous drinkers (score >=4). Relationship quality (RQ) was reported by both women and men using validated measures of intimacy, trust, communication, satisfaction and partner-support around HIV prevention and treatment (PS-HIV).
**Results:** Five separate structural equation models for each measure of RQ were fit using male partner alcohol use as a predictor of male and female RQ. Models used maximum likelihood estimation, controlling for age, education, marital status, and relationship duration. Results demonstrated that women paired with a hazardous drinker reported *higher* levels of intimacy ($p < .05$) and PS-HIV compared to women paired with abstainers. Men who were categorized as hazardous drinkers, compared to abstainers, reported *less* trust ($p < .01$) and more PS-HIV ($p < .05$).
**Conclusions:** Alcohol use by male partners was significantly associated with RQ, although the salience of RQ predictors differed by gender. Both men and women in couples with a male hazardous drinker reported higher levels of PS-HIV, however men also reported less trust in the relationship. These findings highlight the importance of addressing male alcohol use in couples-based approaches to HIV prevention and treatment that target relationship quality.

## WEPED320

### HOW CAN WE INCREASE ACCESS TO HIV SERVICES FOR KEY POPULATIONS THROUGH THE WORKPLACE?

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**Background:** Kenya has a mixed HIV epidemic. Sex workers (SWs) and their clients constitute 14.1% of new infections (KMoT,2008). They are a bridge to the general population, making their partners particularly vulnerable to HIV infection through concurrent sexual partners and inconsistent condom use. Clients of SWs are often workers with at least some disposable income and may also work in settings far from their families. The vulnerability of SWs and their clients to HIV infection is compounded by stigma and discrimination that keep them from accessing HIV services.
**Description:** The ILO, in partnership with LVCT Health WEMA Kazini program and the Bar Hostess Empowerment and Support Programme (BHESP), targeted bartenders, SWs and their clients to provide onsite day and moonlight HIV voluntary testing and counseling (HTC). Mapping of hotspots included bars, brothels and massage parlors and mobilization achieved through peer-to-peer mechanisms. To avoid harassment, law enforcers were informed and sensitized. A comprehensive package was provided, including HIV services, sexual and reproductive health (SRH), screening for TB, sexually transmitted infections and substance use, PMTCT counseling and information on gender-based violence. Participants were referred to specialized clinics and follow-up was done to ensure enrollment and retention into care. HTC was also provided to the partners and children of those who tested positive. The 3-week initiative reached 7,500 sex workers and their clients. Male and female condoms and lubricants were distributed and their correct use demonstrated. A total of 1503 women and 1720 men (of whom 125 were MSM) received HTC.
**Lessons learned:**
- Integrated services provide an incentive for testing, reduce stigma associated with HIV-specific programmes and offer services combining HIV and other health-related outcomes
- It is essential to include communities surrounding hotspots--including groups of bar owners/bartenders— to reach SWs and their clients with HIV and health services
- Partnerships with local authorities and law enforcement are crucial to increase demand and access to services for key populations
- Onsite voluntary HIV testing enhances HTC uptake and is key to reaching SWs, their clients and partners.

**Conclusions/Next steps:** Scale up onsite integrated HIV/health services to SWs and their clients to other counties.

## WEPED321

### MEASURING RELATIONSHIP SATISFACTION AMONG MEN AND WOMEN IN PERI-URBAN UGANDA

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**Background:** While Uganda has had well-recognized success in reducing HIV transmission nationally, HIV prevalence in urban areas remains high (8.7% in the 2011 AIDS Information Survey). Effective HIV prevention among married and cohabiting couples remains a challenge. Increasing couple relationship quality may decrease HIV risk behaviors such as multiple and concurrent sexual partnerships and increase protective behaviors such as mutual HIV testing and disclosure. While psychometric scales have been used extensively to measure relationship functioning in various contexts around the world, these scales have not been widely used in Africa.
**Methods:** Men and women aged 20-49 in peri-urban Kampala who were married or cohabiting were surveyed before and after a couple-focused HIV prevention intervention which aimed to decrease HIV risk through strengthening couple relationships and increasing sexual exclusivity. The survey explored couple relationship satisfaction and quality using psychometric scales, and also asked open-ended questions regarding relationship dynamics. Data were collected from 162 couples (interviewed separately).
**Results:** In the pre-intervention survey, 4 in 5 respondents reported that they were cohabiting but not married, with a mean relationship length of 6.6 years. When asked close-ended questions, men and women reported high relationship satisfac-

tion. For example, men had a mean score of 4.11 (on a 5-point scale with higher scores denoting a more positive relationship) on items on the Dyadic Adjustment Scale, while women had a mean score of 4.04. The great majority of men (91.6%) and women (88.5%) rated their relationship as "happy", "very happy", "extremely happy", or "perfect". However, these data contrast sharply with the responses that men and particularly women gave to open-ended questions about their relationships, in which they communicated significant distress and lack of satisfaction regarding their relationships.
**Conclusions:** These data demonstrate the challenges of validating psychometric scales for use in an African population, as well as the diverse ways that participants may present themselves depending on the data collection modality (e.g. closed-ended versus open-ended questions). Further work is needed to validate psychometric scales addressing relationship satisfaction for use in Africa, and to understand how men and women choose to represent their relationships in research contexts.

## WEPED322

### PARTNER HIV DISCLOSURE, PARTNER RELATIONSHIP AND QUALITY OF LIFE AMONG PEOPLE LIVING WITH HIV/AIDS: A LONGITUDINAL STUDY

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**Background:** Partner HIV disclosure is a critical component in HIV prevention and treatment continuum in terms of improving medication adherence, HIV testing and safe sexual behaviors. However, a great number of empirical studies on partner HIV disclosure are limited by cross-sectional data and not able to explore the causal relationship between partner disclosure and disclosure-related variables. Based on longitudinal data, the current study explores whether and how partner disclosure affect partner relationship and quality of life among people living with HIV/AIDS (PLWH) over time.
**Methods:** We use data of an on-going longitudinal clinical trial among 791 PLWH in Guangxi, China. The participants were recruited from 16 sites (from both urban and rural areas) and assessed semi-annually since 2013. The follow-up rate is averagely 91% for the first four assessments. At the baseline, the participants were asked whether their HIV serostatus had been known by their spouse. If yes, the participants were categorized into disclosure group. We applied multilevel regression models to assess the effect of partner disclosure on the change of partner relationship quality and quality of life over time. Maximum likelihood estimates were used to fit multilevel models.
**Results:** Quality of life significantly increased in the sample (β=.037, p< .0001). Controlling for demographic characteristics, participants in disclosure group experienced a faster rate of increase in quality of life score (β=.045, p=.50). The quality of partner relationship of the cohort declined but the change did not reach the statistical significance (β=-.535, p=.163). Disclosure group showed a slower rate of decline in quality of partner relationship (β=.459, p< .0001) controlling for all the other variables.
**Conclusions:** HIV infection brings a big challenge for partner relationship, especially for the sero-discordant couple. Our findings suggest that partner disclosure may buffer the deterioration of partner relationship in long-term and improve the quality of life among PLWH. Partner disclosure should be integrated into psychological adjustment process of PLWH and their partners.

# SEXUALITY, GENDER AND NEW PREVENTION TECHNOLOGIES

## WEPED323

### THE INFLUENCE OF MASCULINITY ON HIVST COMMUNITY INTERVENTION: A QUALITATIVE EVALUATION OF EMPIRICAL EVIDENCE FROM BLANTYRE, MALAWI

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**Background:** For HIV, population surveys and cohort outcomes show men to have a higher risk of undiagnosed disease than women, and higher risk of death following diagnosis. Here we report findings from an HIV self-testing (HIV ST) study with relevance to other chronic conditions, including TB. HIVST addresses barriers associated with traditional models of providing HIV testing, giving notably high male participation. We examined the role of masculinity on HIVST decisions and subsequent actions amongst couples in urban Blantyre.
**Methods:** Sixty seven self-tested participants were interviewed at baseline, 49 at first follow-up (3-5 months) and 50 at second follow-up (12-15 months). Content analysis was used to interpret study findings.
**Results:** Conception of masculinity dictated men's actions and prescribed specific behavioral attributes, namely having control, knowledge, strength and toughness, and both sexual and economic productivity. The mandate of constant economic provision prevented men living a hand-to-mouth existence from testing with their partners, as they were not at home when HIV ST was offered. Notions of men as all-knowing could promote denial of positive HIV ST results, with men allowed to question their authenticity especially when their partner had tested negative. Even when positive HIV ST results were believed, notions of strength and resilience, combined with the relentless demands of their household provider role, dissuaded men from promptly seeking HIV care, as they felt no urgency to act when healthy. Notions of sexual productivity encouraged men to insist unprotected sex irrespective of their own or their partner's HIV status.
**Conclusions:** The social construction of masculinity, which includes relentless pressure to earn in this impoverished urban setting, restricted the potential benefits of early HIV care and prevention, even within established couples. Community HIV strategies need to explicitly account for the obstacles and barriers linked to masculinity to have full impact.

# PREVENTING AND MANAGING HIV/HEPATITIS C CO-INFECTION

## WEPED324

### HARM REDUCTION AS A PLATFORM FOR ENGAGEMENT IN INFECTIOUS DISEASE CARE FOR PEOPLE WHO USE DRUGS: A LONGITUDINAL COHORT STUDY AT AN INNER CITY MMT CENTRE IN KUALA LUMPUR, MALAYSIA

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**Background:** Project DRIVE aims to engage people who use drugs in health care, including screening for infectious diseases, as well as the continuum of HIV care. This cohort study looks at the capacity and effectiveness of using an MMT program as a platform of care for concomitant infectious diseases.
**Description:** The DRIVE cohort has been established at a methadone clinic in an inner city suburb in Kuala Lumpur, Malaysia. The patient population consists of people who use and inject drugs who are in a voluntary program for MMT. The study conducts baseline and six monthly social assessments, as well as quarterly medical assessments. The social assessment includes sociodemographic factors, incarceration history, housing and employment status as well as history of drug use and risk behaviours. The medical assessment conducts an annual screening for HIV, Hepatitis C and Hepatitis B. For HIV positive, CD4 count (PIMA) is conducted every 6 months, and timely referral for initiation of ARV is carried out.
**Lessons learned:** It was found that the MMT program as a platform of care was effective; Out of a cohort of 145, 56 (39%), 64 (44%) and 48(33%) had undergone screening within the last 6 months for HIV, Hepatitis B and C respectively. New diagnosis of HIV, HBV and HCV were made in 3.6% 3% and 50% of individuals in this cohort respectively. Newly diagnosed individuals were referred on for further care at a nearby health centre for confirmation, assessment and treatment as necessary.
**Conclusions/Next steps:** Initiating a similar screening process in other MMT centres could increase testing and diagnosis and therefore get clients commenced on the HIV and HCV care continuum, targeting an at-risk and hidden population that would not otherwise access the usual health facilities available. On site CD4 count monitoring and ART assessment sets the foundations for timely referrals and may encourage adherence. Creating a model of healthcare that integrates infectious disease, substance disorder treatment, mental health and general practice would be the ideal holistic care for this marginalised population.

# ETHICAL ASPECTS AND STANDARDS, INCLUDING WITH RESPECT TO RESEARCH, CLINICAL SERVICES, PUBLIC HEALTH POLICY AND PROGRAMMES, AND PROFESSIONAL CONDUCT

## WEPED325

### MINIMIZING UNINTENDED RISKS OF HIV-RELATED PROGRAMMATIC MAPPING AMONG KEY POPULATIONS: INTRODUCING THE MAPPING READINESS ASSESSMENT

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**Background:** Collecting information from key populations (KPs), including sex workers, men who have sex with men (MSM) and transgender (TG) individuals, may pose risks to KPs even if the purpose is to improve quality and coverage of health services. Unintended risks can occur through confidentiality breaches, data misuse, or drawing unwanted attention to hidden populations. An emerging global emphasis on programmatic mapping (PM) of the public locations where KPs can be reached for HIV services has raised new ethical concerns. In recognition of these risks, we developed the mapping readiness assessment (MRA) tool to engage communities in a comprehensive assessment of the risks of PM. We describe lessons learned from MRA implementation in South Africa, Haiti, Malawi, Mozambique and Angola.
**Description:** The MRA is a structured guide for obtaining qualitative input from stakeholders including KPs, healthcare providers, public officials, and law enforcement. Topics addressed include understanding the socio-legal environment for KPs, identifying available services and barriers to healthcare for KPs, and exploring the risks of collecting data on KPs. The MRA results in a decision about whether or not to proceed with PM. If consensus is reached to proceed, strategies are developed to minimize risks, contingency plan and protect KP rights and privacy.
**Lessons learned:** In all countries, the MRA revealed differential access to services and exposure to discrimination across KP sub-groups, particularly by socioeconomic class and locale. MRA implementers learned alternative ways of reaching KPs, such as through social media, in countries where punitive laws and discrimination limit their public visibility. We documented concerns that targeting KPs for HIV testing at public venues could lead to further stigmatization or violence, by reinforcing the association between sex work and HIV, or through perceptions that PM implementers are advocating for same-sex marriage or “recruiting” MSM. Action steps resulting from the MRA included decisions to provide testing to all venue patrons and to alert local leaders and authorities to PM prior to fieldwork.
**Conclusions/Next steps:** MRAs can help governments, program implementers, and civil society engage KPs in the PM process, protect KP rights, and strengthen partnerships to ensure that data collected is ultimately used to improve KP services.

## WEPED326

### ETHICAL BLIND SPOT: INFORMATION GAP REGARDING LEVELS OF COMPLIANCE WITH MATERIAL TRANSFER AGREEMENTS BY EXTERNAL LABORATORIES WHICH USE SAMPLES FROM THE DEVELOPING WORLD FOR HIV RESEARCH

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**Background:** Biological samples are crucial in HIV biomedical research. These samples come from institutions conducting HIV research from all over the world and increasingly from the developing world as a lot of clinical trials take place there owing to high disease burden. Research institutions which conduct clinical trials in developing countries almost invariably send samples to external laboratories. Transfer of such samples requires material transfer agreements (MTAs) which outline how the samples should be managed (e.g. intended use, access to, exact location, duration of retention and fate of the samples after the required analyses or the agreed duration has expired among other things). We investigated how research institutions which conduct clinical trials in Malawi, and thus routinely send biological samples to research laboratories in the developing world, monitor compliance with MTAs by the external research laboratories to which they send their research samples.
**Methods:** Laboratory managers or their delegates of the nine major research institutions in Malawi were interviewed on how they monitor adherence to MTAs by external research labs to which they send their HIV biomedical research samples. Questions included what tools, if any, they use to monitor MTA compliance, if the tools work, if the institutions, or their agents, have ever visited the external research labs to audit compliance with MTAs vis-à-vis their samples and if they receive communication regarding fate of their samples.
**Results:** None (0%) reported that they monitor MTA compliance by research labs where they send their samples. None (0%) reported that they, or their agents, have ever audited any external lab to assess MTA compliance. None (0%) reported that they have ever received any communication regarding fate of their HIV research samples. All (100%) reported that they ‘*simply trust*’ that MTAs are being adhered to.
**Conclusions:** Research institutions in Malawi have no knowledge if external research laboratories to which they send their HIV research samples comply with MTAs. Research institutions should put in place mechanisms to monitor compliance with MTA terms by research labs working on their samples to make sure that every step in the fight against HIV is taken ethically.

## WEPED327

### INTEGRATED AND ASSERTIVE HIV TREATMENT AND CARE WITHIN HOUSING AMONG WOMEN LIVING WITH HIV: BALANCING SUPPORT WITH PRIVACY AND SELF-DETERMINATION

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**Background:** In the advent of scale-up of HIV care globally, there has been an increasing shift to integrated and assertive HIV care services within housing programs (e.g. outreach, anti-retroviral therapy (ART) delivery, HIV provider home visits) to better reach marginalized populations. Given suboptimal access to ART, adherence and treatment outcomes among women living with HIV (WLWH) in Canada, it is imperative to understand how WLWH experience novel HIV care models to best promote ART access and retention, alongside individual respect for rights and privacy.
**Methods:** As part of SHAWNA *(Sexual Health and HIV/AIDS: Women's Longitudinal Needs Assessment),* we conducted 53 qualitative in-depth interviews with WLWH in Metro Vancouver between August and December 2015. Interviews were directed by a semi-structured interview guide, which was co-created with WLWH and community organizations. Drawing on concepts of structural violence this analysis explores WLWH's experiences with integrated and assertive HIV care models within housing programs.
**Results:** Our findings demonstrate how integrated and assertive HIV care within housing programs was instrumental in facilitating access to HIV care, adherence to ART and access to social services among the most marginalized WLWH. Many women spoke highly of HIV practitioners who provided respite from social isolation and delivered prescriptions to their door. At the same time, in the context of pervasive stigma, some WLWH voiced concerns regarding confidentiality and feared being ‘outed’ as living with HIV through the outreach visits. Other WLWH were uncomfortable with unannounced visits and feared judgement on their living conditions (e.g. use of drugs), and objected to the delivery of unrequested prescriptions.
**Conclusions:** Integrated and assertive HIV care models within housing programs appear to play a critical role in increasing access to ART for many hard-to-reach WLWH. However, many also describe tensions between HIV care delivered in the context of their home and rights to privacy and confidentiality, particularly where complex social and health issues and stigma surround their lives, including gender-based violence, poor mental health, and drug use. As HIV care models continue to be integrated across diverse sectors, WLWH must be consulted on HIV care models that meet their needs and that respect privacy and self-determination.

## WEPED328

### SOCIETAL NORMS VERSUS ETHICS: NATIONAL ETHICS COMMITTEE EXPERIENCES IN THE REVIEW OF HIV AND AIDS STUDIES TARGETING SEX WORKERS AND SEXUAL MINORITIES

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**Background:** World over, the fight against HIV and AIDS includes special populations such as sex workers and sexual minorities. This has correspondingly led to more research being conducted among sex workers and sexual minorities. Handling

of these populations especially in developing countries poses challenges as their practices are regarded as illegal, immoral and "unnatural sexual acts" yet they are key drivers of the HIV pandemic. Researching on them thus becomes a challenge to researchers and ethics committees as approving such studies may be tantamount to "legitimising" their activities. Ethics Committees are thus caught in between the line of aligning with country norms, social values, morals and the ethical obligation to approve scientific research. The aim of the study was to explore the dilemma and key considerations of Ethics Committees in the review of studies involving sex workers and sexual minority groups.
**Methods:** 12 studies focusing on sex workers and sexual minorities submitted to MRCZ between 2010 and 2015 were conveniently selected and the review criteria and process for them explored. Thematic analysis was done to determine issues discussed, key considerations during review and the outcome.
**Results:** Regarding the process it was noted that sexual minority studies took on average 16 weeks from initial submission to approval compared to others that usually take 4-6 weeks. Deliberations concerning those studies usually took longer during the meeting. EC members were uneasy on approving sexual minority studies. Members requested the study to commit to (1) increased protection of research participants identity, (2) obtain support from other requisite authorities and (3) developing a dissemination plan that would not affect participant well-being. They were subjected to more scrutiny than other studies. EC members are yet to be interviewed on their experiences of providing oversight over such studies.
**Conclusions:** Reviewing proposals on sexual minorities and sex workers pose challenges as the ECs operate within a larger society in which they are expected to follow societal values, norms and morals. Their decisions are thus expected to be a reflection of society, science and ethical merits. Ethics Committees are encouraged to remain objective, unbiased and weigh risks and benefits before reaching decisions.

## WEPED329

### ETHICAL AND PRACTICAL CONSIDERATIONS IN HIV DRUG TRIAL CLOSURE: PERSPECTIVES OF RESEARCHERS IN UGANDA

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**Background:** Rapid advances in HIV treatment have been made possible through large numbers of clinical trials, many of which are conducted in resource poor countries. Previous research indicates an evidence gap regarding HIV post-trial care in these settings. This paper explores the perspectives of research staff on post-trial care of HIV positive trial participants in Uganda.
**Methods:** A grounded theory study was conducted using in-depth individual interviews and focus group discussions with 22 research staff from 3 different trials in Uganda, between October 2014 and August 2015. Ethical approval was secured from the Ugandan local and national research and ethics committees.
**Results:** Three major themes emerged from the data:
**Planning and preparing for trial-closure:** Research staff engaged in planning and preparation activities for post-trial care, which included instituting trial closure guidelines, planning necessary resources and informing trial participants about post-trial care. Planning was guided by existing ethical policies/guidelines.
**Facilitating participants during trial exit:** Research staff engaged in psychological and practical support activities for trial participants. These were aimed at addressing their emotional and socio-economic needs during trial closure, and also to guide them in identifying and linking to post-trial HIV treatment and care facilities. Research staff felt that their current practice could be improved by incorporating more activities such as material/financial support and through a more personalized, direct and facilitated transitioning process since linkage to care was currently indirect - mainly through referral.
**Care and support for participants after trial exit:** The support provided to trial participants after trial exit was minimal, and relied upon the individual initiatives of the staff. Staff felt that post-trial care required improvement, for example, by providing follow up care and support to respond to multiple complex needs of trial participants which often arose after trial exit.
**Conclusions:** This study established a mismatch between what researchers consider 'good' post-trial care practice in HIV trials and the current ethical recommendations, which mainly focus on the need to ensure access to trial drugs and provision of trial results. Ethics authorities should institute post-trial care guidelines which can more holistically address the care needs of HIV positive trial participants in Uganda.

## WEPED330

### EXPERIENCES OF HIV-INFECTED PEOPLE WITHIN THEIR FIRST YEAR OF LEAVING HIV CLINICAL TRIALS IN UGANDA: A GROUNDED THEORY ASSESSMENT

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**Background:** Rapid advances in HIV treatment have been made possible through large numbers of clinical trials, many of which are conducted in resource poor countries. Previous research indicates an evidence gap regarding the meaning of trial closure for HIV positive trial participants in these settings. This paper reports the experiences of HIV positive post-trial participants in Uganda during their first year of exiting from trials.
**Methods:** A grounded theory study was conducted with 21 adult HIV post-trial participants (aged 26-59 years) from 3 trials, using in-depth interviews, between October 2014 and August 2015. Participants were recruited through their former research institutions. Ethical approval was secured from the Ugandan local and national research and ethics committees.
**Results:** Three main themes emerged:
**Accessing routine HIV services:** Although routine HIV care/treatment was freely available to all participants, there were complexities in accessing it. The main challenges included long waiting times, unwelcoming staff attitudes and HIV stigma. Accessing treatment for opportunistic infections emerged as a key problem as many facilities did not provide adequate medications to treat these.
**Experiencing a financial burden:** The majority of trial participants were of low socio-economic status and reported financial problems that affected their ability to access post-trial care. This included lack of funds to pay for transport to clinics, medicines for opportunistic infections and also food. Those suffering from opportunistic infections were often unable to work due to ill health. They faced particular financial challenges, leading to ongoing stress.
**Maintaining contact:** Trial participants reported keeping in contact with research staff or peers. Although this contact was minimal, it nonetheless proved helpful in providing them with psychological and practical support.
**Conclusions:** HIV positive participants in Uganda encounter numerous challenges during their first year of leaving a trial, which can impact on their health and well-being. The findings of this paper highlight a critical need for researchers and other stakeholders to remain involved in the care of HIV positive trial participants in Uganda, during their first year of exit from HIV trials.

## WEPED331

### ENHANCING THE EFFICIENCY OF AFRICAN RESEARCH ETHICS REVIEW PROCESSES, THROUGH AN AUTOMATED REVIEW PLATFORM

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**Background:** The growing scope and complexity of biomedical research in the developing world poses new challenges for research ethics committees' (RECs). The sheer amount of research being conducted, under-resourced RECs, and the lack of modern review technologies has resulted in unprecedented review timelines—with an estimate of 1.5 years to get clearance in many African countries.
**Methods:** The Research for Health Innovation Organiser (Rhinno), a cloud-based ethics review platform, has ushered in a new frontier of digital ethics review in Africa. It facilitates, manages and tracks the throughput of research applications throughout the research projects life cycle; from submission, distribution, to approvals and follow-ups. Rhinno integration is estimated to reduce the review timeline by 12 months. In 2015, Rhinno was actively used by 25 RECs in 8 African countries. We evaluated its impact on efficiency, data security and cost using an online questionnaire administered to chairpersons/administrators in user countries.
**Results:** A 100% response rate was received from 47% national, 47% institutional and 6% private RECs. The REC membership ranged from 46 to 9, protocols reviewed annually ranged from 2040 to 50 and all the RECs reviewed various phases and types of research. Reported high impact (100% of respondents) areas highlighted included: improved protocol submission, distribution; easy platform accessibility; improved communication between the REC and researchers; data confidentiality and security; platform's adherence to international standards; standardisation and harmonisation of the ethics review process. The medium impact areas (60-80% of respondents) included: reduction of workload for REC administrators; prompt notifications; reduction of RECs' administrative costs. Low impact areas included: easing the review of multicenter trials, mostly due to the current few countries us-

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ing Rhinno. Only 12% of RECs reported increased review efficiency from 30 to 12 days, the remaining 82% mentioned it is too early evaluate the impact of Rhinno on timeframe.
**Conclusions:** Implementation of Rhinno has achieved high-impact on data security, submission process, communication, harmonization and cost reduction. However, a long-term evaluation approach is needed to determine impact. Integration of new M&E indicators on efficiency and cost effectiveness into the Rhinno system would improve capacity for RECs to conduct long-term impact.

## WEPED332

### INCREASING PARTICIPANTS' SAFETY IN HIV CLINICAL TRIALS THROUGH ADVERSE EVENTS MONITORING BY RESEARCH ETHICS COMMITTEES: ZIMBABWE EXPERIENCE

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**Background:** The Zimbabwe National Research Ethics Committee is committed to human research participants` safety throughout the research continuum. An increase in HIV clinical trials over the past years, has led to an increase in Adverse Events being reported from different clinical trial sites in Zimbabwe. We share our experiences as the National Research Ethics Committee on strategies employed to increase participants' safety in HIV clinical trials through adverse event monitoring.
**Description:** To increase research participants` safety in HIV clinical trials, the Zimbabwe National Ethics Committee effected an SOP on adverse events handling which was communicated to all researchers. Passive and active clinical trial site monitoring has been intensified and participants interviewed for any problems encountered. Participants were educated on importance of keeping diaries and reporting any problemss since some adverse events can be subtle. Adverse events causality assessment was integrated in monthly protocol review meetings to determine relatedness to study product. Participants` diaries were reviewed to uncover unreported adverse events.
**Lessons learned:** Integration of adverse events causality assessment in monthly REC protocol review meetings led to improved and strengthened adverse event monitoring.In the last two years, a total of 520 adverse event reports were received from 45 active approved HIV clinical trials. 48 site inspections were carried out, 28 adverse events were not documented in the CRF, hence, were not reported. 55 were not timely reported as per the agreed SOP.
**Conclusions/Next steps:** .It is possible to evaluate each and every adverse event reported and participants play a big role in adverse event monitoring thereby making education vital for their safety.

## WEPED333

### WHEN 'BAD' PATIENTS TRANSFORM INTO 'GOOD' PATIENTS: MEDIATING AGENCY IN THE THERAPEUTIC ALLIANCE TO OVERCOME BOTTLENECKS ALONG THE HIV CASCADE OF CARE

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**Background:** Notions of 'good' or 'bad' patient behaviour affect patient-provider relationships in the domain of HIV care. We know little about the role of these social and moral representations in shaping access throughout the cascade of HIV services. In this study, we sought to explore factors that mediate bad and good patient behaviour, and to examine how these mediation processes could serve to overcome barriers along each stage of the cascade.
**Methods:** A qualitative study was conducted in six African countries (Uganda, Tanzania, Malawi, Kenya, Zimbabwe and South Africa) through the ALPHA network. We sampled different types of health workers involved in HIV care and patients from each stage of the cascade. Data were collected through in-depth interviews and were analysed inductively, using both open and axial coding. The constant comparison method was used to assess relational themes within and between site-level data.
**Results:** Providers often labelled certain patients as 'challenging' or 'difficult', such as defaulters and late presenters. However, patients were often seen as blameless, with social and contextual factors, such as poverty and stigma, implicated as barriers to 'good' patient behaviour. Patients were also forgiving to providers failing to maintain high standards of care given health system constraints, such as staff and treatment shortages. Success in mutual understanding resulted in both providers and patients making an effort to accommodate each other, and to find solutions that enhanced access to HIV services along the cascade of care. However, failed mutual understanding resulted in helplessness, apathy and poor attitudinal behaviour among both health providers and patients which hindered patients' progression through the cascade of care.
**Conclusions:** In most sites, patients and providers often reached a state of mutual understanding, and formed stronger therapeutic alliances to overcome barriers to access. While the label of 'bad' patients carry a negative connotation, providers are shifting the blame from individual patients to socio-contextual factors that constrain access and perpetuate poor health-seeking behaviour. Similarly, patients recognise health system constraints faced by providers. Therefore, mutual understanding is a potential mediator of agency in the therapeutic alliance, and may serve to unlock bottlenecks along the cascade of care.

# INTELLECTUAL PROPERTY AND TRADE REGIMES REGARDING ACCESS TO HIV TREATMENT AND DIAGNOSTIC MEDICAL DEVICES

## WEPED334

### NEVERGREENING: CIVIL SOCIETY ROLE IN CHALLENGING AND PREVENTING UNFAIR PATENTS MONOPOLIES IN BRAZIL

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**Background:** Since 2003, the Working Group on Intellectual Property (GTPI, acronym in Portuguese), a group of civil society organizations (CSOs) from Brazil, has been working to mitigate the impact of patent monopolies on access to medicines. Patents allow pharmaceutical companies to set high prices for medicines, threatening access all over the world. It has being well documented the practice by pharmaceutical companies to file patent applications of low quality to extend the monopoly over drugs. This practice in known as evergreening. In Brazil - and other countries -, any interested part may offer arguments to patent examiners showing why a given patent application should not be granted. This mechanism is called pre-grant opposition and might be used to protect public health from unmerited monopolies.
**Description:** Since 2006, GTPI have challenged patents applications for medicines for HIV and Hepatitis C. GTPI filled in total seven pre-grant oppositions: two for tenofovir (2006,2009); two for lopinavir/r (2006,2011); one for tenofovir+emtricitabina (2010); one for atazanavir (2015); one for sofosbuvir (2015).
**Lessons learned:** After 10 years filling pre-grant oppositions in Brazil, the results are: the two patents challenged for tenofovir were not granted. Nowadays tenofovir is free of patents in Brazil and it is being produced by local companies at cheaper price, which resulted in increased access. Lopinavir/r is still under monopy due to the patent that was granted for the molecule, however pre-grant opposition helped to prevent seven extra-years of monopoly. In the case of atazanavir, the opposition might avoid 8 extra-years of monopoly. And for sofosbuvir, the pre-grant opposition may put the drug in public domain. Decisons about the patent application are still pending in those two cases.
**Conclusions/Next steps:** This shows how CSOs may take part in the patent examination process in order to remove patent barriers and put medicines in public domain. Also, it shows how important it is to democratize and stimulate the use of mechanisms capable of fostering generic competition, such as pre-grant opposition, by goverments and CSOs.

## WEPED335

### ONLINE HUMAN RIGHTS TRAINING ON INTELLECTUAL PROPERTY RIGHTS: A CRITICAL STEPPING-STONE FOR INFORMED POLICY DEVELOPMENT, AN AFRICAN CASE STUDY

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**Background:** The AIDS and Rights Alliance for Southern Africa (ARASA) is a partnership of over 90 human rights, TB and HIV organisations working together in Southern and Eastern Africa to promote a Human Rights-based response to HIV and TB.
**Description:** Access to essential medicines such as generic HIV/AIDS treatment is essential in many countries in Africa. Many African countries still have many challenges to access health care services and amongst them is unavailability of adequate supply of HIV and TB drugs, unavailability of adequate diagnostic machines such as CD4, Viral load and TB testing machines and anti counterfeit laws and policies which are impediments to equal access to quality affordable medicines. These issues need to be addressed to ensure adequate access to quality health care services at a community level.
In 2015 ARASA introduced an online training on intellectual property rights and access to medicine. The training targeted human rights activist, community leaders, policy makers and service providers within country specific intellectual property rights offices. After the training the participants where supposed to develop advocacy campaigns that focused on reviewing current anti counterfeit laws to ensure that they do not become impediments to generic drugs through some provisions within this Acts. In SADC ARASA worked with various organisations and stakeholders to advocate for the review and reform of anti counterfeit laws and policies. In Zambia the anti counterfeit Act is now being reviewed to ensure that it does not classify quality approved generic medicine as a counterfeit.
**Lessons learned:** Scaling up online training on intellectual property rights can be a catalyst for review and reform of Intellectual property rights and policies that laws that are stumbling block to access to quality affordable medicines.
**Conclusions/Next steps:** On going advocacy on access to quality, affordable and essential generic medicines should be scaled up to ensure that vulnerable communities such as People living with HIV and AIDS are not denied life saving medicine they require.

## WEPED336

### CHANGING THE INTELLECTUAL PROPERTY NARRATIVE: PATIENTS BEFORE PATENTS

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**Background:** The University of KwaZulu-Natal (UKZN) School of Law has launched a new postgraduate (LLM) module on Human Rights Intellectual Property and Access to Medicines following on a successful intensive short course on this topic for five years, delivered to lawyers, activists and health workers. The aim of this module is to develop successive cohorts of students and activists who are able to critically analyse this area of the law from an access to medicines perspective, and thus challenge the dominant IP narrative as the right holders' prerogative to reap super profits from the suffering of people.
**Description:** The Human Rights Intellectual Property and Access to Medicines module provides an opportunity for the intersection of several disciplines, including the IP; Human Rights; Trade; and Regulatory Science. The module is a rights-based offering that aims to place human rights and social justice at the centre of the IP debate. It draws on local and international scholarship and advocacy efforts in order to provide a different narrative to the existing paradigm of IP hegemony.
Some module outcomes include:
- An understanding of core human rights concepts, theory and practice;
- A critical and evaluative approach to analysing Human Rights, Intellectual Property and Access to Medicines in South Africa and elsewhere; and
- The ability to apply this knowledge in the cause of increasing access to medicines.

**Lessons learned:** The development of a cadre of advocates for access across the African continent. Many beneficiaries of such programmes are active in the process of reforming patent laws in their respective countries. Also, supporting the major challenges to IP control that have come from civil society; and working with governments in areas of policy reform.
**Conclusions/Next steps:** The module will have impact both in the manner in which law teachers understand their craft, and how law students are trained to practice law for the benefit of society as a whole.

## WEPED337

### BARRIERS TO ACCESS AFFORDABLE ARVS IN MIDDLE-INCOME COUNTRIES (MICS)

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**Background:** Of the roughly 15 million people living with HIV who do not have access to antiretrovirals (ARVs), two-thirds live in middle income countries (MICs) - home to nearly 73% of the world's impoverished people. By 2020, it is estimated that 70% of people living with HIV will reside in MICs. These statistics signify that there is a serious treatment gap facing MICs now and even more so in the future. This situation is compounded by two key factors:
(i) drug companies routinely charge higher prices in MICs, given that these are "emerging markets", and exclude them from "access programs" or voluntary licenses;
(ii) there is little international pressure addressing this gap as compared to intervention in low-income countries. Failure to address this widening gap sets back past work to address access to ARVs and there is a need for an urgent response by all actors.
**Description:** This presentation will discuss what civil society-led patent interventions are doing in addressing affordability and access issues for HIV and Hepatitis C drugs in MICs. Special focus will be given to law and policy reform, legal patent challenges, and strengthening patent examination. Evidence-based analysis will be presented for the first time to showcase pricing and patenting trends in a subset of countries, providing recommendations for how to address the treatment gap going forward.
**Lessons learned:**
1) MIC status is fluctuating, as country classifications change, which potentially has an adverse impact on affordability of medicines.
2) Legal and advocacy strategies by civil society are serving as leverage for country governments and emerging as an important negotiating tool with pharmaceutical companies.
3) Information asymmetry is a key barrier in MICs. Challenges persist to obtaining pricing and patent data around key HIV and Hepatitis C drugs in MICs.
**Conclusions/Next steps:**
1) Rising medicine costs and decreasing international support require MICs to enact health-friendly patent policies that promote affordable medicines.
2) Investment is critical in PLHIV networks and their advocates to dialogue with government patent offices, patent offices and health ministries and address information gaps.
Academic research institutions and other actors need to leverage their expertise to support governments to address information asymmetry.

# HUMAN RIGHTS OF PEOPLE LIVING WITH HIV AND KEY POPULATIONS

## WEPED338

### GLOBAL FUND AFRICA REGIONAL GRANT ON HIV - REMOVING LEGAL BARRIERS: COUNTRY COORDINATING MECHANISMS (CCM) ENDORSEMENT FROM PROGRAMME COUNTRIES

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**Background:** In 2013, UNDP and four regional NGOs in Africa who are recognised for their work on HIV and human rights (ARASA, Enda Sante, KELIN and SALC), developed a partnership to successfully apply for a regional grant through the Global Fund New Funding Mechanism. The award was made at the end of 2015 and is the first Global Fund Africa Regional Grant which addresses human rights of key populations (KPs).
**Description:** In order for the award to be made, the consortium sought endorsement from the CCMs of all 10 project countries (Botswana, Cote D'Ivoire, Kenya, Malawi, Nigeria, Senegal, Seychelles, Tanzania, Uganda, Zambia). A project Steering Committee developed country summaries, which were sent to the respective CCMs. Follow-up was handled on a case by case basis. For example, some CCMs requested clarification by email, whereas others requested for an in person presentation. In each case, open communication was maintained so that each CCM was able to send multiple rounds of questions that were answered as swiftly and comprehensively as possible. As a result, all 10 programme country CCMs endorsed the project Concept Note, and will continue to remain involved in the project through communication with the Africa Steering Committee (ASC).

**Lessons learned:** More face to face engagement with CCMs is required when dealing with human rights issues due to possible sensitivities. Multiple forms of communication need to be prepared and offered (presentations, fact sheets, summaries) to satisfactorily answer questions that CCM members may have. KP involvement in presentations to CCMs is critical, but it is important that the project Steering Committee actively supports KPs in this role. In some cases capacity development in human rights is necessary for CCM members to make a fully informed endorsement.
**Conclusions/Next steps:** Endorsement by the CCMs has proven to be essential in development and implementation of this regional grant. The method of seeking endorsement can be replicated by others who are also undergoing the same process.

## WEPED339

### A VIDEO ABOUT A BRAZILIAN HIV-POSITIVE POSTER

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**Background:** In the last years, Brazilian HIV/Aids related campaigns were focused only on prevention and testing. Campaigns focused on stigma and prejudice against people living with HIV/Aids (PLHA) are needed.
**Description:** After discussions with a publicity agency, a poster entitled "I am an HIV+ Poster" was produced in April 2015, featuring a drop of blood from a PLHA. The title "reveals" the serological status of the poster; in low case, it compares itself to a PLHA. It follows asserting that it cannot transmit HIV, such as a PLHA in efficacious treatment or using condoms does not, and that it is possible to live with it like with any other poster. The production was donated by publicity, video and sound agencies.
Some posters were distributed in São Paulo City bus stops for a week. Some of the blood donors stayed near the poster, talked with the readers, and then revealed that the blood in the poster was their own. Reactions were all positive! A 3 minutes video was produced with testimonies by 9 PLHA, and public reactions in streets.
The video has versions for deaf people and subtitled in English, French, Mandarin, and Spanish.
**Lessons learned:** The parallel between the poster and PLHA sensitized people about stigma and discrimination, thus allowing a reflection, both rational and emotional, on their concepts. Visualizations in our youtube channel, were more than 300,000, and exceeded 350,000 in that of the publicity agency; one Brazilian user downloaded the video in her facebook page and surpassed a million visualizations. In Argentina, visualizations exceeded 4 millions. Several people and organizations from Mexico, Philippines, South Africa etc, asked to replicate the campaign. Among other prizes, the poster won a Golden award at "El Ojo De Iberoamerica" Festival, Bronze Lion award at Cannes Festival. Many health care services, educational institutions, prisons, NGOs asked for copies of the original poster.
**Conclusions/Next steps:** The repercussion in social media showed the poster and video revived the discussion on stigma and prejudice related to HIV, both in Brazil and the world, stressing the globality of the subject. An Exposition on this poster and video is planned for 2016.

## WEPED340

### ADDING TO THE EVIDENCE BASE FOR RIGHTS-CENTERED HIV PROGRAMMING: COMPREHENSIVE COUNTRY-LEVEL INVESTIGATIONS SUPPORTED BY THE GLOBAL FUND

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**Background:** Human rights-based approaches to HIV programming are essential to ensure effectiveness and sustainability of programs. The Global Fund to Fight AIDS, TB and Malaria is committed to rights-based and gender-sensitive programming, as reflected in the rights sub-objectives in its 2017-2021 strategy. It encourages including human rights interventions in proposals for programs addressing the three diseases. But inclusion of human rights interventions in proposals and final grant agreements has been infrequent, and the few interventions included have rarely been brought to adequate scale.
**Description:** The Global Fund is undertaking a major five-year effort to evaluate and add to the evidence base on the importance of human rights programming for HIV (and TB and malaria). The centerpiece of this effort, the methods for which were developed in consultation with external experts and key affected populations, are prospective qualitative and quantitative evaluations of the costs and impacts of human rights interventions relating to HIV programs in 15-20 focus countries. The interventions this research focuses on are the seven identified by UNAIDS and the Global Fund as essential for effective HIV programs, namely reduction of stigma and discrimination; access to legal services; "know your rights" information programs; reform of laws and policies that impede access to services; elimination of gender discrimination and disparities; human rights training of health workers; and human rights training of police. Mathematical modelling is being undertaken in some locations on the health impact of these interventions.
**Lessons learned:** Research/evaluation teams are best identified through an open bidding process. Experts consulted emphasized the need for participation of affected populations in these investigations and for using this research as a teaching opportunity for community-based organizations engaged in monitoring and advocacy for rights-based programs.
**Conclusions/Next steps:** The evidence generated from this effort is more comprehensive and more reality-based than some of the evidence previously available on rights-centered approaches to HIV. The results of the country-level investigations will be disseminated in user-friendly ways to policy-makers and program decision-makers and will also inform routine program evaluation approaches in the Global Fund.

## WEPED341

### CURBING SAFETY AND SECURITY RISKS OF WORKING WITH MSM THROUGH ENGAGEMENT OF POLICE AND TRADITIONAL LEADERS

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**Background:** Lesbian gay, bisexual transgender and intersex (LGBTI) Kenyans experience widespread verbal and physical assault from members of the community on a daily basis. These have a significant impact on the mental health and well-being of LGBTI people and also hamper continuing HIV prevention, treatment and care efforts. Historically, LGBTI community and organizations have also faced numerous challenges from law enforcement.
On April 19th 2014, ten police officers raided MAAYGO office, confiscated office materials and arrested, harassed and beat the organization's director and finance officer, as well as one of its members, for "illegally promoting homosexuality" and detained all three in police cells.
**Description:** Men Against AIDS Youth Group Organization (MAAYGO) works in the front lines in theHIV response led the establishment of security network to dialogue and review the incident and what it meant in HIV programming. MAAYGO initiated sensitization forum with local chiefs and police officers to understand and familiarize them with MAAYGO work and sexual orientation and gender identity (SOGI) and rights.
**Lessons learned:** As a result of the sensitization forum, the police commander, local chiefs and police officers are now supporting MAAYGO interventions. These stakeholders now understand how HIV programming for MSM contributes to the national HIV response.MAAYGO continues top proactively and constructively engage with the police and have been allocated sessions to conduct sensitization and training to police officers and local chiefs. MAAYGO also participates at community local chiefs "barazas"to sensitize other community members on LGBTI issues in order to increase tolerance and acceptance.
There are now a number of police officers who understands the plight of LGBTIKenyans and can articulate the issues they face.
**Conclusions/Next steps:** Developing a security plan, scanning the environment before implementing activities, are important when building partnership with the community. Continuous sensitization of law enforcers, local chiefs and communities on LGBTI issues and contributes to a more positive and enabling environment for MSM-focused programming.

## WEPED342

### LEGAL ENVIRONMENT ASSESSMENT FOR HIV RESPONSE IN NIGERIA

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**Background:** The 2011 Political Declaration on HIV and AIDS and the Global Commission Report on HIV and the Law recognize that the law can have a profound impact on the lives of vulnerable and marginalized people. The primary aim of a legal and regulatory assessment is to identify and review HIV, health and any other

related laws, regulations; and policies and practices, in order to establish their relevance to, and impact on the national response to HIV and AIDS. While the 1999 Constitution of the Federal Republic of Nigeria (as amended), offers general protection against discrimination and protects the rights of all Nigerians, there are concerns that the legal and regulatory environment for HIV response could be improved especially given the recent enactment of the Same Sex Marriage Prohibition Act, 2014. This is important, given the disproportionately higher HIV prevalence rates among Key Populations

**Description:** The assessment was government led, anchored by NACA and steered by a Technical Working Group comprising Key Populations (FSWs, MSM, PWID), UN Agencies, PLHIV, Academia, Ministries, Department and Agencies of government. It is believed that given the hostile legal environment especially for key populations, it is important to come up with an assessment involving critical stakeholders in the HIV/AIDS response including the Key Populations to provide evidence base for advocacy for legal and policy reforms.

The assessment which has been completed and validated by stakeholders reveals the existence of a wide range of laws and policies with dire implications for HIV/AIDS.

**Lessons learned:** With the enactment of the Same Sex Marriage Prohibition Act, 2014, hence the hostile legal environment, one of the key lessons learned from the assessment is that advocacy for legal and policy reforms should be informed by evidence based assessment aligned with global and regional documents. It is also important to involve key populations and key government stakeholders in the design and implementation of legal assessment. It gives hope that some of the punitive criminalizing legislations against most at risk populations will be reversed.

**Conclusions/Next steps:** The LEA will inform the development of the National Plan of Action and Accountability Framework for all key stakeholders

## WEPED344

### ACCESS TO ART FOR FOREIGN PRISONERS IN BOTSWANA: STRATEGY AND LITIGATION IN *TAPELA AND OTHERS V THE ATTORNEY GENERAL AND OTHERS*

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**Background:** In August 2015 the Botswana Court of Appeal delivered a judgment, upholding a previous High Court order, in which the Botswana government was compelled to provide antiretroviral treatment (ART) to foreign prisoners. The judgment marks a milestone in a long battle by local and regional civil society to change a government policy in which foreign prisoners were discriminated against in the denial of ART.

**Description:** Spanning a period of three years, the strategy coordinated by the Botswana Network on Ethics, Law and HIV/AIDS (BONELA) and the Southern Africa Litigation Centre (SALC) included legal proceedings at both High Court and Court of Appeal, interim contempt-of-court proceedings, extensive advocacy, and engagement with government officials. The call to dedicate public resources to non-citizen prisoners was unpopular in public discourse and encountered stern government resistance. In addition, Botswana's constitutional framework explicitly endorses exceptions to non-discrimination provisions in the case of non-citizens and in public expenditure. The achievement of policy change was therefore a significant accomplishment following coordinated efforts of various parties.

**Lessons learned:** The implementation of the strategy required clearly-framed, harmonised and sustained advocacy goals and activities on local, national, regional and international levels. The legal strategy was carefully framed in acknowledgment of the jurisprudential context, ensuring outcomes useful to long-term strategic ends in advancing access to healthcare in prisons. However significant hurdles were faced in accessing the prison system in order to monitor compliance with the High Court and Court of appeal orders. Concerns particular to prisoners as litigants need to be accommodated when including litigation in strategies to advance access to treatment.

**Conclusions/Next steps:** SALC and BONELA intend to use the success in the judgment to improve civil society's footprint in HIV-services in Botswana's prisons. Efforts to support the enforcement of the judgment and to use the enforcement process to create opportunities for dialogue are required to ensure sustainable gains in prison health in Botswana.

## WEPED345

### VIOLATIONS OF SEXUAL AND REPRODUCTIVE HEALTH AND RIGHTS OF WOMEN LIVING WITH HIV IN CLINICAL AND COMMUNITY SETTINGS IN UGANDA

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**Background:** Women living with HIV experience more stigma and rights violations in health care settings than HIV-negative women. There is need to further unpack the complex issues of stigma, gender-based prejudices, discrimination, and human rights violations in the context of clinical and community health settings. As part of the Link Up project, ICWEA worked to improve the sexual and reproductive health and rights (SRHR) for young women living with HIV in Uganda. ICWEA conducted a research study focusing on SRHR violations of women living with HIV in their reproductive age (15-49 years) in clinical settings, with a particular focus on coerced and forced sterilisation.

**Methods:** The study was conducted in 2014 in the 8 regions of Uganda. It involved both qualitative (a desk review, focus group discussions, in-depth interviews and selected case studies) and quantitative (a field based inquiry) methods. Over 700 women living with HIV were interviewed. Other respondents included service providers, opinion and district leaders, CSOs and men The approach was participatory: 35 young women living with HIV trained as research assistants.

**Results:** Of 72 women who had undergone tubal ligation as a family planning method, 20 women had been forced or coerced. Their education level was relatively low - 54% had only primary school level - and they are mainly low income earners (34%). Most (95%) sterilizations occurred during child birth, when the woman got a C-section. Coerced and forced sterilization was characterized with misinformation, and no signed consent was sought. Other violations, especially in community settings, included forced abortions, gender-based violence, abandonment by spouses, women forced to give birth beyond number of children desired, and stigma and discrimination.

**Conclusions:** Cultural and social factors remain barriers to access SRHR services. Unequal power relations between women and health workers, spouse or family members lead to women's low bargaining power, limited education, and low economic status. Women lack information about their rights.

There is need to sensitize health workers on women's SRHR, empower women living with HIV to increase their ability to negotiate and resist SRHR violations, and; provide legal redress and justice to women who have undergone SRHR violations, especially forced/coerced sterilization.

## WEPED346

### IMPLICATIONS OF SEXUAL REPRODUCTIVE HEALTH RIGHTS VIOLATIONS ON CARE, SUPPORT AND PREVENTION OF HIV: EXPERIENCES OF WLHIV ON FORCED AND COERCED STERILIZATION IN KENYA

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**Background:** When sexual reproductive health rights are respected and upheld those who need to access reproductive health care feel safe and dignified and are likely to seek these services whenever they need them. The contrary would lead to apathy and seeking alternative ways of addressing reproductive health needs which may expose those seeking care to unprofessional care leading to mortality among other health challenges.

Cases of forced and coerced sterilization of WLHIV came to the fore in 2011 during support group meetings in Nairobi, Kakamega and Kisumu. A study conducted in the same year set to document evidence of such cases and initiate psychosocial support and advocacy to stop the practice.

**Methods:** This study was conducted between September and December 2011 in Nairobi and Kakamega. Respondents were identified through snowball within support groups of WLHIV. Data was collected through in-depth face to face interviews, the respondents identified places they felt comfortable to hold the interviews; this was done to protect confidentiality. Quantitative data was analyzed through graphical displays and tabulations while qualitative data was analyzed according to emerging themes which provided in-depth information to generate close to verbatim accounts of the respondent's experience.

**Results:** The study found out that; non- consensual sterilization was happening in both public and private hospitals, health care workers and family members were the main perpetrators, the affected women suffered psychological stress and were disinherited of their matrimonial property, stigma and discrimination was the main driver of forced sterilization which led to many women shying away from disclosing

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their HIV status, finally the study highlighted how the intersection of low socio-economic status, HIV and gender increases vulnerability of WLHIV to nonconsensual sterilization.

**Conclusions:** There is need to accelerate reproductive health rights awareness among women living with HIV, health workers and community members to sustain the gains made in HIV response.

## WEPED347

### THE ROLE OF NGOS IN CONFRONTING ANTI-GAY LEGISLATION: A PANACEA TO COMBATING THE SPREAD OF HIV/AIDS AMONG MSM IN NIGERIA

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**Background:** : In January 2014, the ex-president of Nigeria signed into law a legislative Act that formally criminalizes same sex oriented citizens and other Lesbian, Gay, Bisexual, Transgender and Intersex (LGBTI) persons living in Nigeria for their human person, their sexual orientation and gender identity. Apart from the Criminal and Penal Code which impose 14 years jail term on homosexuals or bisexuals, the Resent Same Sex Marriage Prohibition Act criminalizes civil partnerships, marriages of same sex persons, organizations that provides developmental intervention programs, professionals who support LGBTI people such as nurse, doctors and lawyers, association of HIV positive gay men by the virtue of sexual orientation and people who identify with LGBTI persons by association (which could include family members) among others. This drove many gay men underground and hinders the CSOs from providing medical support and care to LGBTI and those living with HIV/AIDS.

**Methods:** : In 2015, the International Centre for Advocacy on Right to Health-ICARH engaged a legal practitioner on a full time job to further her critical intervention on Human Rights in order to promote and defend the fundamental Human Rights of sexual minority population in the Federal Capital Territory Abuja, Nigeria. Also, in October 2015, ICARH and other NGOs conducted 'Legal Environmental Assessment' on the impact of Nigerian Legal System in the fight against HIV/AIDS. The Assessment attracted the Federal Ministry of Health, the National Agency for the Control of AIDS, CSOs, Donors, Lawyers, Doctors and Allies of the LGBTI.

**Results:** The Human Rights Lawyer responds quickly in cases of arrest/detention of community member to secure their bail having in mind that some of the detained community members on *ARV therapy do not have access to drugs while in cell. Fortunately*, **ICARH's** clinic now records more MSM accessing **ARV drugs** due to intensive sensitization by the organization.

**Conclusions:** There is need for Government Policies to be void of discrimination but geared towards equality for all.

## WEPED348

### ESTABLISHING A COMMUNITY-OWNED SYSTEM TO MONITOR AND RESPONSE TO HIV-RELATED HUMAN RIGHTS CHALLENGES: LESSONS LEARNT SO FAR

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**Background:** Right, Evidence and Action (REAct) is an information technology (IT)-based human rights monitoring and response system used and owned by community-based organisations. Since mid-2014,REAct has been set up in Myanmar, Lebanon, Uganda, Senegal, South Africa and Zimbabwe by organisations of PLHIV, LGBTI people, migrants, women from key populations and sex workers. Through REAct, organisations document human rights-related barriers, including gender violence, to accessing HIV and health services. REAct produces information to inform provision of adequate rights-based programmes; responds to individual emergencies; generates evidence for advocacy, and generates data for improving rights-based programming.

In 2015, there was formative evaluation on REAct with two strands: an overview of its contribution to the existing body of evidence about human rights reporting and response systems; and a specific field evaluation in Uganda.

**Description:** The overall evaluation used a mixed method approach, including a desk review of information provided by participating organizations and in the public domain and appreciative inquiry/semi-structured interviews with 25 persons, including global key population networks, REAct implementers and strategic partners.

In Uganda, a cross-sectional research design was adopted. Qualitative research with one-two-one and focus groups totaled 28 individuals (17 implementers, four managers and seven beneficiaries). Atlas,ti-computer software and Martus software were used for thematic qualitative data analysis.

**Lessons learned:** REAct has improved skills and human rights knowledge among target population, enhanced the sense of ownership and legitimacy of implementing organisations among their beneficiaries. It has contributed to providing responses to crises responses and generating evidence for advocacy, guided HIV response and programming among Key Populations and improved the diagnosis of human rights-related needs. There is need for further technical assistance on both human rights research and IT use; security risks need to be further factored in and addressed. The inherent suitability of the system needs to be reinforced with robust referrals and partnerships with human rights service providers.

**Conclusions/Next steps:** REAct contributes to the essential needs among communities to own their own monitoring and response system for human rights violations. REAct needs to be developed to contribute to generating evidence towards the fulfilment of the Sustainable Development Goals and to be openly accessible to other organisations.

## WEPED349

### REASONABLE ACCOMMODATION MADE EASY: PRACTICAL GUIDELINES FOR EMPLOYERS OF ALL SHAPES AND SIZES

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**Background:** All workers should enjoy equal access to employment, yet some encounter physical, procedural or psychological barriers—including discrimination--that may put them at an unfair disadvantage. If not addressed, such barriers also deprive companies of a broader, more diverse pool of workers, a factor that can also place businesses at a disadvantage in both the local and global marketplace. Many employers lack information on why reasonable accommodation is both a human right and good business practice, when and how to provide an accommodation, and low cost options for doing so.

**Description:** To fill this knowledge gap, the International Labour Organization (ILO) has developed practical, step-by-step guidelines for employers large and small, taking the employer through the accommodations process with concrete examples, and making the business case for diverse workplaces that accommodate workers' needs in varying circumstances. The guide focuses on four specific groups: persons living with or affected by HIV or AIDS, persons with disabilities, persons with family responsibilities; and persons who hold a particular religion/belief.

The guidelines were developed through extensive consultation with a working group of experts from around the world. In particular, sections focusing on the needs and concerns of workers living with or affected by HIV were developed in consultation with the Canadian Working Group on HIV and Rehabilitation and take the episodic nature of HIV and AIDS into account. The guidelines are divided into sections designed to help employers understand the concepts behind reasonable accommodation and the process and steps for implementing accommodations during the employment cycle. They also contain a model policy on reasonable accommodation that can be adapted for use by businesses of varying size, complexity and resources.

**Lessons learned:** Collaboration with experts from academia, businesses and civil society organizations was essential to ensure the development of practical, flexible guidelines that meet the concrete, specific needs of employers and their workers.

**Conclusions/Next steps:** Dissemination of the guidelines will be scaled up among employers and other world of work stakeholders, to promote increased provision of reasonable accommodation for all workers, including those living with or affected by HIV or AIDS.

## WEPED350

### HUMAN RIGHTS AND HIV: ZERO DISCRIMINATION YOUTH TASK FORCE IN THE RESPONSE TO THE AIDS EPIDEMIC IN BRAZIL

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**Background:** In Brazil, HIV infections rose 11% from 2005-2013 in the population as a whole, with a noted high vulnerability of young people. From 2005-2014, notified AIDS cases between 15-19 years old individuals more than tripled (from 2,1 to 6,7 cases per 100,000 inhabitants). UNAIDS and the Ministry of Health identified gaps in the response, including that of young people also, which were less and less involved in issues related to HIV, with very few young activists. Information to promote adherence was also lacking.
**Description:** · The Zero Discrimination Youth Task Force brings together young activists from different human rights areas (women's movements, race and ethnic, indigenous, land reform, etc.) as well as HIV-positive youngsters, in order to fight discrimination, empower young people from key populations and those most vulnerable in society. The approach is cross-cutting through five transdisciplinary themes: educommunication; social mobilization; advocacy; ethics and culture of peace and conflict mediation. Mobilization is innovative, through social media and crowdsourcing of ideas, with primary focus on virtual environments and communities. The group is active on virtual mobilization on social and human rights issues and also very prominent in welcoming and supporting young people who have recently discovered their HIV positive status. The task force also facilitates, mediates and helps in the development of social intervention strategies.
**Lessons learned:** The application of nonviolent communication principles and culture of peace in cross-cutting issues was beneficial. The gathering of leaders of human rights movements into AIDS-related issues has been very important for mutual learning. Through the deconstruction of misconceptions, it was provided a space for dialogue was created that allowed the approach and perception of the other as a partner.
**Conclusions/Next steps:** Since the establishment of the task force a significant increase for noted in the participation of networks and youth movements in response to the AIDS epidemic in Brazil. Similarly, there was an increase of visibility in the youth agenda and their demands. Through ongoing training, it is expected the expansion and strengthening of this network.

## WEPED351

### SECURING LAND RIGHTS FOR WIDOWS LIVING WITH AND AFFECTED BY HIV USING CUSTOMARY JUSTICE STRUCTURES

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**Background:** In Homabay and Kisumu counties of Kenya, many widows and orphans become vulnerable to HIV when their husbands and fathers die, due to disinheritance by their families and communities, which leaves them destitute. These counties are among the 47 with the highest HIV prevalence rate, with Homabay at 25.7% and Kisumu at 19.3%, as against the national prevalence of 6.04%. Many are evicted from their rural homes and flee to urban areas where they find themselves vulnerable to physical and sexual abuse, increasing their vulnerability to HIV. Often they resort to high-risk behavior, such as polygamy or involuntary sex work in order to earn enough money to survive. For women and children living with HIV it becomes very difficult to access consistent treatment.
**Description:** KELIN trained over 50 elders and 100 widows on HIV and the rights based approach. The widows who had been evicted were linked to the trained elders who mediated over their cases. The widows were then resettled on their land. Each case took an average of three months to be resolved.
**Lessons learned:** The use of customary justice systems has not only ensured access to justice to over 300 widows living with HIV, but has helped secure land and property rights, enabling them to become economically independent and productive members of the community. Women's access and control over land is a basic necessity for a decent livelihood, especially in rural agricultural areas and critical to ensuring women living with HIV or widowed by HIV can protect themselves from infection, cope with illness, and support their families. By facilitating the widows to access justice it ensure that they enjoy their right to health.
**Conclusions/Next steps:** KELIN has developed a tool for those who want to replicate similar programs. The tool outlines a simple guideline for implementation in any community where harmful cultural practices have a negative impact on HIV exist. KELIN has documented all the cases that have been settled by the widows and is now working with the Judiciary to formalise the process of access to justice by way of mediation as envisioned by Article 159(2) of the Constitution of Kenya.

## WEPED352

### CRIMINALIZATION OF SEXUAL MINORITIES RIGHTS FOSTERING STIGMA AND DISCRIMINATION: CASE OF BURUNDI

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**Background:** On April 22, 2009, Burundi amended its Criminal Code to criminalize sexual relations between consenting adults of the same sex for the first time in its history. The State of Burundi has legal obligations to protect the rights of all its citizens arising from the Universal Declaration of Human Rights, and various treaties, pacts and international conventions that the State of Burundi has ratified, as well as under the Constitution of the State of Burundi. Nonetheless, sexual minorities in Burundi continue to be the victims of human rights violations and face increasing discrimination and stigmatization.
**Description:** The research was carried to produce first ever data on the extent of discrimination by le Mouvement pour les Libertes Individuelles - MOLI whose work is around documentation an research on human rights abuse and violations based on real or perceived sexual orientation and gender identity. The authors analyzed MOLI's archives and verified the accuracy of the files and case documentation of MOLI employees, as well as other reports produced by the organization since 2010, where over 17 cases were documented.
**Lessons learned:** The research recognized remarkable progress has been made securing the right to health for sexual minorities since 2007, especially with regard to HIV/Aids prevention programs. However, the institutionalization of homophobia materialized by official intolerance and promotion of homophobic attitudes, and detention and threats of detention incite some health providers to not giving comprehensive services to MSM & Transgender while contributing that they go on background and prefer to not disclose their sexual practices to health providers. Also, sexual minorities identifying organizations were found denied registration impacting their ability to organize and mobilize various constituencies.
**Conclusions/Next steps:** Laws and punitive provisions against sexual minorities continue to hamper effective responses to HIV/Aids as well as for them to attain the highest level of health services as most of them fear of being viewed as criminals. Thus, initiatives on documenting and addressing issues human rights, sexual orientation and gender identity needs to be encouraged in other to adopt a human rights based approach to HIV/Aids.

## WEPED353

### CHALLENGING ANTI-PROSTITUTION LAWS WITH HELP OF CEDAW

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**Background:** Female sex workers are among the populations most vulnerable to HIV in Eastern Europe and Central Asia (EECA) — vulnerability which is directly linked to stigma and discrimination that is perpetuated by anti-prostitution criminal and administrative laws. Yet there is neither public pressure to repeal these laws locally, nor calls for change from international allies. From 2013-2015, sex worker activists from Sheikh-Aim Network, Kyrgyzstan and Silver Rose Association, Russia, with support from the Canadian HIV/AIDS Legal Network and International Women's Rights Action Watch Asia Pacific (IWRAW) sought to build international pressure for sex work law reform in the region.
**Description:** Activists submitted periodic country reports to the Committee on the Elimination of Discrimination against Women (CEDAW Committee) in order to secure recommendations regarding anti-prostitution laws in Kyrgyzstan and Russia. Sex workers attended pre-sessions and review sessions of, and presented reports to, the CEDAW Committee. In 2015, the CEDAW Committee issued a strong recommendation to repeal anti-prostitution administrative laws because they are discriminatory and increase the vulnerability of sex workers to HIV.
**Lessons learned:** When it comes to sex work, the CEDAW Committee is considered a fairly conservative UN human rights body, which at best promotes the so-called Swedish model, where sex workers are tolerated but clients are punished. Before 2015, the CEDAW Committee recommended the decriminalization of sex work on several occasions, but never challenged administrative prohibitions against sex work. The 2015 recommendation was a clear step forward by a UN human rights

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body in recognizing the human rights of sex workers. The main driver of success was the active participation of sex worker activists in CEDAW sessions. CEDAW Committee members had the opportunity to hear first-hand experience concerning the ways in which anti-prostitution laws exacerbate stigma and discrimination against sex workers and increase their vulnerability to HIV.
**Conclusions/Next steps:** The 2015 CEDAW recommendation will be used to fight anti-prostitution laws in the EECA. Sex worker activists plan to approach senior government officials to urge them to implement the recommendation. Activists will also maintain a dialogue with the CEDAW Committee to amplify the voices of the communities most affected by HIV.

## WEPED354

### EXPLORING EQUITY IN COCHRANE HIV SYSTEMATIC REVIEWS USING THE PROGRESS PLUS FRAMEWORK: A BIBLIOMETRIC ANALYSIS

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**Background:** Inequities undermining the efforts to curb the HIV epidemic are increasingly being documented such as, gender based differences in prevention and treatment, the role of religion in sexual behavior and adherence to care, access to social capital in prevention and engagement with care and level of education in HIV testing. These issues raised above would suggest that elements of inequity should be integral parts of HIV research, practice and policy. The objective of this research was to describe and summarize equity reporting in HIV systematic reviews and explore the extent to which equity issues are addressed in HIV reviews using the PROGRESS Plus framework; a tool to measure variation in health across socially stratifying forces.
**Methods:** We conducted a bibliometric analysis of all the systematic reviews published by the Cochrane HIV/AIDS group as of March 2014. The reviews were grouped into four categories: behavioral, social or policy interventions (n=16); biomedical prevention (n=16); health services and care (n = 9); and therapeutics, prognostics and diagnostics (n = 62) giving a total of 103 reviews. PROGRESS Plus items were identified as present or absent in the reviews and recorded by pairs of seven reviewers using a standardized data extraction form. PROGRESS Plus items included place of residence (P), race or ethnicity (R), occupation (O), gender (G), religion (R), education (E), socio-economic-status (S), social capital (S), age (Plus item) and sexual orientation (Plus item).
**Results:** The analysis included 103 reviews published as of March 2014, with a median of 5 studies per review (min 0, max 44). Reporting of PROGRESS-Plus factors was as follows: Place of Residence (low, middle and high income) (55.3%), Place of Residence (urban or rural) (24.3%), Race or Ethnicity (20.4%), Occupation (10.7%), Gender (65.0%), Religion (1.9%), Education (7.8%), Socioeconomic Position (10.7%), Social Networks and Capital (1.0%), Age (1.9%) and Sexual Orientation (3.8%).
**Conclusions:** Gaps in the reporting of relevant equity indicators were identified in the research suggesting HIV research is not consistently conducted through an equity lens. There is a need to incorporate more socially stratifying factors into both primary and secondary studies.

## WEPED355

### HOW USEFUL IS PUBLIC IMPACT LITIGATION AS AN ADVOCACY TOOL TO ADDRESS THE STRUCTURAL DRIVERS OF HIV AND TB IN PRISONS: A CASE STUDY OF EXTREME OVERCROWDING IN POLLSMOOR

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**Background:** South Africa has the benefit of a legislative framework that aims to protect the rights of prisoners - from a progressive and comprehensive constitution that guarantees the rights of prisoners and detainees to human dignity, adequate accommodation, regular exercise and access to health care services, to policies directed at dealing with the prevention of sexual abuse and the treatment of HIV and TB in prisons.
**Description:** The prevailing inhumane conditions, including extreme overcrowding, inadequate sanitation facilities, inadequate staffing, poor nutrition and lack of regular exercise, make it nearly impossible to implement the policies necessary to ensure prisoners' rights. For example, it is impossible to prevent sexual abuse, a driver of the spread of HIV in prisons, if it is impractical to separate vulnerable and predatory detainees, or to prevent the spread of TB if infected detainees cannot be accommodated separately from healthy ones. If we are successfully to implement practices designed to halt the spread of HIV and TB in prisons, it is necessary to remove the structural obstacles that prevent their effective implementation.
**Lessons learned:** Extensive engagement with relevant officials often simply yields the response that until the broader, upstream challenges within the criminal justice system are addressed, the inhumane conditions and extreme overcrowding in prisons will persist.
**Conclusions/Next steps:** Following several years of unsuccessful engagement with the Department of Justice and Correctional Services on issues of extreme overcrowding, Sonke Gender Justice represented by Lawyers for Human Rights launched a court application in December 2015 challenging the unconstitutional conditions in Pollsmoor Remand Detention Facility. The author provides a case study of this litigation as it is unfolding, and assesses the merits and limitations of public impact litigation, a tool that has been used to great effect in other instances - securing antiretrovirals or textbooks - as a method of addressing structural drivers of HIV and TB in South African prisons, such as overcrowding.

## WEPED356

### ANTI-GAY LAW, MSM AND HIV: HUMAN RIGHTS INFLUENCES AND HIV/OTHER STIS AMONG MEN WHO HAVE SEX WITH MEN IN NIGERIA (MSM)

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**Background:** Results from the recent Integrated Behavioural and Biological surveillance Survey (IBBSS) 2014 indicates that HIV prevalence among Men who have sex with Men is skyrocketing: From 13.5% (in 2007) to 17.2% (in 2010) and 22.9 (2014). Despite the tremendous donor money spent on MSM-HIV programming, the passing of the anti-gay law in Nigeria is having a huge impact on efforts already made to mitigate HIV new infections among this sub-population in Nigeria.
**Objective:** To measure the impact of the anti-gay law HIV programming in Nigeria
**Methods:** Between October to December 2015, a well-structured questionnaire were administered to the clients at the Strengthening HIV Prevention Services (SHiPS) Nigeria HIV Drop-in- Centre (DIC) for HCT/STI syndromic management services to MSM in Benue and Nasarawa States. The data were evaluated in a cross-sectional analysis. Logical regression was used to determine the correlates of the anti-gay law.
**Results:** A total of 436 MSM were reached. This figure indicates 65% of enrollment at the facilities before the signing of the antigay law in Nigeria. Mean age was 23 years +/- SD. HIV prevalence was 6.8%, 19% reported Anal warts cases, 11% for herpes Simples virus (HSV) and 6% for Gonorrhea. 67% visited the drop-in-Centre (DIC) two or more weeks after having the sign and symptoms of the STI, because they are concerned about the attitude of the Healthcare workers if they inform them of their same-sex practice. 39% reported engaging in self-medication before visiting the DIC. 13% were asked to pay double or more at a Health care facility (HCF) because of their sexual orientation and fear of being handed over to the law enforcement agencies. 42% have female sex partners in other to cover up suspicions they could be MSM by the general populations. More than half of the clients are aware of an MSM with an STI but not willing to visit the HCF due to the anti-gay law.
**Conclusions:** Criminalization of consensual sex among MSM is limiting their uptake of continuum of care and services at the various health facilities thus, increasing their vulnerabilities in increased risky behaviours.

## CHILDREN'S RIGHTS AND HIV

### WEPED357

#### FIGHTING FOR CHILD RIGHTS THROUGH COMMUNICATION FOR DEVELOPMENT (C4D), A SUCCESS STORY FROM MALAWI, 2014-2015

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**Background:** More need to be done to protect children from HIV as incidences of sexual abuses keep increasing. This threatens the attainment of zero HIV and AIDS by 2030. In response to this, Chikwawa Diocese started a C4D approach to give children voice so that their views, concerns, and interests are heard and given legitimacy. C4D is an approach that empowers children as subjects, story-tellers and advocates of their own rights through child-created narratives, photos and videos. It facilitates dialogue between children and their parents, duty bearers and policy makers.
**Description:** In 2013, a total of 198 (100F, 98M) children aging from 9 to 17 years were mobilized to form groups of 20 each. In 2014, the children and 20 (10M,10F) community members were trained in C4D elements which are child rights**,** Community Journalism, Video shooting and Photography skills, Storytelling and Children Indaba. The children and community journalist produce videos and write community news articles that trigger discussion against bad practices affecting children in their communities. The groups are linked to police, local courts, health facilities, education offices and other social providers for care and support.
**Lessons learned:** C4D exposured various child abuses happening in the communities. In 2014, 7 cases of sexual abuse were reported as compared to 2 in 2015, 21 girls were withdrawn from marriages. 37children (14M, 23F) were brought back to school, 14 (5M, 9F) children were brought out from child labour. 5 cases of corporal punishment were discussed in 3 primary schools. Community journalism skills have also promoted writing ability and storytelling among children.
**Conclusions/Next steps:** C4D can expose hidden child abuses that can be dealt with in order to meet the zero HIV and AIDS by 2030.
Empowered children can help to challenge abuses that impact their development.
C4D to be implemented at a scale to empower more children.

## GENDER EQUITY

### WEPED358

#### DON'T FORGET THE BOYS: EQUITY AND GENDER CONSIDERATIONS IN VULNERABLE CHILDREN ATTENDING COMMUNITY-BASED PROGRAMMES IN SOUTH AFRICA AND MALAWI

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**Background:** HIV can lead to illness, poverty, bereavement, and stigma, in both HIV-infected and affected children. Girls and boys face different challenges, yet current global data is not disaggregated by gender until adolescence or adulthood. Much research shows negative effects of HIV on girls, most notably reduced educational opportunities and caregiving burden, and programming for girls has flourished. Boys, however, also face challenges, and a focus on gender should not inadvertently disadvantage them.
**Methods:** Longitudinal data were gathered from 989 children (including 135 HIV+) and primary caregivers in two African countries with high infection rates, from attenders at a randomly selected sample of community organisations (99% response rate, 86% at follow up 15 months later).
**Results:** At baseline, there were no gender differences according to country, child age, school attendance, child home, parental bereavement or HIV status. However, boys were more likely to experience community violence ($\chi^2$=13.24,$p$< .001) and harsh physical discipline
(52.9% -vs-43.1%;$\chi^2$(1)=9.41,$p$=.002). Boys were less often in the correct class (66.1%-vs-76.0%; $\chi^2$=11.24,$p$=.001), scored lower on educational functioning ($M$=82.30-vs-$M$=88.27, $t$(908)=4.17,$p$< .001) and suffered a higher number of educational risks ($M$=0.93-versus-$M$=0.64, $t$(864)=4.27,$p$< .001). Boys displayed more behavioural and emotional problems ($M$=3.25, and were more likely to report engaging in delinquent behaviours $t$(903)=3.49, $p$=.001). Controlling for cognitive abilities, developmental delay, carer HIV status and school attendance, girls were still approximately 1.5 times more likely to be in the correct class for their age than boys (odds ratio (OR), 1.51;CI1.06-2.15), with better educational functioning (B=5.60; CI, 2.76-8.44), and lower total educational risks (B=-0.22; CI, -0.35 - -0.097).
Further analyses showed the association between gender and educational functioning was mediated by exposure to community violence and harsh physical discipline. A similar mediation effect was found for educational risk. All the gender differences at baseline were still significant at follow-up. Furthermore at follow-up boys reported a significantly lower quality of life ($t$(831)=2.51, $p$=.012).
**Conclusions:** Our data shows boys affected by HIV are exposed to specific risk factors which contribute to poor educational outcomes and quality of life. A sustained approach to preventing HIV for both girls and boys should include a focus on specific programming for boys.

### WEPED359

#### OPPORTUNITIES FOR ADVANCING WOMEN'S RIGHTS THROUGH COMMUNITY-BASED CARE OF CHILDREN AFFECTED BY HIV: EVIDENCE FROM SWAZILAND

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**Background:** Women's disproportionate burden of care-related labor prevents them attaining human rights including gender equality, fair work conditions and health. International policies advocate care of children affected by HIV in families and communities, where care-related labour is typically undervalued, unpaid "women's work". Unless they address gender inequalities, these policies may detract from women's rights. In this presentation we aim to highlight opportunities for advancing women's human rights through community-based care policies and programs.
**Methods:** Data detailing community-based, care-related labor were generated through mixed-method participatory action research. It investigated health, participation and empowerment in a rural Swazi community caring for children affected by HIV. We performed thematic and descriptive statistical analyses of relevant data from a household census, structured and unstructured observations of participation at a community preschool and neighborhood care point and focus group discussions with teachers, volunteer carers and male and female community members.
**Results:** Child care was conceived as "women's work". In 91 percent of households women were the primary carers for a median of three children. Some focus group participants perceived providing child care increased sexual risk for poor women because they relied on men, who often expected sex in return for providing food and essential material goods. Women did the majority of voluntary, care-related labor at community facilities for children, including neighborhood care points and schools. FGD participants perceived these facilities and the spirit of volunteerism were benefits to the community. However volunteer child-carers reported feeling undervalued and unsupported (emotionally and materially) by community members and external organizations, performing hard physical tasks which provided limited learning opportunities and not always receiving the food-for-work parcels they expected.
**Conclusions:** There is an urgent need to advocate for gender equity and many opportunities to advance women's rights through community-based care policy and programming. The results of this study suggest that providing a living wage, increased psycho-social support, learning opportunities and access to labor-saving technology for home and community-based child carers, and sensitizing communities about women's rights and the importance of child care-related labor, can simultaneously advance women's rights and improve children's care.

### WEPED360

#### MAPPING OF POLICIES, LAWS AND SERVICES ON GBV AND HIV INTERSECTIONS IN NIGERIA

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**Background:** Studies have shown that exposure to violence is a strong predictor of HIV infection (WHO, 2000). In Nigeria, HIV prevalence among the general population is 3.4%. and the national median prevalence among pregnant women is 4.1%. Result of the National HIV/AIDS Reproductive Health Survey (2007) revealed that gender inequality is an important driver for the epidemic. Prevalence rates have been found to be higher among females (4.0%) than males (3.2%).

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**Description:** The objective of the exercise was to map existing laws, polices, services and other mechanisms available in the country for GBV and HIV /WWD/SRH intersections; assess the gaps in response and the opportunities available for engaging men in addressing the problem of GBV and its intersection with HIV/WWD/SR. It was a follow up to the UNDP global initiative on GBV and HIV. It was government led and anchored by NACA. The mapping which was completed in 2013 and validated by stakeholders reveals the existence of a wide range of gaps in laws, policies and services with dire implications for GBV/HIV intersections and informed the development in 2014 the National Plan of Action (NPOA) on GBV/HIV Intersections.
**Lessons learned:** The findings and recommendations provided evidence based advocacy for the passage of the Violence Against Persons Prohibition Act 2015 which had been with the National Assembly for up to ten years before then. A key lesson learnt from the mapping is that advocacy for legal and policy reforms should be informed by evidence based assessment aligned with global and regional documents. It gives hope that some of the punitive criminalizing legislations against most at risk populations will be reversed.
**Conclusions/Next steps:** Government should be supported to own and implement the NPOA on GBV and HIV intersections at National and sub-national levels as one of the strategies for ending AIDS by 2030.

# ETHICS AND HUMAN RIGHTS ASPECTS OF ACCESS TO PREVENTION, DIAGNOSIS, TREATMENT AND CARE INTERVENTIONS

## WEPED361

### OPPORTUNITIES TO WORK WITH LAW ENFORCEMENT, COMMUNITY MEMBERS AND POLITICAL LEADERS TO ENHANCE THE EFFECTIVENESS OF HIV PREVENTION PROGRAMMES FOR PEOPLE WHO INJECT DRUGS IN THREE SOUTH AFRICAN CITIES

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**Background:** Wrongful arrest, confiscation of injecting equipment and assault contribute to high-risk injecting and unsafe equipment disposal among people who inject drugs (PWID). Human rights violations affecting PWID in South Africa have not been quantified. We aimed to measure these violations and map the electoral wards (wards) where they occurred in a needle and syringe programme (NSP) in Cape Town, Durban and Pretoria (South Africa). Political and community resistance to the NSP occurred between September and November 2015 in two wards; one in Pretoria and another in Cape Town.
**Methods:** Data collection began in August 2015 as part of service delivery and included data on: confiscation of injecting equipment; arrest for needle and syringe possession; detention without cause or processing; physical assault, and wards where violation occurred. Data was recorded on paper forms, entered into a spreadsheet and analysed using frequencies, proportions and geospatial mapping.
**Results:** Between August and December 2015, 232 violations were reported (116 in Pretoria, 108 in Cape Town and 22 in Durban), namely: confiscation of injecting equipment (144), arrest without cause or processing (20), and physical assault (28). Fifty six per cent (65/116) and 75% (81/108) of the violations occurred in the wards where resistance to the NSP were experienced in Pretoria and Cape Town, respectively. In Pretoria, the needle return rate in the ward that experienced resistance dropped by 29% (350 to 250 per day) between August and November 2015. In Cape Town, the number of PWID accessing NSP services from the NSP mobile clinic between 1 November and 15 November 2015 in the ward experiencing resistance dropped from 30 to 5 per day after the clinic relocated in early November 2015 due to political pressure.
**Conclusions:** More human rights violations occurred in wards where resistance to the NSP was experienced compared to wards where no resistance was encountered. Resistance and human rights violations negatively affected injecting equipment disposal and access to NSP services. The effectiveness of NSPs to prevent HIV infections among PWID could be improved through focused advocacy and training around evidence-based HIV prevention interventions for PWID within law enforcement agencies, the broader community and political leaders.

## WEPED362

### TRANSFORMING THE NEXUS BETWEEN SUBSTANCE USE TREATMENT AND HIV/AIDS IN VIETNAM

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**Background:** The ~200,000 people who inject drugs (PWID) and their sexual partners are focal populations in Vietnam's HIV/AIDS epidemic; thus, the HIV/AIDS response and substance use policy are highly interdependent. Long-prevalent views of drug use as a "social evil" produced a system of compulsory drug detention centers, which reached a peak of >120 centers with >100,000 residents in 2008. These centers' regimen - detoxification, "moral education", and labor - has no basis in evidence and is highly ineffective (relapse rates > 90%), extremely expensive, and violates human rights.
**Description:** Advocacy by civil society and international organizations combined with evidence from methadone maintenance treatment (MMT) to produce major changes in substance use policies. Successful pilots begun in 2008 prompted MMT expansion to 43 provinces. Vietnam also decriminalized drug use (2009) and requires court decisions to send PWID to compulsory centers (2012). Civil society and other stakeholders worked with the Ministry of Labor, Invalids, and Social Affairs (MOLISA) to develop a "Renovation Plan", approved by the Prime Minister in 2013, that recognized drug addiction as a chronic, relapsing condition and committed to a transition from compulsory detention to voluntary, evidence-driven treatment. Timelines and targets for closure of compulsory centers or their conversion to voluntary treatment programs were promulgated. By 2015, the number of compulsory centers was down to 95 and residents to 15,500. SCDI, a local NGO, is working closely with MOLISA to develop in three provinces the voluntary treatment programs called for in the Renovation Plan, training programs on addiction treatment and social work, and a monitoring and evaluation framework for the Renovation Plan.
**Lessons learned:** This experience demonstrates that government is willing to work with civil society and follow evidence to transform substance use treatment, which in turn will strengthen the HIV/AIDS response. However, the transition will be lengthy, with some powerful interests still opposed, and periodic setbacks likely.
**Conclusions/Next steps:** The M&E framework should be implemented so that progress in the transition may be monitored and stakeholders have data to advocate full implementation of the Renovation Plan and ongoing improvement in uptake, quality, outcomes, and cost-effectiveness of voluntary treatment.

## WEPED363

### ADDRESSING THE TREATMENT ACCESS BARRIERS FOR PERSONS LIVING WITH HIV (PLHIVS) IN GOVERNMENT PATIENT SUPPORT CENTERS IN KISUMU COUNTY

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**Background:** Incidents of stigma and discrimination among Persons living with HIV accessing care and treatment support at government health facilities has been documented in the Kenya. Research finding indicates that stigma and discrimination has caused PLHIVs to avoid or fear accessing quality HIV care and treatment services, including counseling, prevention and support.
Youth Arise Against HIV/AIDS and TB's advocacy interventions seek to see an improved engagement with the collaborative HIV and TB response to promote human rights and engage in national-level advocacy around rights issues.
**Description:** A half day forum was conducted for selected **30 PLHIVs** who were members of support groups, some of whom are Community Health Volunteers, caregivers, parents and young people that access care at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH)in Kisumu County. The meeting was convened to discuss and identify issues affecting PLHIV in accessing care at JOOTRH and other different government patient support centers and suggest ways of addressing them. The main objective was to empower everyone involved to ensure they don't infringe right of PLHIVs as they access care , Come up with a report as well as a memorandum to engage Key stakeholders at the Kisumu County Health Ministry in Kisumu County so as to improve services and also come up with ways of addressing it.
**Lessons learned:** The PLHIVs representatives came up with a petition signed with 1000 signatures, which was presented to the Kisumu County MOH that manages the facility. After getting the signed petition, the MOH scrapped off the baseline tests and registration fee that were barring PLHIVs from accessing treatment and also led to high rate of default and none adherence . The MOH and the facilities

representatives decided to engage the PLHIVs representatives to solve the stigma/discrimination that was a fear factor among staff and clients, to engage PLHIVs as peer educators and mentors to enhance Meaningful Involvement of PLHIVs (MIPA) in decision making.
**Conclusions/Next steps:** Initiative to enhance meaningful involvement and participation of PLHIVs should be promoted and supported globally.

## WEPED364

### DELIVERING A HUMAN RIGHTS BASED APPROACH TO ANTENATAL CARE: HEALTH CARE PROVIDERS' EXPERIENCE AND PERCEPTIONS IN CONTEXTS OF HIGH HIV PREVALENCE AMONG PREGNANT WOMEN AND GIRLS

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**Background:** In Southern Africa, HIV-related illnesses are a major cause of death among pregnant women and girls and have exacerbated the region's high rates of maternal mortality. In South Africa nearly 30% of pregnant women and girls are living with HIV, available antiretroviral treatment can improve maternal health outcomes and reduce the risk of mother-to-child transmission. Early access to antenatal care is particularly important in this context. Despite commendable health policies, many pregnant women do not access antenatal care until the latter stage of pregnancy, indicating human rights failures.
A human rights based approach (HRBA) to health care policy development and implementation aims to ensure availability, accessibility, acceptability and quality of services. Health care providers can play a key role.
This study focused on health care providers' experiences and perspectives of delivering antenatal care in settings with high prevalence rates of HIV among pregnant women and girls. It aims to evaluate the challenges of delivering a HRBA to antenatal care.
**Methods:** The primary research relates to a qualitative study, and interviews with 32 health care providers involved in provision of antenatal care services in public primary health care facilities in KwaZulu-Natal and Mpumalanga. Permission for the study was granted the provincial Departments of Health and ethical clearance from the Human Sciences Research Council. The data was analysed on a thematic basis for commonalities.
**Results:** In contexts of high HIV prevalence the lack of privacy, patient confidentiality and informed consent at health facilities, especially in HIV testing during antenatal care may result in delays accessing care; Difficult working conditions for health care providers, including understaffing and lack of human rights training exacerbates challenges in providing care and treatment to pregnant women living with HIV in a manner consistent with a HRBA.
**Conclusions:** Health care providers were supportive of a HRBA but often unable to fulfil requirements without resources and support. In resource scarce setting, a HRBA may lead to small changes in implementation that improve access. Ongoing human rights training for health care providers could assist women and girls at risk of multiple forms of discrimination in accessing essential antenatal services.

# AWARENESS, INFORMATION AND RISK PERCEPTION REGARDING HIV TRANSMISSION AND PREVENTION

## WEPED365

### HEALTH BELIEFS AND HEALTH-SEEKING BEHAVIOR AMONG PRAYER GROUPS IN ACCRA

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**Background:** Christian faith healing has edged out traditional religious healing due to the rapid growth of Pentecostal-Charismatic churches in Ghana (de Graft Aikins, 2005). The study investigates the religious and health beliefs and practices of prayer groups in Achimota Forest as part of the health-care seeking process, with particular reference to better understanding their knowledge of care-seeking behaviour. Specifically, we identify which types of illnesses are the central concerns of prayer group members, describe the attitudes of prayer group leaders and members towards biomedicine and traditional healers and, determine what type of care, including care-giver prayer groups, these members first turn to when they are sick.
**Methods:** Data was collected by conducting in-depth individual (18) and group interviews (4 with eight people in a group) with 50 interviewees in total. Participant observation was used as well to observe the religious expression of the groups in the forest, which prayer group members believe to be the most ideal space to commune with God.
**Results:** The initial findings show that a disease might have either spiritual or physical origins, they sought both biomedical and spiritual care. Interviewees were convinced that hospitals can help with physical diseases, but spiritual diseases require spiritual solutions such as prayer. HIV/AIDS was given as an example of an illness that could be either physical or spiritual. In terms of spiritually caused HIV/AIDS, according to respondents, test results can change from HIV positive to negative through prayer. In their health beliefs and health-seeking attitudes, prayer group members and their leaders make a salient differentiation between treatment and healing. The interviewees shared in the general belief that doctors can treat certain conditions, but only God heals.
**Conclusions:** The study lends credence to a considerable lack of knowledge or misconceptions about physical causes of illnesses, especially regarding HIV/AIDS. Therefore, we recommend the development of health outreach programmes including public health education. The emphasis here is to alter beliefs and cultural practices of a huge constituency in the field of health care in Ghana.

## WEPED366

### TALKING SEX AND INTERPRETING HIV RISK IN SOUTH AFRICA AND ZAMBIA: AN ANALYSIS OF THE INFLUENCE OF COLLOQUIAL DISCOURSE ON CONCEPTUALISATIONS OF SEX, HIV-RELATED RISK AND STIGMA

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**Background:** Speaking about sex is often awkward, and sometimes taboo in many southern African contexts. Colloquialisms are used to create a conversational way for people to talk about sex. We ask, how does the way people talk about sex (using discursive tools like metaphor, idiom, slang, and euphemism) influence the way they think about HIV risk?
**Methods:** In preparation for the HPTN 071 trial, mixed-method qualitative data from 21 urban communities in Zambia and South Africa were collected between December 2012 and May 2013. In each place, semi-structured observations, 130 group discussions (participants = 1107) and 95 interviews were conducted about 'HIV prevention in this community'. Purposive sampling was used to include diverse participants (by gender, age, and role in this community/health system). Narrative analysis was used to identify conceptual themes.
**Results:** As anticipated, participants did not discuss sex openly. Colloquialisms were used to describe sex acts. In turn, this sex 'language' extended into conceptualisations of HIV risk in four ways: (1) Categorical distinctions made between different sex acts facilitate a conceptualisation of HIV risk and stigma that is highly sex act specific. For example, 'thigh sex' is only appropriate with casual partners. (2) Metaphors of sex after succumbing to pressure support conceptualisations of HIV risk as a form of retribution and 'justifies' stigma toward people living with HIV (PLWH). For example, 'stumbling' into infidelity resulting in HIV infection. (3) Language affirming the role of sex in relationships positioned HIV as an 'outside' element that is allegorised as 'seeking to harm' and HIV risk to be pernicious. For example, accusations of PLWH being driven by evil influences to vindictively spread HIV. (4) Euphemisms for PLWH reiterate that the body is damaged (permanently) and strongly emphasizes HIV riskiness and is stigmatising toward PLWH. For example, *gebrokenheid* ('the state of brokenness') is an Afrikaans term sometimes used to describe PLWH and perceived as adversely affecting sexual prowess.
**Conclusions:** Colloquialisms used to talk about sex extend into the way people think about HIV-related risk and are stigmatising toward PLWH (emphasizing vulnerability to retribution and frailty). Public health promotion should engage these colloquial discourses to facilitate messaging comprehension.

## WEPED367

### SEX, MARRIAGE AND HIV RISK: REACHING REGULAR FEMALE PARTNERS OF MSM, TRANSGENDER WOMEN AND HIJRAS TO IMPROVE IMPACT OF INDIA'S HIV RESPONSE, EXPERIENCE FROM PEHCHAN

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**Background:** The Pehchan programme, implemented by India HIV/AIDS Alliance with support from the Global Fund, has strengthened 201 CBOs and reached more than 430,000 MSM, transgender women, and hijras (MTH) with expanded HIV services. The programme's baseline in 2011 showed that 34% of MTH were legally married to female spouses, and of these MTH, 73% of them lived with their wives. In the 2015 Pehchan Impact Assessment Study, data showed that 50% of MSM studied also have regular or occasional sex with female partners. Only 50% of them reported any condom use with these partners, and consistent condom use was only 41%. Similarly, 65.88% of MTH surveyed had regular sex with male partners, 96% of which was penetrative. Only 77% of them used condoms in their last sexual encounter. Low condom usage, marital status, and relationship issues increase HIV vulnerabilities of MTH and their sexual partners.
**Description:** Pehchan has worked intensively to reach female sexual partners of MTH. 2,679 female partners of married MSM were provided sexual and reproductive health (SRH) services through linkages to Family Planning Association of India (FPAI) clinics, ensuring access to good quality SRH services. Counselling, support groups for married MTH, and focus group discussions with female partners were undertaken. A training module for Pehchan staff on MTH with female partners was developed, along with other IEC materials. A pilot intervention at programme sites in three states helped mitigate and prevent intimate partner violence.
**Lessons learned:** Engaging MTH with female partners has facilitated improved understanding of SRH, fostered higher levels of support for female partners by MTH, expanded uptake of SRH services, increased HIV testing, and reduced partner violence. This approach has proved effective in reducing HIV vulnerability in MTH and their female sexual partners.
**Conclusions/Next steps:** HIV prevention interventions often fail to develop strategies to reach the sexual partners of key populations. The HIV response in India needs to incorporate a more inclusive approach to ensure that interventions address the range of HIV and SRH needs of those at risk for HIV acquisition, both MTH themselves and their sexual partners, including spouses and other female partners.

## WEPED368

### LOVELIFE'S GROUNDBREAKER MODEL: ADDRESSING STRUCTURAL DRIVERS OF HIV AND AIDS AMONG SOUTH AFRICAN YOUTHS

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**Background:** loveLife is South Africa's largest national HIV prevention initiative. A nation-wide youth volunteer service corps called groundBREAKERs implements loveLife's various HIV prevention campaigns across the country. Youth leadership and development are at the core of the groundBREAKER programme, which was started in 2001 for South Africans aged 18-25. This paper focuses on evaluations conducted with the 2009, 2010 and 2011 cohorts and seeks to understand the self-reported outcomes and impact of the programme on participants during this period.
**Methods:** The groundBREAKER evaluation model is a non-experimental design that uses a mixed method approach that includes quantitative and qualitative questions. The programme is evaluated at three different stages: a pre-questionnaire, a post-questionnaire and an ex-post questionnaire two years after groundBREAKERS have exited the programme.
**Results:** Both outgoing and alumni respondents hold the groundBREAKER programme in high regard. The data also suggests that alumni have a greater consciousness about their risk of HIV infection and have learned strategies to assist them in modifying their risky behaviour. Perhaps most importantly, groundBREAKERS also reported behaviour that is conducive to risk reduction two years after having completed the programme. A high percentage of respondents reported that they can get their boyfriend or girlfriend to use a condom, even if he/she does not want to: 94% in 2010 and 92.3% in 2011. Approximately eighty percent of alumni respondents from each cohort also reported using a condom the last time they had sex (82.7% in 2009, 79.8% in 2010 and 81.4% in 2011). Further to this, four out of five alumni respondents reported having an HIV test in the past six months which is an indication of regular testing after exiting from the programme. Finally, the fact that the vast majority of alumni respondents from 2010 and 2011 credit loveLife with changing their sexual behaviour (80.8% in 2010 and 92.4% in 2011), should be viewed as a major programmatic achievement.
**Conclusions:** The findings from the evaluations for all three cohorts strongly indicate that the programme has helped loveLife in contributing to the reduction of HIV incidence among young people.

## WEPED369

### KEY DETERMINANTS OF MOTHER TO CHILD TRANSMISSION AMONG WOMEN ON THE EMTCT PROGRAMME IN MASHONALAND EAST PROVINCE

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**Background:** The national objective of the elimination of mother to child transmission of HIV in Zimbabwe is to have a transmission rate below 5%. However, in Mashonaland East province transmission rates as high as 11% were recorded in 2015. This study therefore sought to establish the reasons for for such high rates in the province.
**Methods:** A case-control methodology was adopted for the study, whereas cases were defined as any baby testing HIV positive at birth and in neo-natal care; controls were babies born HIV negative at birth and in neo-natal care. Cases and controls were matched on the basis of demographic variables,knowledge about eMTCT, attitude towards eMTCT, health seeking behaviour, and practices during pregnancy and eMTCT. The respondents were HIV positive mothers whose babies tested HIV positive or negative after 6 weeks of birth.The sampling frame was based on the ANC register and the identified participants were to be traced to their communities.
**Results:** A total of 573 questionnaires were received ,and 555 records were considered for analysis as they were more than 80% complete. Of those included for analysis 31.2%transmitted the virus to the child whilst 68.8% did not transmit the virus to the child.The odds of transmitting the virus to those who had booked for ANC were 62% less likely compared to those who did not book for ANC. Those who were tested during pregnancy were 59% less likely to transmit the virus compared to those tested after pregnancy. Those who delivered at home were 2.5 times likely to transmit the virus to the baby compared to those delivered at the clinic and it was statistically significant. Babies who received prophylaxis had 85% less chances of being infected compared to those who did not, and it was statistically significant.
**Conclusions:** The study established HIV transmission among pregnant women in province is a result of HIV positive women delivering at home rather than heath centres, pregnant HIV positive women enrolling late for ANC,failure to get tested for prophylaxis by both mothers and babies, failure to get tested for STIs before and during pregnancy, and failure to adhere to exclusive breastfeeding in neo-natal care.

## WEPED370

### WINNING THE BATTLE AGAINST INVISIBILITY: FEMALE SEX WORKERS ORGANISED FOR CHANGE IN THE HIV RESPONSE APPROACH IN NIGERIA

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**Background:** Past HIV prevention interventions for female sex workers in Nigeria had been organized by others for the community with little attention paid to addressing structural interventions that can create the needed support for HIV response for the Community. Female sex workers realized the need to change the current paradigm of HIV prevention and treatment management for female sex workers and therefore took actions to make the needed changes.
**Methods:** In 2014, Female sex workers in Nigeria took the opportunity created by the Global Fund NFM initiative to organize the first ever national meeting of female sex workers in Nigeria. Discussions at the meeting included the need to self organize to increase access of female sex workers to HIV prevention tools and STI management through demand for drop-in-centres, and how to improve the structural intervention needs of female sex workers by directing national efforts to reduce female sex workers harassments. In addition, strategies to institute safe guard measures for preventing HIV transmission were also highlighted. As a first step, representatives of FSW were charged with the responsibility of organizing focus group discussions at the state level.

**Results:** Thirty focus group discussion meetings were held to step down the outcome of the national meetings to peers. The number of participants at each meeting ranged from 24 to 50. Second, the national executive focused attention on the National stakeholders' and instituted requests for the establishment of drop-in-centres. These demands have resulted in the creation of 24 drop-in-centres in Nigeria. Finally, 125 female sex workers participated in a road show during the 2015 World AIDS Day in Abuja, Nigeria highlighting the needs to respect the rights of female sex workers, and respect their contribution as part of the national workforce in Nigeria.
**Conclusions:** Female sex workers can self-organize if and when given the space. Organizing the female sex worker community in Nigeria would facilitate tailored intervention for the community and make a difference for the national HIV response in Nigeria.

## WEPED371

### FINDINGS FROM A QUALITATIVE EVALUATION OF *INTERSEXIONS II:* CRITICAL ELEMENTS FOR A SUCCESSFUL TELEVISION DRAMA

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**Background:** The second series of the highly acclaimed South African drama series, *Intersexions,* was broadcast from February to October 2013. The series aimed to show the risks of keeping secrets that can impact on sexual and reproductive health; highlight sexual networks and the concomitant HIV infection risk; emphasise HIV risk reduction practices, and to promote tolerance and acceptance of the lesbian, gay, bisexual, transgender and intersex (LGBTI) community.
**Methods:** Utilising a qualitative approach, 14 focus groups and 12 interviews were conducted with target and secondary audiences in six provinces across South Africa. The objective of the evaluation was to find out what regular audiences thought of the drama and how it was meaningful to them in the context of their own lives.
**Results:** Aspects identified as critical to the success of the drama in having an impact on regular viewers included:
*Realism:* The series was lauded for its astounding realism and was often referred to as a *'reality show'* in the way it *'exactly'* depicted *'the things that you see happen in life'.*
*Critical self-reflection:* Participants reflected on their own relationships and the quality and type of communication they have with their sexual partners.
*Social media: Intersexions* broke new ground in terms of how social media platforms can be strategically used within health communication programmes.
*Interpersonal communication:* Watching *Intersexions* created a space for a new level of openness in a number of participants' family relationships.
*Sexual minorities:* Numerous participants indicated that storylines promoting acceptance of sexual minorities were effective at reinforcing existing positive attitudes or by helping to build greater acceptance of the LGBTI community.
*Behaviour change:* Meaningful self-reported behaviour change as a result of participants' engagement with *Intersexions* included HIV testing, increased condom use, reduction in number of sexual partners and uptake of MMC.
**Conclusions:** The power of mass media to create much needed spaces for interpersonal dialogue and conversation about sexuality, relationships, and HIV prevention is significant. *Intersexions* appears to have broken through the cultured silence about HIV and the *'HIV fatigue'* that often accompanies efforts to raise awareness about HIV prevention, care and support.

## WEPED372

### THE ROLE OF BEHAVIOUR CHANGE COMMUNICATION IN IMPROVING COMMUNITY KNOWLEDGE ON TB AND HIV IN SOUTH AFRICA

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**Background:** HIV/ AIDS and TB remains a concern in South Africa, with an estimated 6.8 million people affected by the disease at the end of 2014. South Africa has made significant strides in prevention interventions and improving access to treatment the spread of the epidemic is still of serious concern. The need to increase community knowledge on TB and HIV remain critical to influence factors that lead to individuals making healthy choices.
**Methods:** 'We Beat TB' is a national mass media campaign developed under the USAID TB Program South Africa and continued under the USAID TB CARE II South Africa Project, aimed to improve health-seeking behaviour among South African communities by increasing knowledge on TB and TB/HIV prevention, encouraging early presentation for diagnosis, treatment and treatment adherence. Messages on TB and TB/HIV co-infection were broadcast on national television and radio channels between the years 2010-2013. The 'We Beat TB' campaign included community partnerships to raise awareness on symptoms of TB and HIV, and tested messages were distributed in the form of pamphlets and billboards in area specific language. The campaign was evaluated in 2014 through a Khayabus omnibus survey which sampled 3,598 nationally representative population through in-home face to face Computer Assisted Personnel interview. The survey sample was weighted to the entire adult South African population, aged 15 years and older. A margin error of 1.63% is applicable.
The evaluation assessed the campaign's impact on knowledge, attitudes and behaviours towards testing for HIV and TB.
**Results:** The 'We Beat TB' campaign achieved awareness on TB and HIV information among 45% of the South African population. South Africans who were exposed to the campaign were more likely to remember TB prevention strategies. The campaign successfully motivated behavioural change in that those who recall being exposed to the campaign were more inclined to get tested for HIV and TB.
**Conclusions:** Effective communication campaigns can reach large numbers of people in the population, impact on key health knowledge and health seeking behaviour for better population health outcomes.

## WEPED373

### OPPORTUNITIES AND OBSTACLES FOR PREVENTION AND PSYCHOSOCIAL SUPPORT SERVICES FOR OLDER PERSONS LIVING WITH HIV IN UGANDA

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**Background:** HIV prevalence among older people (above 50 years) stands at more than 13% of sub-Saharan HIV positive persons. This is attributed to; new infections among elderly, prolonged survival that follow improved treatment (anti-retro-viral therapy); cultural practices including trans-generational sex, polygamy and wife inheritance. Age-related vaginal thinning and dryness among older women increase the risk of infection. The Elderly have inadequate prevention and support services because they are not considered to be sexually active and symptoms of HIV among them are attributed to 'normal aging'.
**Methods:** This study attempted to examine opportunities and obstacles for HIV prevention and psycho-social support services for elderly people. The study depended on secondary data from a longitudinal qualitative study of older people in Uganda infected and affected by HIV. It was embedded within a larger cross-sectional study on indirect and direct effects of HIV for 510 older people living in southern Uganda. Monthly visits for up to 12 months were done to collect an oral diary on each participant's life during the preceding week. For data analysis, standard methods for thematic content analysis were conducted and the NVIVO software was used.
**Results:** Disclosure about HIV by the elderly is hindered by stigma of being associated with HIV; given the esteem associated with being elderly in the African society. While kinship ties that used to be instrumental in the provision of care and support services for elderly are being eroded by increasing mobility and urbanization, opportunities for alternative care-giving schemes exist. The paper discusses these opportunities in light of numerous obstacles which include among others;
1) perceived invulnerability of elderly people to HIV;
2) Messages, formats and media campaigns for HIV prevention that are designed for younger generations.
**Conclusions:** Prevention and psycho-social support services should be age-segmented to;
a) address peculiar needs of various age groups;
b) create awareness that elderly people are equally susceptible to HIV despite their age and status in society.

## HIV COUNSELLING AND TESTING IN HEALTH CARE AND COMMUNITY SETTINGS

### WEPED374

### WORKING TOWARDS INCREASING THE NUMBER OF HIV-INFECTED PEOPLE WHO KNOW THEIR STATUS IN CAPE TOWN SOUTH AFRICA: LEARNING FROM TWO INNOVATIVE COMMUNITY-BASED HIV COUNSELLING AND TESTING STRATEGIES

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**Background:** South Africa has adopted the UNAIDS goal, which includes 90% of all people living with HIV will know their status by 2020, making HIV testing services essential. Health services cannot test everyone. Community-based HIV counselling and testing (CBHCT) strategies can reach populations who do not typically access health services, e.g. males. This study analysed the routine data collected from two innovative CBHCT strategies, strategically implemented around Cape Town, to increase the number of HIV positive individuals who know their status.
**Methods:** In 2015, the Desmond Tutu TB Centre at Stellenbosch University implemented:
(1) mobile HCT services using tents and a van at a major city transport hub, targeting commuters for "walk-in" services, and
(2) systematic door-to-door mobilization for mobile HCT services in the community, targeting people living in a high HIV/TB burden area. Data was collected between 23 June and 23 September 2015.
All HIV rapid testing was done according to the provincial algorithms. Data was collected in HCT registers and entered into a database for analysis.
**Results:** Of the 3921 clients who attended HCT, 3859 received an HIV test, of which 48% were men. Overall HIV positivity was 7%. Females had a higher positivity (8%) compared to males (5%) across both strategies. The majority of HIV-infected clients (93%) accepted a referral letter to HIV care, irrespective of sex. Linkage to care (LTC) was self-reported by clients that they had attended HIV care at a health facility. LTC was higher for door-to-door mobilization compared to the transport hub for both males (61% and 32% respectively) and females (58% and 44% respectively).

| | Transport Hub (n=1880) | | Door to door mobilization (n=2041) | | Total (n=3921) |
|---|---|---|---|---|---|
| HIV indicators | Males | Females | Males | Females | Total |
| Counselled | 949 (50%) | 931 (50%) | 936 (46%) | 1105 (54%) | 3921 |
| Tested for HIV | 931 (98%) | 907 (97%) | 931 (99%) | 1090 (99%) | 3859 (98%) |
| HIV Diagnosed | 43 (5%) | 77 (8%) | 47 (5%) | 91 (8%) | 258 (7%) |
| Received a referral letter | 41 (95%) | 71 (92%) | 44 (94%) | 85 (93%) | 241 (93%) |
| Linked to care | 13 (32%) | 31 (44%) | 27 (61%) | 49 (58%) | 120 (50%) |

*[HIV outcomes across two innovative community-based HCT strategies]*

**Conclusions:** HIV positivity was higher in both CBHCT strategies compared to the HIV prevalence for the Western Cape Province overall. Innovative and strategically directed CBHCT strategies can increase the number of HIV infected individuals who know their status and can access males, who do not typically access health facilities.

### WEPED375

### HIV TESTING MODELS AND THEIR IMPLICATIONS FOR PATIENT ENGAGEMENT WITH HIV CARE AND TREATMENT ON THE EVE OF "TEST AND TREAT": FINDINGS FROM THE BOTTLENECKS STUDY

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**Background:** In the context of ever-expanding opportunities to undergo HIV testing, we sought to understand the circumstances under which people living with HIV/AIDS (PLHIV) learned their status and considered how these experiences influenced their subsequent engagement in HIV care.
**Methods:** As part of a multi-site qualitative study to understand bottlenecks in HIV care, we conducted in-depth interviews with 5-10 health providers and 20-30 PLHIV in: Uganda, South Africa, Tanzania, Kenya, Malawi and Zimbabwe. Topic guides explored patient and provider experiences of HIV testing and treatment services. Themes were derived through inductive and deductive coding aided by NVivo10. Ethical approval was gained in all countries.
**Results:** In all sites, providers primarily viewed testing as an opportunity for delivering moral messages regarding sexual behaviours and expectations of HIV clinic use. In contrast, PLHIV were rarely motivated by the opportunity to gain health workers' advice, but rather wanted to "check" or "know" their status, particularly if they were ill, or perceived themselves at risk from a partners' known or unknown status and sexual behaviours.
HIV testing through provider-initiated models was generally appreciated by PLHIV, but was rarely perceived as a choice, and there were instances of coercion including excessive insistence on "counselling until acceptance", testing without consent or withholding further medical attention. Responses to "submission" during the testing process included subsequent disengagement from the HIV care process.
Repeat testing was common, even among those already diagnosed, and could be provider or patient-initiated. Providers rarely accepted documented test results from other facilities. Some patients re-tested because of doubts over the accuracy of prior test results, or over the persistence of HIV infection after treatment initiation. However both cases represented an opportunity to develop familiarity with clinic and testing procedures, as well as to build mutual trust with health workers.
**Conclusions:** Opt-out clauses in provider-initiated testing must be respected. Provider-initiated re-testing suggests missed opportunities for communication between service providers. Patient-initiated testing and re-testing represented an enactment of agency in the context of uncertain risks, which was often more important in promoting acceptance of an HIV diagnosis and facilitating engagement with long-term care than the moral messages delivered by counselors.

### WEPED376

### FORMATIVE RESEARCH AS A TOOL TO ADDRESS ETHICAL CONCERNS DURING A FAMILY-BASED HOME-BASED COUNSELLING AND TESTING (FBCT) INTERVENTION DEVELOPMENT PROCESS IN KWAZULU-NATAL

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**Background:** Conducting formative research is a scientific, ethical and community engagement imperative. This paper discusses formative data on the perspectives of key informants and community stakeholders regarding a family-based home based counselling and testing (FBCT) intervention. We draw on a popular ethical framework for research in developing contexts (Emanuel et al., 2004) to analyse these perspectives.
**Methods:** In-depth interviews were conducted with 20 key informants and 20 community stakeholders to explore their perspectives on components of the FBCT model, potential implementation challenges, possible barriers or facilitators to uptake, potential social harms and ethical issues when working with children and families. Respondents were purposively selected to include key informants with extensive knowledge and/or experience of the topic and community stakeholders who previously participated in a HBCT intervention, or from existing social and community networks in the area. Data were analysed thematically using NVivo software.
**Results:** The formative research identified areas of support and concern regarding the FBCT intervention. Following Emanuel and colleagues these can be clustered according to eight key ethical benchmarks: collaborative partnerships, social value, scientific validity, favourable risk/benefit ratio, informed consent, independent review, fair selection of participants, and on-going respect for participants. Respondents raised concerns about confidentiality of their HIV results which relates to the principle of on-going respect. Concerns that adolescents will be coerced to test for HIV relates to informed consent, and fears of disclosure to family members and the broader community relate to risk-benefit considerations. Respondents reported potential positive outcomes of the intervention including enabling families to access a service at home rather than a clinic (risk-benefit ratio) and improved opportunities for disclosure (social value). This data was used to refine the intervention and address stakeholders' concerns by engaging the community, training intervention staff on ethics, and incorporating independent consent mechanisms for adolescents that recognises their legal right to independent testing but allows opportunities for family-based testing and disclosure.
**Conclusions:** Formative data assisted the research team to address concerns prior to piloting the FBCT model, and to address family, socio-cultural and community factors that may impact the effective delivery of a FBCT intervention.

## WEPED377

### PEER COUNSELLING TO IMPROVE PLHIV ACCESS AND ADHERENCE TO CARE AND TREATMENT: EXPERIENCE FROM THE VIHAAN PROGRAMME IN INDIA

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**Background:** The estimated PLHIV population in India is 2.1 million (NACO 2015). Access and adherence to care and treatment services remain a challenge for people living with HIV (PLHIV) due to associated stigma and discrimination. India HIV/AIDS Alliance implements the Global Fund-supported Vihaan care and support programme for PLHIV to increase treatment adherence, reduce stigma and improve access to services.
**Description:** Vihaan has established 350 Care & Support Centres (CSC) across India. Counselling services are provided through CSCs to encourage access to care and treatment services for PLHIV. The CSC counselling is done by both technical and peer counsellors. 349 peer counsellors across India have been trained to support PLHIV to access family testing, treatment and health services. Peer counsellors also counsel PLHIV on opportunistic infections (OI) management, sexual and reproductive health and rights, positive prevention, nutrition and family planning.
**Lessons learned:** A total of 872,582 PLHIV are registered in CSCs, of whom 76% (669,661) received counselling from peer counsellors in 974,495 counselling sessions. Peer counsellors function as a bridge between clients and the technical counsellor, linking PLHIV to the services they need. They also act as role models and positive speakers, which also helps to encourage affirmative health seeking behaviours among PLHIV. Along with peer counselling, 171,937 PLHIV were linked for OI management counselling, 57,018 for partner testing counselling, and 387,872 for ART adherence counselling with the technical counsellor.
**Conclusions/Next steps:** Vihaan's strategy of engaging PLHIV community members as peer counsellors has proven to be successful in improving client access to care and treatment services. The peer-counselling strategy, complementary to technical counselling, should therefore be continued and expanded in other community-based interventions for PLHIV to improve access, adherence and overall well-being.

## WEPED378

### PROMOTING VOLUNTARY COUNSELING TESTING ON HIV: A COMMUNITY AND WORKPLACE OUTREACH STRATEGY

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**Background:** Mozambique is one of the ten countries most affected by the HIV epidemic, with prevalence rates of approximately 11.5% among the adult population. While there has been an increase in the number of people tested, according to the 2014 Global AIDS Response Progress Report, as of 2011, more than 75% of Mozambican men aged 15-49 were unaware of their HIV status, compared with 55% of Mozambican women of corresponding age[1].
**Description:** To contribute to filling the testing gap, ILO launched the global VCT@Work initiative, which aims to increase the demand for voluntary confidential HIV testing among workers and their families, to facilitate their access to HIV services, including testing and treatment.
In order to ensure increased uptake of VCT, the VCT@Work initiative builds on partnerships with different actors from the public and private sectors, such as:
- The Business Coalition on HIV and AIDS (ECoSIDA); the Mozambique Railway Company (CFM);
- The sugar industry;
- The Mozambique Airlines;
- The Ministry of Health, through the Provincial Directorates;
- The National AIDS Council (NAC);
- The Ministries of Transport and Labour;
- Civil society organizations (including women's organizations (*Associação Avante Mulher*) and service providers (*Associação para a Defesa da Familia (AMODEFA)*) and the *Centro de Desenvolvimento Comunitário*, a local non-governmental organization.

For this end, 130.000 workers and community members from 2014 to 2015 have been voluntarily tested under the VCT campaign with the HIV positive people having been referred to the health system for follow up. Therefore, 57.000 men and 43.000 women have been tested and there were recorded 3.230 men had positive status and 3100 women from workplace and community level have tested positive and then referred.
**Lessons learned:** Using the workplace as an entry point to create demand for VCT is an effective vehicle to reach workers with HIV services. This strategy also expands health services to the communities surrounding the workplace. The VCT@Work initiative has increased the demand for testing at community and workplace levels.
**Conclusions/Next steps:** ILO will continue to promote public-private partnerships to reach more workers and their families with VCT services.

# ACCEPTABILITY AND IMPACT OF PROMOTING ABSTINENCE, MONOGAMY AND/OR SEXUAL FIDELITY

## WEPED379

### UNDERSTANDINGS OF SEXUAL FAITHFULNESS AND RELATIONSHIP SATISFACTION AMONG MEN AND WOMEN IN PERI-URBAN UGANDA

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**Background:** While Uganda has had well-recognized success in reducing HIV transmission nationally, HIV prevalence in urban areas remains high (8.7% in the 2011 AIDS Information Survey). Men and women living in high-density, low-income, peri-urban areas may be particularly likely to engage in multiple and concurrent sexual partnerships and other high-risk sexual behaviors which put them at risk of HIV infection. Effective HIV prevention among married and cohabiting couples remains a challenge. Increasing couple relationship quality may decrease HIV risk behaviors such as multiple and concurrent sexual partnerships and increase protective behaviors such as mutual HIV testing and disclosure.
**Methods:** As part of a couple-focused HIV prevention intervention in peri-urban Kampala (which aimed to decrease HIV risk through strengthening couple relationships and increasing sexual faithfulness), single-gender focus group discussions were held to explore issues of couple relationship quality and satisfaction. A total of 39 men and 50 women participated in 8 focus group discussions. All participants were between the ages of 20 and 49 and were married or cohabiting.
**Results:** Men and women presented diverse opinions on the degree to which couples were satisfied in their relationships, although there was consensus that many couples were not satisfied and that this lack of satisfaction drove men and women to seek other (concurrent) sexual partners. Common relationship problems included financial issues, lack of sexual satisfaction (for men and women), and domestic violence. Participants reported that while some couples decided to stay together because they had children together, relationships were often characterized by deception, secrecy, and a lack of trust and positive communication. Having outside (concurrent) sexual partnerships was felt to be common, and to often lead to the ending of a relationship. Participants were aware that multiple and concurrent sexual partnerships increased risk of HIV and other STIs, and some mentioned fear of HIV, STIs, and pregnancy as reasons to be faithful to a sexual partner.
**Conclusions:** These data demonstrate the need for couples-focused HIV prevention interventions, particularly those which help men and women to develop relationship skills and build more mutually satisfying and faithful relationships.

# CONDOM AND LUBRICANT AVAILABILITY, ACCESSIBILITY, DISTRIBUTION AND/OR SOCIAL MARKETING

## WEPED380

### ENSURE KEY POPULATION GET ACCESS TO CONDOMS AND LUBRICANT

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**Background:** Despite an overall decline in HIV prevalence among adults aged 15-49 years (from 2% in 1998 to 0.7% in 2013[1]) in Cambodia, prevalence remains high among members of Key Population (KPs): female entertainment workers (FEWs), men who have sex with men (MSM), transgender people (TG), and people who in-

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ject drugs (PWID). In Cambodia, the most common mode of transmission for HIV is unsafe sex. HIV prevalence was estimated at 14% among FEWs, 2.1% among MSM was and 2.6% among TG[2]. All populations report low condom use, especially with a regular partner: 36.1% among FWEs, 77.4% among MSM and 79% among TG[3]. A high-risk venue (HRV) is a venue where sex among KPs and partners is negotiated and may take place. The proportion of HRV that sells condoms on-site remains low. Based on geographic information system (GIS) data, 26% of HRV have condoms available on-site.

**Description:** To avoid new infections and reduce HIV risk, PSK provides technical assistance to socially market HIV prevention products, aiming to increase visibility and availability of condoms and lubricant among KPs in high-risk venues. A "peer to peer sale approach strategy" has been employed by PEPFAR/USAID-funded Flagship program to implement on-site peer marketing of condoms and lubricants.

**Lessons learned:** PSK works with 5 Centres of Excellence (CoE) in three provinces to implement this strategy and ensure product availability for KPs. From December 2013 to September 2014, 1,507,680 Condoms were distributed to KPs. Of these, 85% were sold through peer-to-peer sales inside HRV and 15% were distributed for free by CoE during outreach sessions. Peer-to-peer sales strategy led to constant condom availability in locations accessible to KPs, and motivated the people selling them.

**Conclusions/Next steps:** The success of this innovation was recognized, and it has been replicated as a core activity in the National HIV/AIDS strategic plan for 2014-2020 under the prevention package. Additionally, it has been replicated under the Global Fund's New Funding Model.

## SEROADAPTIVE BEHAVIOURS: PREFERENCE, PRACTICE AND IMPACT

### WEPED381

#### FACTORS ASSOCIATED WITH HIV-POSITIVE AND HIV-NEGATIVE PREGNANT WOMEN DISCLOSING THEIR HIV TEST RESULT TO THEIR PARTNER IN TABORA, TANZANIA

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**Background:** HIV testing during pregnancy is almost universally available and accepted now and recently, Tanzania adopted targeted universal ART including discordant couples. Understanding factors associated with HIV status disclosure among HIV-positive and HIV-negative women is essential to effectively enroll discordant couples into HIV prevention and treatment services.

**Methods:** EGPAF is studying the effect of SMS appointment reminders and cash transport payments on clinic attendance and facility-based delivery for HIV-positive and HIV-negative women, and HIV testing of exposed infants. Multivariate regression analysis of baseline data (n=1149) identified factors associated with HIV status disclosure to a partner. Inclusion criteria included pregnant women (>=18 years) attending antenatal care who had at least one prior pregnancy.

**Results:** The mean age of participants was 27 years; 86% were married; 46% were HIV-negative, 29% were known HIV-positive, and 25% were newly identified HIV-positive. The prevalence of partner disclosure was 58% overall (48% among HIV-negative; 66% among HIV-positive). In multivariate analysis, partner disclosure was more likely among women with known positive status (adjusted odds ratio [AOR]=10.5, 95% CI: 6.2,17.8) or newly diagnosed positive status (AOR=1.8, 95% CI: 1.2,2.8) compared to those testing HIV-negative. Women whose health care was usually decided by others (AOR=1.8, 95% CI: 1.1,2.8) were more likely to disclose compared to women who decided themselves. Disclosure was positively associated with being married (AOR=4.0, 95% CI: 1.9,8.1) or cohabiting (AOR=2.9, 95% CI: 1.4,5.9), and negatively associated with having a partner with some education (AOR=0.69, 95% CI: 0.50,0.95). Compared to women who knew their partner was negative, women with known positive partners were more likely to disclose HIV status (AOR=3.4, 95% CI: 2.0,5.9) while those who did not know their partner's status were less likely to disclose HIV status (AOR=0.08, 95% CI: 0.05,0.15).

**Conclusions:** Disclosure is more common among pregnant women who are HIV-positive, rely on others for health care decisions and know their partner is HIV positive. The lower rates of disclosure among HIV-negative women suggest that lack of open communication about HIV risk and HIV status may limit identification of discordant couples; service providers should strengthen and update communication-relevant key messages into post-test counseling for those testing negative.

## ACCEPTABILITY AND UPTAKE OF VOLUNTARY MEDICAL MALE CIRCUMCISION

### WEPED382

#### LOW UPTAKE OF VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) AMONG HIGH-RISK MEN IN MALAWI

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**Background:** Among 14 priority countries identified by the World Health Organization for voluntary male medical circumcision (VMMC) scale up, Malawi is among those with the lowest VMMC uptake, indicating an urgent need to increase VMMC demand to enhance HIV epidemic control. This study analyzes the HIV risk profile of men accessing VMMC services in Malawi to provide local demand creation programs crucial information to increase uptake.

**Methods:** Using latent class analysis, we evaluated the risk profile of 269 men (16 years and older) accessing VMMC services in three districts in southern Malawi and examined any differential VMMC uptake by class membership. Classes were defined based on four HIV risk factors: ever tested for HIV, condom use at last sex, having casual or concurrent sexual partners in the previous three months, and using alcohol before sex in the previous three months. Poisson regression was used to determine if being in the high risk group was associated with specific socio-demographic characteristics, including education, age, marital status, religion, district, and location (urban/rural).

**Results:** Two distinct classes were identified: high and low/medium risk. Only 8% men in the sample were high risk while 92% were low/medium risk. Results also indicate that men who have a lower level of education (Risk Ratio [RR]: 0.934, p<0.05) and are in the 19-26 age group (compared to 16-18 age group) (RR: 1.076, p<0.05) are more likely to be in the high risk group than in the low/medium risk group.

| Risk factors | Class 1, Low/medium risk | Class 2, High risk |
|---|---|---|
| Class prevalence | 0.92 | 0.08 |
| Estimated number in each class | 248 | 21 |
| **Probabilities of risk behaviors given class membership** | | |
| 1. Never been tested for HIV | 0.32 | 0.29 |
| 2. No condom use at last sex | 0.79 | 0.43 |
| 3. Casual or concurrent partners (prev. 3 mn.) | 0.08 | 1.00 |
| 4. Alcohol use before sex (prev. 3 mn.) | 0.06 | 0.47 |

*[Probability of risk factor given class membership]*

**Conclusions:** Findings highlight the importance of understanding the risk profile of men accessing VMMC to design more targeted VMMC demand creation programs. The results indicate a need to implement specialized strategies to improve VMMC uptake among men in the high risk group, who only comprise 8% of those accessing VMMC and who are more likely to be in the 19-26 age group and have a lower level of education.

### WEPED383

#### CORRELATES OF CONDOM USE AND PROCEDURE KNOWLEDGE AMONG MEN ACCESSING VOLUNTARY MEDICAL MALE CIRCUMCISION IN MALAWI

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**Background:** Research about voluntary medical male circumcision (VMMC) in sub-Saharan Africa has focused on cost effectiveness analyses, service quality, and factors influencing uptake and scale-up. There is a dearth of information about the HIV risk taking behaviors of men accessing VMMC and their HIV knowledge. This study aimed to analyze the VMMC knowledge and condom use correlates among men ac-

cessing VMMC services in Malawi to understand their demographic characteristics and HIV risk profile to provide insights into how to better target communication efforts to improve uptake of VMMC in a country that has had very low VMMC uptake since scale up efforts started in 2011.
**Methods:** In August 2013, 269 men ages 16 or older accessing VMMC were recruited at service sites in Southern provinces in Malawi. Bivariate and multivariate logistic regressions were used to determine associations and the relative odds of condom use at last sex and VMMC knowledge. Correlates tested included: education, age, location, religion, marital status, ever tested for HIV, having casual or concurrent sexual partners, and alcohol use before sex.
**Results:** Multivariate analysis revealed condom use was associated with having a casual/concurrent partner in the previous 3 months (Adjusted OR [AOR]: 2.54, CI: 1.15 - 5.60), being single (AOR: 0.40, CI: 0.20 - 0.81), and being 27 or older (AOR: 0.28, CI: 0.10 - 0.75). VMMC knowledge was associated with education (AOR: 2.08, CI: 1.21 - 3.55) and location (AOR: 2.73, CI: 1.620 - 4.587), with men with higher education levels and living in urban areas more likely to know that VMMC partially protects against HIV compared to counterparts.
**Conclusions:** Results highlight the need to ensure information about VMMC is appropriate for men with a low level of education and living in rural areas. Results also suggest men exhibiting low HIV risk behavior may be accessing VMMC more than men with high-risk behaviors. Further research is needed to understand the HIV risk profile of men accessing VMMC and the reasons why men who do not know VMMC partially protects against HIV are accessing the service as this will provide information to inform efforts to increase uptake.

## WEPED384

### Demographic, socioeconomic, behavioural and psychosocial determinants of willingness to circumcise among men in Botswana

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**Background:** Botswana remains one of the countries most affected by the HIV/AIDS epidemic. Almost all the HIV infections in Botswana are through heterosexual intercourse. In addition to adopting encouraging use of condoms, sticking to one partner and abstaining from sexual intercourse as preventive measures of HIV against sexual HIV infection, Botswana recently promoted male circumcision as recommended by the World Health Organization (WHO). However, the uptake of male circumcision in Botswana has been sluggish. This paper investigates the demographic, socioeconomic, behavioural and psychosocial factors associated with willingness to circumcise among men aged in Botswana with the intention to guide the HIV/AIDS prevention efforts.
**Methods:** The study uses a sample of 2565 males aged 10 to 64 years who reported to have not circumcised using data from the Botswana AIDS Impact Surveys 2013 (BAIS IV 2013). The outcome variable for the study was whether males were willing to circumcise during the next 12 months. A total of six logistic regressions models were employed to determine factors associated with willingness to circumcise.
**Results:** Out of the 2565 males who were not circumcised, 45% had intentions of circumcising during the next 12 months from the time of the survey. Findings from the logistic regression analysis revealed that demographic and socioeconomic factors such as age, marital status and level of education were important predictors of willingness to undergo circumcision. Those aged 30 years and above were more than twice as likely to be willing to circumcise during the 12 months after the survey as those aged 10 to 19 years. The never married were less likely to be willing to undergo circumcision (Odds ratio, 0.79) than the ever married. Those with tertiary education were 1.4 time more likely to be willing to undergo circumcision as compared to those with primary education and below. Behavioral and psychosocial factors considered were not statistically associated with willingness to circumcise.
**Conclusions:** In order to increase the uptake of male circumcision in Botswana, promotion of male circumcision strategies should target the young, the never married and those with secondary education or less to increase their likelihood of male circumcision.

# Initiation, deferral and interruption of antiretroviral treatment, including treatment as prevention

## WEPED385

### Fear and transformation: giving social meaning to the barriers and facilitators of engagement in HIV care in Zambia

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**Background:** Zambia has implemented rapid and widespread roll-out of life-long, free HIV care and treatment (C&T) since 2005. Despite this success, large numbers of people living with HIV (PLHIV) are known to have left or 'disengaged' from care. Nested within a 4-province study of care and treatment outcomes and recognising the dynamic role of social and service-related factors, this research examined how and why Zambian PLHIV engage and disengage from care.
**Methods:** In-depth interviews were conducted with a stratified random sample of 75 adults across five patient categories: engaged in-care, pregnant in-care, disengaged, facility transfer, friend/family of deceased patient. Sixteen focus group discussions were also convened with lay and professional health workers serving the same catchment areas. Audio transcripts were translated, transcribed and uploaded to Nvivo QSR™ for thematic analysis incorporating inductive and deductive coding.
**Results:** Severe ill-health and transformative effects of antiretroviral therapy were powerful motivators for starting and remaining in HIV-care. However, the significance of physical recovery and associated motivation to remain in care were consistently described in terms of their social implications; i.e. how they helped PLHIV resume and sustain their role as healthy, productive members of society. Barriers to engagement were also framed in terms of social meaning, especially, self- and community-stigmas that branded people accessing HIV-care (and thus visible to the community) as 'immoral' and 'dependent'. Particularly in the absence of a 'lazarus-like' recovery (e.g. for pre-ART or antenatal clients) such stigmas fed PLHIV's perception of their own social isolation and decisions to disengage. (In)sensitive or (in) convenient service-delivery were frequently reported, but were typically described as reinforcing - versus determinative - factors.
**Conclusions:** The social implications of engaging or not engaging in HIV-care remain central to Zambian's HIV treatment decisions. More focus must be placed on social programs and policies targeting local communities' understandings of HIV and HIV-care, in order to counter negative perceptions and the associated social pressures to disengage from treatment.

## WEPED386

### Use and non-use of antiretroviral treatment among people living with HIV in Australia between 1997 and 2015

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**Background:** Current international targets aim for 90% of people diagnosed with HIV to be on antiretroviral treatment (ART). Australia is a high income country in which most people living with HIV have access to affordable healthcare and ART. Despite this, recent national surveillance data indicate that 23 to 30 per cent of Australians living with HIV are currently not using ART. The aim of this paper was to identify socio-demographic and attitudinal factors associated with ART non-use over time in four samples of Australian people living with HIV.
**Methods:** Data for this paper were derived from a cross-sectional survey of PLHIV repeated at four time points: 1997, 2003, 2013 and 2015. There were approximately 1,000 respondents to each survey. The survey included close to 250 items related to health, wellbeing, ART use, and attitudes toward ART use. Univariate and multivariate logistic regression analysis were used to examine factors associated with ART non-use.
**Results:** ART use in the 2015 sample approximated the international target of 90%. There was a significant decrease in ART use between 1997 and 2003, followed by an increase between 2003 and 2015. Factors associated with ART non-use were consistent across all cohorts. People less likely to be using ART were younger (all cohorts), diagnosed with HIV for a shorter period, working full time and reporting salary, rather than social security, as their main source of income (2003, 2012). Multivariate models showed that, over the 18 years covered by these data, belief in the health benefits of delayed ART uptake was associated with non-use.

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**Conclusions:** ART use among PLHIV in Australia is close to international targets. However, these findings suggest that a belief in the health benefits of delayed ART uptake has persisted among non-users since the 1990s and may be a factor preventing more widespread uptake, particularly among younger, newly diagnosed PLHIV.

## WEPED387

### POWER, AGENCY AND CHOICE: PEOPLE LIVING WITH HIV'S INITIATION OF EARLY ANTIRETROVIRAL THERAPY IN THE CONTEXT OF PRACTITIONER-PATIENT RELATIONSHIPS IN SHISELWENI, SWAZILAND

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**Background:** The World Health Organisation now recommends immediate antiretroviral therapy (ART) initiation after a HIV diagnosis for all adults, following evidence of associated health benefits and transmission reduction. Swaziland is one of the first countries to pilot early access to ART (EAA) for all adults diagnosed with HIV under routine programme conditions. A qualitative study was conducted to explore people living with HIV's (PLHIV) experiences with EAA in Shiselweni, Swaziland.
**Methods:** Médecins sans Frontières and the Swaziland Ministry of Health started EAA in Shiselweni in October 2014. Participants were recruited purposively from the pilot cohort, to include those otherwise ineligible for ART (e.g. with CD4 counts above 350), and those who had, and had not, initiated ART. 15 in-depth interviews were conducted with individuals newly diagnosed with HIV. Interview transcripts were analysed thematically using coding, with constant comparison of patterns and concepts within and between cases, and discrepancies from majority themes were actively sought. Nvivo 11 aided analysis.
**Results:** Participants described the need to 'surrender to' and 'obey' the 'law' of health services, demonstrating subservience in their relationships with providers. There was an expectation that patients should follow health advice as prescribed, with the 'experts' being deemed as responsible for patients' lives. As a result, patients generally exhibited limited autonomy regarding the decision to initiate early ART, with some wanting to do as they were advised, as well as some feeling unable to refuse ART. However, patients' agency could break the bounds of these typically hierarchical practitioner-patient relationships, and some participants would exert their resistance of this power, for example by reportedly agreeing to initiate ART to providers and then not taking the drugs.
**Conclusions:** The power dynamics within practitioner-patient relationships can undermine patients' autonomy in deciding whether to initiate early ART. Some patients bow to the EAA rules and expectations, with many initiating early ART accordingly; and others demonstrate ways to resist them. Further research among those who initiate early ART is needed, to explore how these issues will influence their on-going engagement with treatment and care over time.

# INTEREST IN AND EXPERIENCE OF USE OF PRE-EXPOSURE PROPHYLAXIS OR POST-EXPOSURE PROPHYLAXIS

## WEPED388

### INTENTION TO LEARN MORE ABOUT PRE-EXPOSURE PROPHYLAXIS AMONG VIEWERS OF TIME2PREP: AN ONLINE VIDEO CAMPAIGN SERIES TO INCREASE INFORMATION-SEEKING AMONG MEN WHO HAVE SEX WITH MEN IN NEW YORK CITY

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**Background:** In New York City (NYC), men who have sex with men (MSM) accounted for more than half of 2,718 newly-identified HIV infections in 2014. Despite the efficacy of pre-exposure prophylaxis (PrEP) for HIV prevention, in New York state (where half of people living with HIV are insured through Medicaid) only 1,330 people filled Medicaid prescriptions for PrEP from 7/2014-6/2015. Barriers to uptake include stigma and lack of information. Online video-based interventions have effectively addressed other HIV prevention behaviors among MSM and are a promising avenue for promoting critical thought and follow up.
**Methods:** We developed an online video campaign (Time2PrEP) to increase information-seeking about PrEP among NYC MSM. The videos were marketed through Facebook, Twitter, Instagram, Black Gay Chat, and Scruff and highlighted in publications including Towleroad, OUT Magazine, The Advocate, HIV PLUS Magazine, Manhunt Blog, and The Huffington Post. Individuals who watched one or more videos on www.hivbigdeal.org could complete a questionnaire in SurveyGizmo. We used Stata SE/14.1 and bivariate logistic regression to assess correlates of intention to get more information about PrEP after watching the video(s).
**Results:** The videos were viewed 52,586 times on YouTube, including 5,804 from www.hivbigdeal.org from 11/2015-1/2016. The majority of the 156 survey participants identified as white (60%), male (94%), and gay (76%). Many (48%) said they definitely would seek more information about PrEP after watching the videos. Under one quarter (24%) had ever used PrEP, but they were more likely to want more information about PrEP (OR:2.34, 95% CI:1.08-5.06). One third (33%) said they would definitely start or continue using PrEP in the future, and this group had higher odds of planning to seek more information (OR:10.08, 95% CI:3.20-31.72). Those who would like their sexual partner(s) to use PrEP (66%) were also more likely to report information-seeking intentions (OR:6.32, 95% CI:1.30-30.77). African American participants (22%) were more likely to want to get more information about PrEP than participants of other races (OR:2.21, 95% CI:1.02-4.80).
**Conclusions:** The popularity of the Time2PrEP video series and self-reported intention to seek more information among viewers shows that this type of intervention is a promising tool for HIV prevention.

## WEPED389

### "COMO CONEJILLO DE INDIAS": CRITICAL ROLE OF MEDICAL AND RESEARCH MISTRUST IN ACCEPTABILITY OF PREP AMONG TRANSGENDER WOMEN IN LIMA, PERU

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**Background:** Pre-exposure prophylaxis (PrEP) is a leading biomedical HIV prevention strategy for key populations such as, transgender women (TW). However, successful real-world implementation is contingent on community-level acceptability to ensure knowledge, usage, and adherence to PrEP.
**Methods:** Between May-July 2015, four focus groups (FGs; n=32) and brief demographic surveys were conducted to inform a social network-based PrEP intervention for TW in Peru. FGs lasted 90-120 minutes and followed a semi-structured format (themes probed: socialization, social network formations, acceptability and preferences for intervention methods). Audio files were transcribed verbatim and analyzed via an immersion crystallization approach using Dedoose (v.6.1.18).
**Results:** Among TW (mean age: 29 years) 16% reported prior knowledge of PrEP including, participation or knowing a previous participant in HIV prevention trials in Peru. Across FGs medical and research mistrust emerged as key, multidimensional and interrelated barriers to PrEP acceptability including:
1) Mistrust of health care systems and providers,
2) Wariness of research focused on TW,
3) Suspicions of PrEP efficacy, and
4) Fear of potential adverse effects.
Disillusionment with experimental trial designs (blinded allocation to placebo versus study drug), perceived drug effects (questions of Truvada efficacy), and of study staff (mistrust of reported results, lack of information on side effects or potential interactions with hormone therapy) emerged as key themes. Participants voiced suspicion of research and apprehension regarding the current public health emphasis on TW as a "key population" for HIV prevention efforts. Participants' discussion regarding transphobia among medical providers further emphasized the perceived focus on TW as disingenuous. These narratives also questioned the scientific community's labeling of TW as "high-risk" (especially compared to their cisgender male sexual partners).
**Conclusions:** Perceptions of the rationale for and conduct of biomedical HIV prevention research may have unintended consequences for PrEP acceptability among Peruvian TW. Mistrust of medicine, clinical research, and public health systems underlie narratives of resistance to PrEP as an HIV prevention strategy. Efforts to increase community involvement in clinical research trials and to differentiate health services from health research are needed to combat existing mistrust, fortify relationships with TW communities, and facilitate the successful implementation of biomedical HIV prevention strategies with this population.

## WEPED390

### "YES, I WOULD LIKE TO USE THEM, BECAUSE SEX IS MY WORK": AWARENESS OF AND WILLINGNESS TO USE PREP AND PEP AMONG FEMALE AND MALE SEX WORKERS IN MOMBASA, KENYA

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**Background:** Pre- and post-exposure prophylaxes (PrEP and PEP) effectively reduce HIV infection, yet PrEP, though recently approved by Kenya's Ministry of Health, is not yet available in public health facilities and PEP is underutilized in Kenya. We explored awareness of, willingness to use, and utilization of PrEP and PEP among female and male sex workers (FSWs and MSWs) in Mombasa, Kenya.
**Methods:** We conducted in-depth semi-structured interviews with 25 FSWs and 25 MSWs recruited from eighteen bars/clubs in Mombasa. Of those who self-reported being HIV-negative (21 FSWs; 23 MSWs), we asked about their awareness of, willingness to use, and use of PrEP and PEP. Interviews were transcribed, thematically coded, and analyzed using Dedoose.
**Results:** Awareness of PrEP and PEP was low overall, with MSWs slightly more aware than FSWs. PEP utilization was also low for both MSWs and FSWs. None of the participants reported use of PrEP. However, after learning about PrEP and PEP in the interview, most sex workers expressed that they were very willing to use them, with greater willingness among FSWs than MSWs. Primary reasons among those willing to use PrEP were failure to use condoms consistently with clients, unpredictable number of clients per night, and self-protection. In addition, participants expressed willingness to use PEP if they believed they had put themselves at risk of HIV infection because of condom breakages and/or non-use with their clients. On the other hand, concern for potential negative side effects was a barrier described by all participants interested in PrEP and PEP. Yet, willingness to use PEP was not affected by the negative side effects among participants who had used PEP previously, citing the need to prevent HIV infection.
**Conclusions:** FSWs and MSWs expressed a general lack of awareness but a marked willingness to use PEP and PrEP, if and when it becomes available. PEP underutilization, despite its availability, was due to lack of awareness rather than unwillingness. These findings point to the urgent need for increased availability and targeted PrEP and PEP education and promotion for FSWs and MSWs in Kenya.

## WEPED391

### EXPERT PERSPECTIVES ON PREP USE DURING PREGNANCY: IS PREP READY FOR IMPLEMENTATION?

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**Background:** Pregnant women in high HIV prevalence settings are at risk for acquiring HIV. Pre-exposure prophylaxis may significantly decrease infection rates in HIV-uninfected pregnant women but has yet to be programmatically implemented on a large scale. Our project evaluated how a diverse group of key international stakeholders weighed biologic, social/cultural, and ethical value trade-offs in the possible implementation of PrEP in pregnant women.
**Methods:** Global representatives from HIV policy, research, treatment, and implementation were identified from WHO, NIH, PEPFAR, USAID, CDC, Ministries of Health, and clinical and research facilities. Semi-structured, individual interviews were conducted with 25 representatives from 7 countries using a standardized guide, were recorded, and transcribed verbatim. Transcripts were systematically coded using a constant comparative approach. Themes related to barriers and facilitators of PrEP implementation in pregnant women were identified.
**Results:** Expert opinions were mixed regarding whether PrEP was ready for implementation during pregnancy. Those who supported immediate PrEP implementation emphasized urgency to prevent HIV and considered potential fetal risks to be outweighed by known harms for women and infants should they acquire HIV. Experts not supporting PrEP implementation believed fetal safety and PrEP adherence should be better defined prior to implementation. Experts noted concerns regarding who should be offered PrEP and felt that women's ability to accurately characterize their own HIV risk and HIV stigma would obstruct acceptance of and adherence to PrEP. Some feared that clinician attitudes and beliefs about sexual behaviors during pregnancy, combined with diminished autonomy and power for women in patient/provider and women/male relationships, could pose a significant barrier. Experts also raised a number of concerns related to the distribution of scarce resources and the prioritization of PrEP over ARVs for treatment. Potential facilitators identified included improved motivation and uptake of medical interventions during pregnancy, education and outreach with women, partners, providers and communities to improve acceptance and knowledge, and the development of clear guidelines and infrastructure.
**Conclusions:** Delivery of PrEP in pregnancy could avert HIV infections in a vulnerable population but will require addressing potential barriers to successful implementation including concerns regarding safety, resource allocation, stigma, and identifying the appropriate target population.

## WEPED392

### GETTING PREPARED TO OFFER PREP TO YOUNG WOMEN

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**Background:** Adolescent Girls and Young Women (AGYW) aged 16-24 are twice as likely to get HIV infection than their male counterparts due to socio-economic factors and gender disparities, including challenges in negotiating safer sex methods such as condoms. WHO has recently recommended PrEP for all people at substantial risk of contracting HIV. In Zimbabwe, this includes AGYW. However, questions remain about the acceptability of PrEP among AGYW, and how to best to implement and ensure adherence among those who use it.
**Methods:** Two consultations were held at the SHAZ! "HUB", a youth drop-in centre offering comprehensive SRH/HIV services, with AGYW (n=30, age 16-26) involving questions about the acceptability, uptake and adherence of PrEP among AGYW. English language transcripts were thematically analysed using participatory methods.
**Results:** Most participants were unaware of PrEP as an HIV prevention option. Once PrEP was explained, they expressed enthusiasm for using the method - as it would allow them to take ownership of prevention efforts and they would be able to use the method discreetly. However, when researchers showed participants the pills and bottle they come in, concerns were expressed about taking HIV drugs as prevention, and the fear that if they were seen taking these pills people would suspect they were HIV positive. They expressed a desire to repackage and otherwise disguise pills for greater confidentiality. Participants also suggested that PrEP be offered in private, safe places like the HUB or other youth friendly environments. Adherence issues were discussed. Participants taking oral contraception reported they would take them the same time as their contraceptive pills. Others discussed potential challenges with adherence such as living with family members who do not know they are taking the pills, to remembering to take them, and starting and stopping when they have or do not have partners.
**Conclusions:** AGYW are enthusiastic about the prevention option offered by PrEP. However, attention must be paid to packaging and acceptable service delivery methods to ensure confidentiality. Given that PrEP offers the only female controlled ARV based prevention option, it is critical that programs respond to the specific needs of AGYW in roll-out.

## WEPED393

### EXPERIENCES WITH LONG ACTING INJECTABLE (LAI) CABOTEGRAVIR (CAB) AS PREP: A QUALITATIVE STUDY AMONG MEN PARTICIPATING IN A PHASE II STUDY (ECLAIR) IN NEW YORK AND SAN FRANCISCO

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**Background:** Pre-exposure prophylaxis (PrEP) has been found to be efficacious in preventing HIV, with US national guidelines recommending its use in higher risk populations. Adherence challenges with oral PrEP have stimulated interest in alternate modes of administration.

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**Methods:** We conducted 30 in-depth interviews including 26 trial participants (18 MSM and 8 heterosexual men) and 4 clinical providers in a Phase IIa study (ECLAIR) to evaluate the safety, tolerability and acceptability of LAI CAB in New York and San Francisco. Uninfected adult males at low to moderate risk of HIV acquisition were randomized to 4 weeks of oral PrEP or placebo followed by 3 injections of LAI CAB or LAI placebo every 12 weeks. Interviews explored attitudes and experiences with LAI CAB and perceived advantages/disadvantages in comparison to daily oral PrEP. Interviews were audiotaped, transcribed, coded and analyzed using thematic content analysis.
**Results:** Almost all participants experienced some level of side effects associated with LAI CAB, mostly temporary injection site soreness. Yet, all reported being satisfied and interested in continuing LAI CAB. Participants described the convenience of LAI CAB and perceived advantage of not having to worry about adhering to a daily oral. Participants described the peace of mind associated with LAI CAB given the possibility for missed oral doses among themselves or their partners who may be on PrEP, particularly in the context of ongoing sexual risk behavior. MSM participants, particularly in San Francisco, described a surrounding culture whereby MSM were expected to be on PrEP to be seen as safe sexual partners. Participants described the dynamic nature of their HIV risk, with periods of lower and higher risk behavior. While several participants felt oral PrEP may be contributing to increased sexual risk behavior in the broader community, only a few reported increased risk behavior during their participation in the trial. Providers expressed the need for guidelines to assist patients in choosing when to start, stop and/or transition between oral PrEP and LAI CAB.
**Conclusions:** LAI CAB was seen as preferable to oral PrEP among men in this Phase II study. Further research is needed on LAI CAB among women and in other settings.

## WEPED394

### "I WOULDN'T TRY SOMETHING THAT I DON'T TRUST": PERCEPTIONS OF PRE-EXPOSURE PROPHYLAXIS (PREP) AMONG WOMEN WHO INJECT DRUGS IN WESTERN KENYA

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**Background:** Women who inject drugs experience heightened vulnerability to HIV due to overlapping drug-using and sexual networks and engagement in sex work. In Kenya, where injection drug use is a growing public health concern, offering preexposure prophylaxis (PrEP) could be an effective HIV prevention tool. However, despite Kenya being one of the first African counties to approve PrEP for HIV prevention, little is known about how gender and the social context of drug use may shape willingness to adopt such interventions in this setting. To identify potential opportunities and barriers to PrEP adoption among women who inject drugs, we qualitatively explored perceptions of PrEP delivery mechanisms, including oral antiretroviral medications (e.g., Truvada®), vaginal rings, and microbicide gels.
**Methods:** We drew from a mixed methods study of injection drug use and HIV risk in Kisumu, Kenya. In 2013-2014, 151 men and women who reported recent injection drug use completed surveys assessing sexual and drug-related risk behaviors. This analysis draws on qualitative interviews completed by a subsample of 17 female participants. Semi-structured interviews explored reproductive health topics including perceptions, knowledge, and acceptability of various PrEP methods.
**Results:** Participants' average age was 26 years (range: 20-35) and half were already HIV positive. The majority expressed a general lack of awareness of PrEP. After explaining PrEP methods, participants voiced a mixture of interest, uncertainty, and mistrust. While acceptability of oral PrEP was generally highest, a few women felt that people who are "not sick" should not take medication. Over half of the women expressed concern regarding inserting a vaginal ring or gel, especially related to potential side effects and inability to hide these methods from their partners. Others expressed interest in learning more about "protecting" themselves, particularly if methods could also act as contraceptives.
**Conclusions:** Our findings suggest limited acceptability of PrEP among women in western Kenya, especially regarding anticipated side effects of various methods. To reach an "AIDS free generation," it will be critical to understand the social contexts surrounding PrEP adoption in diverse communities affected by HIV. Increasing the acceptability and adoption of PrEP will require continued engagement of these communities in further intervention research.

## WEPED395

### INCREASING THE UPTAKE OF POST EXPOSURE PROPHYLAXIS (PEP) BY RAPE SURVIVORS IN GHANA: THE ROLE OF THE GHANA POLICE SERVICE

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**Background:** Survivors of GBV including rape and defilement experience physical and emotional trauma. In Ghana, most rape and defilement cases are not reported to the police. For cases that are reported, police referrals to health facilities are mainly for establishing that a crime has been committed, with no consideration for access to Post Exposure Prophylaxis (PEP). Late reporting of cases to health facilities makes it almost impossible to administer PEP. The Police Service records between 280 and 376 rape cases yearly, with average of 1100 defilement cases yearly nationwide. However, referrals of survivors of sexual abuse for PEP services from 2010-2012 represented only 5.79%, 5.47% and 6.39% respectively of the total cases reported. Timely reporting of sexual abuse and empowerment of police in availing survivors with PEP services are essential to avoid HIV transmission and unwanted pregnancies.
**Description:** The Ghana Police Service AIDS Control Program with support from UNFPA held workshops for 190 police personnel in 6 Police Regions. Participants learned about the vital role of police in ensuring rape/defilement survivors are offered the lifelines of PEP. Emphasis was laid on promoting community involvement in timely reportage of sexual abuse. Participants agreed on roles of the various police units and developed action points and monitoring systems for increasing PEP referrals. The police held meetings with community leaders and engaged local radio stations to educate communities on the need to protect rape/defilement survivors by facilitating access to prompt medical attention. Investigators and community members agreed on surveillance and reporting systems to ensure that survivors received timely and appropriate medical attention.
**Lessons learned:** Police returns (monitoring) indicated a sharp increase for survivors accessing PEP services from 6.39% in 2012 to 24.25% in 2013 and 27% in 2014. Notwithstanding these achievements, it was observed most of the perpetrators of the abuses were close relations of survivors, resulting in fear that reporting to the police might attract harsh punishments and affect family cohesion.
**Conclusions/Next steps:** Engaging the police in public education enhances uptake of PEP by rape/defilement survivors. Continuous police/community partnerships in addressing GBV prevention and management will increase access to PEP by survivors.

# ADHERENCE TO ANTIRETROVIRAL THERAPY, INCLUDING WHEN USED AS PREVENTION OR FOR CHEMOPROPHYLAXIS

## WEPED396

### PROMOTING ADHERENCE TO ANTIRETROVIRAL THERAPIES (ART): A CHALLENGE FOR CLINICIANS

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**Background:** Promoting medication adherence is a central concern for clinicians caring for people living with HIV (PLHIV). A myriad of scales and indices have been used to measure the well-being of PLHIV, but the comparative importance of these measures in predicting medication adherence has been little studied.

**Methods:** We conducted a cross-sectional study of medication adherence with an international convenience sample of 1,812 PLHIV attending clinics in Canada, Namibia, Puerto Rico, Thailand, and the United States. We categorized respondent medication adherence into None (0%): Low (1-60%); Moderate (61-94%); High (95-100%) levels based on self-report. Thereafter, controlling for age, sex assigned at birth, education, and ability to pay for care, we used a stepwise multinomial logistic regression to investigate the predictive importance of 13 measures including depression, stressful life events, chronic disease self-efficacy, and perceived stigma.
**Results:** Using bivariate analysis, we found that the mean scores of all 13 scales/indices differed by adherence category and were correlated with one another. In the stepwise model, adherence self-efficacy, depression, stressful life events, and perceived stigma were significant predictors of medication adherence, controlling for race, sex assigned at birth, education, and ability to pay for care. For every one point increase in the chronic disease self efficacy score, the odds of being in the None, Low, or Moderate adherence category were 5%, 6%, and 3% lower respectively compared to the High category. Further, every additional stressful life event increased the odds of being in the None or Low category by 5% compared with the High category. Among the demographic variables which were forced into the model, only race was a significant predictor with non-white race being associated with double the odds of being in the None category.
**Conclusions:** Clinicians need tools to identify those PLHIV who may find maintaining medication adherence a struggle. Given that most clinicians have limited time with patients, these results suggest that asking about self-efficacy, depression, stigma, and stressful life events, and particularly the latter, routinely, may have the greatest benefit in distinguishing those patients who may require additional support.

## WEPED397

### Antiretroviral therapy interruption among people who use drugs in a setting with a community-wide HIV treatment as prevention initiative

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**Background:** HIV Treatment as Prevention (TasP) programs seek to promote antiretroviral therapy (ART) access and optimal adherence (≥ 95%) to produce viral suppression among people living with HIV (PLHIV) and prevent the onward transmission of HIV. ART interruptions (defined as ≥30 consecutive days without taking ART) remain more common among people living with HIV (PLHIV) who use drugs and undermine the effectiveness of TasP. This study was undertaken in a setting with a community-wide TasP initiative to examine individual, social, and structural influences on ART interruptions among PLHIV who use drugs.
**Methods:** Semi-structured qualitative interviews were conducted with thirty-nine individuals recruited from an ongoing prospective cohort study comprised of PLHIV with histories of drug use in Vancouver, Canada. We identified participants who had experienced treatment interruptions (defined as ≥ 30 days without refilling an ART prescription) through a linkage with a local HIV/AIDS treatment registry. Data were analyzed using deductive and inductive approaches, and interpreted by drawing on the concept of structural vulnerability.
**Results:** While study participants positioned ART interruption events as the result of “treatment fatigue,” our analysis of participant accounts revealed underlying individual, social, and structural factors as primary drivers of these events, including:
(1) prior adverse ART-related experiences among those with long-term treatment histories (≥15 years) who transitioned to more complex ART regimens;
(2) experiences of social isolation related to structural vulnerability (e.g., stigma, colonialism) led to depression and undermined motivation to adhere to ART regimens; and,
(3) disruptions to daily routines and breakdowns in the continuity of HIV care stemming from events that increased structural vulnerability (e.g., residential eviction, incarceration).
**Conclusions:** These findings demonstrate the importance of comprehensive structural reforms (e.g., housing interventions, drug policy reforms) and targeted interventions across the continuum of HIV care to optimize ART adherence among drug-using PLHIV and maximize the individual and community health benefits of TasP.

## WEPED398

### “I am taking ARVs. I am smoking nyaope. It is not good.” Challenges to ART adherence among substance-using women living with HIV in Pretoria, South Africa

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**Background:** Substance abuse affects the delivery and outcome of HIV treatment and management. People living with HIV and substance dependence are less likely to access HIV clinical care and to receive and adhere to ART, and more likely to have rapid disease progression. In South Africa, women who use alcohol and other drugs (AOD) continue to encounter barriers in the HIV treatment cascade.
**Description:** A NIDA-funded cluster randomized trial, which recruited high-risk AOD-using women in Pretoria, compared standard HIV testing and referrals to the Women’s Health CoOp, an evidence-based behavioral intervention with linkage to care and ART initiation and adherence monitoring. Participants who knew their HIV status but were not on ART at enrollment increased ART initiation after their final appointment. Despite the increase in ART uptake, adherence was low. To elucidate the challenges to adherence, we conducted 18 semi-structured in-depth interviews with participants from the intervention arm who had completed their final follow-up.
**Lessons learned:** Most participants reported an initial denial of their HIV status, but gained self-efficacy to prioritize clinic visits and to stay healthy for themselves and their families. A majority were aware of the benefits of ART; however, AOD use impeded ART adherence. Participants also reported that nonadherence may have been exacerbated by the fear of mixing AODs with ART, which may have been evoked by clinicians’ zero-tolerance and stigmatizing attitudes about AOD use. Participants who reported discriminatory treatment in clinics were less likely to adhere to ART than those who did not report discrimination. Long clinic wait times and lack of documentation also were barriers. Participants identified lack of family support, low self-worth, and poverty as inhibitors. The shortage of affordable substance abuse treatment in the community was a recurring barrier.
**Conclusions/Next steps:** Because of their substance use and stigmatization, these South African women experienced barriers to ART initiation and adherence. Comprehensive HIV treatment services that address structural barriers and include gender-based interventions with a focus on substance use as a comorbidity within the HIV treatment cascade are essential. HIV prevention programs targeted at key populations need to adopt a holistic approach in order to reach the UNAIDS 90-90-90 treatment target.

# Risk compensation: conceptualisation, assessment and mitigation

## WEPED399

### Risk compensation following medical male circumcision: results from a one-year prospective cohort study of circumcised and uncircumcised school-going youth in KwaZulu-Natal, South Africa

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**Background:** Voluntary medical male circumcision (VMMC) in young men is an important component of national HIV prevention programmes, given its protective effect in the heterosexual transmission of HIV. Concerns have been raised that circumcised men will increase their sexual risk behaviours following circumcision as a result of lowered perceptions of HIV-risk. This possibility of risk compensation has the potential to reverse the public health benefit of VMMC. Accordingly, this study documented sexual practices of circumcised (n= 616) and uncircumcised (n=589) learners in 42 mixed sex secondary schools over a 12 month period in Vulindlela, KwaZulu-Natal who were targeted by a national department of health VMMC campaign.
**Methods:** During the VMMC campaign (March 2011 To February 2013) 5165 learners were circumcised and 5923 refused to be circumcised. We randomly selected participants for each cohort from March 2012 until May 2013. Study participants aged 16 to 24 years were interviewed at baseline, 6 months after baseline and at 12 months. Mixed effect models were used to account for the longitudinal data and the clustering of learners in schools.

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**Results:** The uncircumcised cohort was slightly older than the circumcised group (17.4 vs 17.7 years, p < .01). In terms of sexual behaviours, the uncircumcised cohort was more likely to be sexually active at the baseline interview (54 vs. 41%; p < .01). There were no statistically significant differences between the circumcised and uncircumcised cohort in terms of number of sexual acts in the previous 6 months (p=.32) and the number of sexual partners in the previous 6 months (p = .77). Further, perceptions of HIV risk were significantly lower in the circumcised cohort than in the uncircumcised cohort at study endpoint (p = .01). The uncircumcised group reported higher incidence of transactional sex than the circumcised group (7% vs. 2%, p < .01).
**Conclusions:** There was no evidence of risk compensation in this study. Early involvement of young men in VMMC is optimal for HIV prevention, however the intensification of prevention activities needs to be addressed for high risk young men such as those who engage in transactional sex and refuse circumcision.

## EMERGING APPROACHES FOR COMBINATION HIV PREVENTION

### WEPED400

#### EXPERIENCES OF ADOLESCENT GIRLS AND YOUNG WOMEN (AGYW) PARTICIPATING IN AN INTEGRATED COMBINATION OF EVIDENCE-BASED PROGRAMME IN RESOURCE CONSTRAINT SETTINGS, SEDIBENG AND ORANGE FARM IN GAUTENG PROVINCE

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**Background:** HIV risk is a formidable concern for Adolescent Girls and Young Women (AGYW) in South Africa, with the highest number of estimated new HIV infections happening among AGYW aged 15-24 years (Shisana et al, 2014). Over the years, research data suggest limited effectiveness of stand-alone HIV-prevention programmes for AGYW, leading to arguments for economic strengthening and HIV prevention education combination prevention approaches which interrupts the pathway to HIV infection and promotes protective, risk reduction, and opportunity opening behaviors (Cluver et al, 2014). Despite these calls, the efficacy of combination programmes in low resource constrained settings, particularly in semi-urban and informal settlements, is shrouded with limited evidentiary basis as they remain under-tested. The goal of this study is set to explore the perceptions of AGYW on their experiences of participating in an integrated combination programme.
**Methods:** Utilising a qualitative approach and a collective case study design, semi-structured one-on-one interviews are being conducted with 25 participants that were sampled from 75 AGYW based at Community Based Organisations in Sedibeng and Orange Farm in Gauteng province who are participating in HIVSA's combination programme. Non-probability purposive sampling and simple random sampling procedure of probability sampling, respectively, are being used to select study participants.
**Results:** The research allows "relevant" and "information rich participants" to share their experiences. Emerging data obtained from AGYW after a year of participating in an combination programme indicate that there is strengthened building of skills leading to HIV testing, uptake of treatment and care services; as well as change of Knowledge and Attitudes related to HIV risk perception. However, AGYW are reporting no success in opening of savings accounts and in establishing linkages that enhance their entrepreneurial and employability capacity. Issues of reach, accessibility, acceptability and effectiveness are also being explored and recommendations for replication are being made by participants.
**Conclusions:** Outcomes from the qualitative assessment have potential to add to a body of evidence important for fine-tuning, contextualizing and strengthening the efficacy of combination approaches in HIV prevention and empowering AGYW sustainably in disadvantaged socio-economic contexts. The practicality, synergistic effects and barriers of combining HIV and economic strengthening programming require more specific research.

### WEPED401

#### IMPACT OF COMBINATION PREVENTION APPROACHES ON HIGH-HIV PREVALENCE IN FISHING COMMUNITIES: A CASE OF SIGULU ISLANDS, NAMAYINGO DISTRICT, EAST CENTRAL UGANDA

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**Background:** In 2009, combination HIV prevention was recommended by PEPFAR as an essential component of a balanced response to the global HIV epidemic. Combination HIV prevention defined as "Combining quality biomedical, behavioral, and structural interventions to craft a comprehensive prevention response to targeted subpopulations with mutually reinforcing interventions." Fishing communities are known to be at higher risk of acquiring HIV infection in many sub-Saharan African countries. STAR-EC, an eight-year district-based project funded by USAID and implemented by JSI and its partners, supported integrated outreach to fishing island communities from April 2010 to Oct 2015.
**Description:** Quarterly integrated combination prevention service delivery outreaches were conducted to the Sigulu Islands, an archipelago of 11 islands in Lake Victoria. Services included HIV testing and counseling (HTC), voluntary medical male circumcision (VMMC), family planning, malaria treatment, TB diagnosis and treatment, chronic HIV care, condom education and distribution, risk-reduction interventions, and dissemination of IEC materials. The program used multidisciplinary teams of health workers and trained 345 village health teams and 216 condom peer educators to deliver services in static health facilities and mobile community outposts.
**Lessons learned:** During the period of April 2010 to Oct 2015, 22,315 individuals received HTC; 1,219 people, including 251 pregnant and lactating mothers who started on antiretroviral therapy (ART); 6,200 males were circumcised; 107 TB patients completed treatment, 1,444 clients received sexually transmitted infection treatment; and 611,077 condoms were distributed. This archipelago has experienced a significant reduction in HIV positivity, from 19% in 2010 to 4.8% in 2015, steady progress toward the goal of 'zero new HIV infections.'
**Conclusions/Next steps:** Combination HIV-prevention approaches help reduce HIV transmission in high-prevalence pockets. These approaches should be adopted by community and facility health workers who provide HIV&AIDS services in high HIV prevalence communities.

## PREVENTION WITH HIV-POSITIVE PEOPLE

### WEPED402

#### QUALITATIVE FORMATIVE RESEARCH TO REFINE A THEORY-BASED MULTI-LEVEL SEXUAL RISK REDUCTION INTERVENTION FOR HIV-POSITIVE MSM IN INDIA

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**Background:** Studies from India have indicated high levels of sexual risk among HIV-positive MSM (HIV+MSM) and thus the need for effective/culturally-appropriate interventions. Based on the Social-Personal Model and our previous studies, we designed a multi-level (individual and MSM community levels) intervention for HIV+MSM to promote safer sex and to promote acceptance of HIV+MSM among MSM communities. We conducted a qualitative formative research among MSM to understand their perspectives and to get inputs on the intervention content and implementation.
**Methods:** In 2015, we conducted five focus groups and in-depth interviews with a total of 17 HIV+MSM and 20 HIV-negative/unknown status MSM in urban/rural settings in Tamil Nadu, India. Using NVivo-10, narrative thematic analysis was using the techniques of framework analysis and grounded theory.
**Results:** Participants identified several barriers to safer sex among HIV+MSM: discrimination towards HIV+MSM within MSM communities and from the society, non-disclosure of HIV status to friends/partners, and challenges in sexual communication/negotiation skills. Facilitators of safer sex such as supportive friends/partners and personal resolution to practice safer sex were also reported. Discussions revealed that HIV-negative MSM disapprove of sexual activity of HIV+MSM even if they reported condom use. HIV+MSM were concerned about the location of the

individual-level counselling intervention (community-based organisation vs. other private settings) as they feared that other MSM might come to know their HIV status. Some MSM preferred 'non-community' counsellors as they believed that he/she will keep their HIV status confidential, while some others preferred peer/MSM counsellors. For intervention length, participants suggested about 3-6 individual individual sessions with a gap of two to four weeks. Decreasing the discrimination faced by HIV-positive MSM was noted as key to promote voluntary disclosure of HIV status and early engagement in care. Imparting messages to accept HIV+MSM within MSM communities through dramas and skits at community events and drop-in centres of community-based organisatons were suggested for the community intervention.

**Conclusions:** Formative research helped us refine the intervention content (e.g., stigma, mental health support, preparing a tailored plan for safer sex/disclosure) and implementation strategies (e.g., type of counsellor, location, length) - thus improving the acceptability/robustness of the proposed multi-level intervention among HIV+MSM.

## WEPED403

### OUTCOMES OF A PILOT RCT TO PROMOTE SAFER SEX PRACTICES AMONG MSM LIVING WITH HIV IN TAMIL NADU, INDIA

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**Background:** Studies have pointed out that MSM living with HIV (MSMLH) in India need an effective and culturally appropriate intervention to promote safer sex. As part of a multi-level intervention based on Social-Personal Model, we developed and tested a pilot individual level counselling intervention using motivational interviewing techniques to promote initiation and maintenance of safer sex among MSMLH.

**Methods:** We present preliminary analyses from a two-arm pilot randomized controlled trial (RCT) among 46 MSMLH (intervention: n=26; control: n=20) in Chennai, India. MSMLH in intervention group received 4-session tailored sexual risk reduction counseling (tailored risk reduction plan, mental health, sexual communication/negotiation). Participants completed assessment at baseline (pre-intervention) and at the end of 3 and 6 months. We developed a sexual risk score (based on condom use in anal sex, HIV status of sexual partners, number of partners, etc.) to assess sexual risk. Mixed-ANOVA analysis was conducted (SPSS-21), with intervention/control condition as between-subjects factor and time (baseline and endline) as within-subjects factor. Process evaluation included activities to assess intervention fidelity (e.g., observation of sessions by external evaluator) and post-intervention satisfaction survey.

**Results:** Participants' mean age was 37.8 (SD=9.9) and monthly income was INR 8875 (SD = 5050). More than half self-identified as kothi (feminine/receptive) and the rest as double-deckers (versatile role), and two-thirds were never married. There were no significant differences in the baseline characteristics of intervention and control groups, except monthly income. Out of the 46 participants, 3 persons in the control group and 6 persons in the intervention group did not complete the endline survey. Intent-to-treat analysis showed the intervention group decreased their sexual risk compared to control participants (d=.29, indicating a small/moderate effect). When the 9 drop-out cases were excluded from the analysis, we obtained similar results. Process evaluation indicated high intervention fidelity and high satisfaction among intervention group participants.

**Conclusions:** We found that our individual level counseling intervention to reduce sexual risk in MSMLH was feasible, acceptable, and had evidence of effectiveness equal to or greater than other HIV-positive interventions.

# SCHOOL-BASED SEXUAL EDUCATION, LIFE SKILLS AND GENDER EQUALITY EDUCATION

## WEPED404

### A SCHOOL-BASED CLINIC-LINKED SEXUAL REPRODUCTIVE HEALTH AND RIGHTS PROGRAM IN A RURAL HIGH-SCHOOL IN SOUTH AFRICA: PROGRAM OUTCOMES

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**Background:** Adolescents in Sub-Saharan Africa carry a disproportionate burden of HIV disease and experience poor access to Sexual Reproductive Health and Rights (SRH&R) services. Improving SRH&R services for youth is a policy priority in SA and initiatives are planned to improve unmet needs. With the existing model of service delivery, school-health services are unlikely to be able to address these needs. This study reports on the outcomes of a school-based clinic-linked SRH&R program for adolescents in a rural high-school.

**Methods:** The intervention comprising of an integrated school-health SRH&R service that provided information, education, counseling and referral to a youth-friendly SRH&R clinic or social protection services to 1258 learners in a co-ed school. The program was evaluated through routine program data and through surveys at baseline and post -intervention for the period May 2014- August 2015. Analysis including univariate, bivariate analysis was undertaken using *t*-test and *Chi* square tests.

**Results:** Baseline demographic profile showed that 52% of learners were male and with an age- range of 14-26 years(μ=17.2;SD 2.5)years**).** Learners came from households that were mainly female-headed (70%), food insecure(33%) and relied on state grants (88%). Learners faced challenges of coming to school hungry(58%), feeling tired (42%) and unsafe when walking to school(20%). Gender-based violence and sexual coercion was higher in females compared to males(raped first time I had sex(4.6% vs 1% ) and ever forced to have sex(8.3% vs 4.6%)). Between the baseline and post SRH&R life-skills education intervention(89% learners completed), basic knowledge and attitudes changed significantly; condoms can prevent HIV(51%-68%), willing to have HIV test(66.4%-84.6%), sex with virgin prevents HIV(17.7%-9.5%) and STIS are treatable(28.6%-49.4%). Reported behavior improved; used condom at last sex(23.6-36.5%),sought care at youth-friendly clinic(31.7 to 50.5%). There was a 73% uptake of the school-based clinic-linked SRH&R service and 89% were self-referred. Of total learners, HCT uptake was 40%, VMMC by male learners(36%), pregnancy-rate per annum(14%).

**Conclusions:** These findings show that learners faced socio-economic, nutritional challenges, GBV and sexual coercion. The high uptake of services despite the challenges learners face, suggest that unmet needs amongst learners within these schools can be addressed through school-based clinic-linked adolescent-friendly services.

## WEPED405

### SEXUALITY EDUCATION IS TAKING HOLD: HOW AN INCREASING COMMITMENT TO CSE WILL REAP BENEFITS FOR HIV PREVENTION AND SEXUAL AND REPRODUCTIVE HEALTH

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**Background:** Comprehensive sexuality education (CSE) aims to ensure that all young men and women gain the knowledge and skills to make conscious, healthy and respectful choices about relationships and sexuality. CSE is one of five key recommendations made by UNAIDS and the African Union to fast track the HIV response and end the AIDS epidemic among young women and girls across Africa. Good quality CSE that is accessed by all adolescents and young people remains a key input to combination prevention services that empower them to protect themselves from HIV, STIs and unintended pregnancies.

**Description:** UNESCO, with UNFPA, carried out a review of CSE implementation and coverage in 48 countries in 2015, through the analysis of existing resources and studies, assessing whether curricula meet international standards. The review also examines the evidence base for CSE and its positive impact on young people's health outcomes. It takes stock of political support for CSE and factors that influence programme success such as CSE's position within school curricula, the content covered, teacher training for classroom delivery, and partnerships with parents and communities.

**Lessons learned:** A majority of countries are now embracing CSE and actively strengthening its implementation at a national level through policy, curriculum or teacher training. Despite these efforts, gaps remain between policies and classroom implementation. Whilst many countries' curricula meet basic international standards, most curricula need to be strengthened in terms of gender and rights and to address the needs of young people living with HIV. Adequate teacher training is

an essential component to quality delivery. The review found that where sexuality education is not fully compulsory or is extra-curricular, a large number of students will not reap the benefits.

**Conclusions/Next steps:** Evidence clearly shows that CSE contributes to HIV prevention and improves sexual and reproductive health and gender equality outcomes. As such, CSE is a critical enabler that should form part of national HIV and SRH programmes, and one that young people themselves repeatedly demand. Continued support is needed to ensure that gender and rights is better highlighted and to strengthen teacher capacity to deliver CSE. Ongoing advocacy will help hard-won gains take hold and grow.

## WEPED406

### EVALUATION OF THE IMPLEMENTATION AND RESULTS OF THE DANCE4LIFE SCHOOLS PROGRAM IN ARGENTINA

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**Background:** Since 2010, Fundacion Huesped and the Youth for Health Network have implemented the dance4life program in public schools. An evaluation was conducted assessing the results of the program to determine if predicted outcomes occurred, and drawing conclusions about the possible impact of results on the sexual and reproductive health of the youth.

**Methods:** A retrospective evaluation was conducted in 2014 by an external evaluator analysing program implementation at public high schools of the Buenos Aires Metropolitan Area from March 2010 to December 2013. A mixed-methodology (qualitative-quantitative), using validated tools and frameworks, was applied through self-reported surveys, semi-structured interviews and focus groups with students, peer educators, teachers, and staff.

A literature review of past reports and program-related documents complemented this. Interviews and focus group transcripts were analysed using a directed content framework for coding main themes. Quantitative data was analyzed using Excel.

**Results:** The program was implemented in an innovative and successful way, training over two thousand ¨agents4change¨ (youth facilitators) over a four-year period. The experiences reported were generally positive, its methodology being the most novel and attractive part. Youth participation in the execution of the program was a valuable point for all the stakeholders. Teachers and young people reported that one of the positive aspects was that it was an international program, demonstrating large global involvement. 93% of respondents answered correctly about modes of transmission. Knowledge in relation to contraceptive use also was high: 68% for the injectable form; 99% for the condom. Positive attitude changes were reported: respondents indicated changing a lot in their respect for PLHIV (72%) and their capacity for talking openly about sexuality (60%). 80% said they knew how to avoid having sex if not wanting to.

**Conclusions:** Although the dance4life program has had very positive results in almost all the variables, including greater awareness of sexuality and confidence in decisions about sex; there are issues that need to be addressed: project sustainability assuring lasting effects on school culture; health system integration to improve health outcomes. Having baseline and follow-up data is critical in order to compare changes in young people's knowledge, attitudes, and practices before and after implementation.

## WEPED407

### SCALING UP COMPREHENSIVE SEXUALITY EDUCATION IN AFRICA: ARE WE WINNING THE QUALITY BATTLE?

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**Background:** Comprehensive Sexuality Education (CSE) aims to increase young people's chances to form safe and satisfying relationships, prevent HIV, safeguard their sexual and reproductive health and wellbeing, and advocate for their rights to dignity and equality. As CSE gains momentum and interest at international, regional and national levels, governments in Eastern and Southern Africa (ESA) are increasingly putting in place measures to scale up school based delivery.

**Methods:** To assess the quality of CSE curricula and delivery, UNESCO commissioned a five country study (Uganda, Zambia, Lesotho, Malawi, Namibia) and used an in depth assessment tool (Sexuality Education Review and Assessment Tool (SERAT)) completed with key stakeholders (92). Key informant interviews were conducted with government officials (24), teachers (44) and learners (72) from selected schools and secondary data was obtained from national population based surveys. Data was analysed using SERAT; charts were generated to show the strength of various features of the program.

**Results:** Interview and SERAT results across all 5 countries revealed moderate to strong curriculum content from 9-18 age ranges, and very weak to no content for the 5-8 year age group. Teachers' inability to deliver due to a lack of subject matter specialization and poor quality of teacher training in comprehensive sexuality education were cited as common challenges. This coupled with high pupil teacher ratio; high pupil textbook ratio; and poor linkages with health services were critical factors affecting quality of classroom delivery and the desirable outcomes for young people. Absence of a strong M&E system providing real time data on CSE delivery and outcomes was cited as a challenge.

**Conclusions:** To improve quality of CSE delivery, countries need to ensure that CSE starts early, is age appropriate; teachers are well equipped with content and facilitation skills to deliver using innovative methods and engaging health resource persons. Including CSE indicators in Management Information Systems is critical for tracking progress and quality of CSE delivery. As efforts to reach large numbers of young people escalate, it is critical to ensure that the CSE programs maintain quality, content, and delivery methods necessary to attain the desired outcomes.

## WEPED408

### ADVENTURE UNLIMITED: A PATHWAY TO CHILDREN HIV/AIDS EDUCATION

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**Background:** The Adventure Unlimited is the programme targeting children aged between seven (7) to 13 years, who most programmers overlook especially for HIV and AIDS awareness as they are considered young for some sexual oriented packages associated with such awareness. A moralist defense is always given as this age group is seen as "innocent." In the mid 90s the age group between five (5) to 14 years was called the window of hope as it was seen as free from HIV infection. With the change of scenario thus: all the below 25years considered the HIV "generation" and the children below 15 years being the target of all sorts sexual violence including defilement need has arisen to give age-suitable sexual and reproductive health to this age group.

**Description:** The Adventure Unlimited is a nine session psychosocial and value based approach programme adopted from The Scripture Union that among other topics addresses; self-awareness, socialization process, family and friends as social units, reproductive and sexual awareness, social environment and other helpful human values. It is delivered in schools in a very relaxed environment using an enter-educate approach.

**Lessons learned:** From the facilitators reports YAZ has discovered that many children have been willing to disclose sexual abuse that has either happened to them or a friend and are willing to undergo counseling .The participants in the Adventure Unlimited sessions have been discussing reproductive and sexual matters, which society does not associate with this 'innocent' age. The programme is an eye opener and can be used as a good pathway to impart knowledge on HIV and AIDS in this age group which will develop into preventive skills before they grow into becoming sexually active.

**Conclusions/Next steps:** New infections can be controlled properly by reaching out to those below the age of 15years and build a value system with their socialization process so that they grow with a preventive awareness. This also helps in acquiring useful psychosocial life skills to deal with different risky situations in life.

## WEPED409

### Addressing teachers' comfort levels to teach sexuality education: the case of South Africa

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**Background:** In South Africa the recent SACMEQ Data indicates poor levels of HIV knowledge among learners in schools (less than 40 %) whereas teachers' knowledge levels are 100%. The gap of knowledge between learners and educators can be attributed to educators' lack of capacity to transmit their knowledge and the conflict between the educator personal values and teaching of sexuality education/ life skills. Evidence show that effective Comprehensive Sexuality Education (CSE) consistently increases learners HIV knowledge and other health issues, delays the age of sexual debut, and increase their use of contraceptives including condoms.
**Description:** UNESCO in collaboration with UNFPA and the John Hopkins HC3 project developed an online course on CSE to provide teachers with knowledge and skills to implement age appropriate, human rights and gender based comprehensive sexuality education in the classroom. 50 HIV and Life Skills District Coordinators as Master Trainers (13 Males and 37 Females ) from the Eastern Cape Department of Education (DoE)were trained through a 40 hour on-line sexuality education course blended with values clarification exercises. The seven modules focused on: Sexuality; Adolescent Social and Emotional Development; Fertility, Pregnancy and Reproduction; Preventing STIs and HIV; Gender and Relationships. Knowledge assessments was done upon completion of each module, and teach backs facilitated to demonstrate how to deliver content in the classroom setting using scripted lesson plans on sensitive topics.
**Lessons learned:** The average pass rate achieved by participants was 81% with an average of 11.7 % knowledge increase from prior to undertaking the course. 92% of the participants found that the online course was relevant and has increased their capacity to implement CSE in the classroom. Implementing an on-line course requires sufficient access to computers and internet connectivity and provides a safe space for participants to learn at their own pace.
**Conclusions/Next steps:** The on-line course on sexuality education provides an accessible resource that support teacher training through ICTS. DoE in the Eastern Cape intends to expand the on-line course to reach 850 teachers in 21 Districts through utilising 15 ICT Centres.

## WEPED410

### Scaling up access to SRH education and services in Zambia: mission impossible without faith-based partners Saili Alice, Mwilu Mumbi, Remmy Mukonka, Yusuf Ayami, Dymus Nyeleti institutions: UNESCO, ZINGO, Zambia

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**Background:** The purpose of the project is to improve the sexual and reproductive health (SRH) outcomes of young people in Zambia through the national roll-out of comprehensive sexuality education (CSE) in schools and increased access to sexual and reproductive health services. Baseline data showed that only 25% of school learners scored 95% correct or higher on HIV and AIDS basic knowledge, that 77% of schools did not provide comprehensive life skills-based HIV and sexuality education, and that among 15 year olds, 12.4% of girls and 21.9% of boys had had sex.
**Description:** To ensure a successful national scale-up of the provision of CSE and access to SRH services, an intersectoral and comprehensive approach was used: curriculum development, teacher training, development of teaching and learning materials, strengthening of referral systems, mass media outreach, etc. all of which has required stronger coordination within the government spheres and in-country partners. However, the debate on children being taught sexuality education is a very sensitive and emotive issue, especially among the religious community. As one of the main barriers to successful implementation is community and parental resistance, the project teamed up with an inter-faith organization, ZINGO, who trained religious leaders on CSE, and facilitated the provision of parent-child communication on SRH. The dialogues on sexuality education have made parents and guardians aware of what is being taught in school, and has allowed parents and young people to discuss sexuality education in an open manner. The acceptance of the communities has in turn empowered schools to provide CSE and referrals.
**Lessons learned:** The partnership with ZINGO has provided a platform for dialogue with the religious community and created an opportunity to break religious and community barriers that impede the successful implementation of CSE. Building partnerships with civil society organizations works as a quick enabler for impactful implementation of CSE.
**Conclusions/Next steps:** The effective scale-up of a national programme, requires partnering with faith-based organisations, as integration and intersectoral collaboration without taking into account the fears and resistance of communities, cannot succeed.

## Community-based approaches, including empowerment, outreach and culturally appropriate service delivery

## WEPED411

### Taking stock of the Kamhlaba program: making room for key populations in Swaziland's HIV response

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**Background:** Swaziland's national HIV prevalence is 31% among adults ages 18-49. Female sex workers (FSW) and men who have sex with men (MSM) have 70.3% and 17.6% prevalence, respectively. The Swaziland National AIDS Programme (SNAP), President's Emergency Plan for AIDS Relief, United States Agency for International Development-funded Health Communication Capacity Collaborative (HC3) embarked on the KaMhlaba program to reduce HIV among these populations. Objectives included development of evidence-based programs, strengthening SNAP's leadership and coordinating capacity, improving access to and quality of HIV cascade services for MSM and FSW, and strengthen FSW/MSM constituent-led networks to foster an enabling environment.
**Description:** In November 2015, external evaluators conducted a stock-taking exercise to assess strengths, challenges, and opportunities for KaMhlaba. They interviewed government, community-based organizations, implementing agencies, donors, service delivery providers, and a health care worker training institution. They analyzed existing data comparing age-disaggregated general population prevalence to FSW and MSM, and demonstrated the increased HIV burden among FSW/MSM. FSW follow the same peak prevalence across time as women generally, though FSW prevalence is up to twice has high. MSM have a similar prevalence trajectory over time as general population males, and contrast at ages 35-39 where MSM prevalence sharply increases.
**Lessons learned:** KaMhlaba program implemented size estimation and a "hotspot" venue mapping to identify gaps in the HIV cascade. HC3 established a formal relationship with SNAP to jointly execute activities, including the national coordinating body - the Key Population Technical Working Group. A similar coordinating group was formed among MSM organizations, called the "Super Group", to inform and plan interventions for MSM. Building upon the success of the MSM Super Group and capitalizing on regional FSW support groups, a FSW Group was formed by electing members from the regional support groups and meets monthly. Comprehensive mobile services are available to FSW/MSM in 15 hotspots including CD4 testing, sexual reproductive health/family planning and referral to ART, adherence and psychosocial support. Older MSM have tailored, separate interventions from younger MSM.
**Conclusions/Next steps:** Kamhlaba will scale-up and increase quality through Super Group engagement and outreach efforts to clinical providers. These nascent outreach efforts will grow into enhancing active linkages for care and treatment.

## WEPED412

### Combining road safety and health testing and counseling among truck drivers: the case of South Africa and Zimbabwe

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**Background:** HIV remains a major challenge in the Sub Sahara Region. While significant progress has been made in addressing the epidemic amongst the general population prevalence is still very high in key populations who include long distance Truck drivers & sex workers. This challenge for long distance truck drivers is compounded by Road safety concerns and high records of traffic accidents on the transport corridor.

**Description:** It is against this background that the Swedish Workplace Programme developed interventions to reach out and target long distance truck drivers in South Africa, and Zimbabwe. The campaign in the 2 countries involved a Road-side Stop and Test Campaigns in South Africa and Zimbabwe in partnership with Scania group ,Ministry of Transport & ILO

Objectives of the Driver Road Safety and HTS campaigns:-

1. Raising awareness on HIV & Wellness among long distance truck drivers
2. Raise awareness on the importance of Road Safety to reduce Traffic accidents
3. Offering Health Testing services to drivers at the stop and test sites
4. Ensuring linkages to treatment, care and support for those tested where necessary
5. Sensitisation on union social protection schemes
6. Promote Wellness and healthy lifestyles
7. Provide bumper check on vehicles stopped at the road side campaigns and issue a defects report where necessary.

**Lessons learned:** There is a need for continued awareness about HIV and Wellness among Truck drivers, Truck stops, toll plazas and border posts are convenient places to offer awareness and testing services for long-distance truck drivers, Provide syndromic treatment and HIV counseling at strategic points along major trucking routes to allow easy access to Health testing services ,mobile clinics along trucking routes to provide STD treatment and counseling to truck drivers and sex workers.

**Conclusions/Next steps:**

1. Replicate along Transport corridor in Southern Africa to reach more drivers
2. Complement the HTS programme with education activities in the surrounding community in order to reduce risky behaviours, encourage HIV prevention and early diagnosis of HIV and opportunistic infections as well as early treatment.
3. Combining Road safety, car fitness and HTS resulted in increased uptake of HTS among Truck drivers.

## WEPED413

### THE INTERPLAY BETWEEN HIV/AIDS COMPETENCE IN THE HOUSEHOLD AND COMMUNITY-BASED TREATMENT ADHERENCE SUPPORT FOR PEOPLE LIVING WITH HIV/AIDS IN SOUTH AFRICA

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**Background:** The size and scale of the HIV/AIDS epidemic compelled South Africa to respond to their human resource shortages by developing innovative means of delivering health care. In this respect, the HIV/AIDS epidemic was a catalyst for renewed focus on community health workers (CHWs). CHWs bring care closer to people living with HIV/AIDS (PLWHA) and their household environment. The socio-ecological and individual-familiy-community models draw attention to the fact that the dynamic interplay with the household level should be taken into account, in order to study the impact of HIV/AIDS comprehensively. As community-based interventions to support PLWHA have largely ignored the social context in which they are implemented, the following research aim will be addressed: *examining the way in which household dynamics hamper or facilitate the impact of community-based treatment adherence support.*

**Methods:** During the participatory observations, 48 community based treatment adherence support sessions in patient's houses were observed in a township on the outskirts of Cape Town, South Africa. Furthermore, 32 in-depth interviews were conducted with PLWHA, as well as 4 focus group discussions with 36 CHWs. By making use of Nvivo, the data was analyzed carefully in accordance with the Grounded Theory procedures.

**Results:** Despite the fact that the CHWs try to present themselves as not being openly associated with HIV/AIDS services, results show that the presence of a CHW is often seen as a marker of the disease. Depending on the HIV/AIDS competence in the household, this association can challenge the patient's hybrid identity management and his or her attempt to regulate the interference of the household in the disease management. Moreover, the degree of HIV/AIDS competence present in a PLWHA's household affects the manner in which the CHW can perform his or her job and the associated benefits for the patient and his or her household members.

**Conclusions:** This study draws attention to the importance of taking pre-existing dynamics in a patient's social environment, such as the HIV/AIDS competence of the household, into account when designing community-based treatment adherence programs - in order to provide long-term quality care, treatment and support in the context of human resource shortages.

## WEPED414

### BRIDGING THE GAP FROM PEDIATRIC ART TO ADULT ART FOR ADOLESCENTS THROUGH ART MENTORSHIP

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**Background:** Studies have shown that adolescents living with HIV on antiretroviral therapy (ART) often have lower viral suppression rates compared to both adults and younger children. This sign of treatment failure is mainly due to poor adherence as a result of inadequate support during the transition period from paediatric to adult ART. In addressing this problem AIDS Counselling Trust (ACT) came up with a project to support adolescents on ART through Community Based ART Mentors (CBAM) who are young adults who have been on ART for more than 5 years. The CBAM were trained in Treatment Literacy, Adolescent Sexual and Reproductive and Basic Counselling so that they will be effective in dealing with adolescents on ART and be able to respond to respective developmental needs.

**Description:** The organisation collaborated with local health facilities in Dzivarasekwa and Dzivarasekwa Extension to refer adolescents who would have come to collect their medication to CBAM for ongoing support.

The adolescents were given the option to choose the CBAM of their choice from a list that was readily available at the clinic. The project overall objective was to increase ART adherence from 65% to 100% for 150 adolescents in Dzivarasekwa by December 2015.

**Lessons learned:**

· Adherence to treatment increased to 95-100% for the 172 participating adolescents (93 girls; 79 boys)

· Drug fatigue due to being on treatment from infancy was cited as a contributing factor to lower adherence rate.

· The use of young CBAM proved to be an innovative strategy that enhanced the adolescent's self belief and esteem as they had someone who faced similar challenges but managed to survive and still look healthy. Some have established families.

· HIV-positive adolescents need factual information on how to establish intimate relationships, sexual and reproductive health.

**Conclusions/Next steps:** The concept of bridging the gap from paediatric ART to Adult ART for Adolescents through ART mentorship can be adopted by all Health Care providers as a strategy to enhance adherence. For increased efficacy of the project additional ART support services like viral load testing and management of side effects should be available, accessible and affordable.

## WEPED415

### INDIGENOUS WOMEN-CENTERED HIV CARE: RESPONDING TO CULTURE AND SAFETY

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**Background:** Indigenous women globally are disproportionately affected by HIV. In 2014, 30% of new diagnoses in women were among Indigenous women, despite Indigenous peoples representing just 4.3% of Canada's population. Alongside gender inequalities, the intergenerational impacts of colonialism in shaping Indigenous women's exposure to HIV infection are well known; and yet we know less of the voices and experiences of Indigenous WLWH in navigating HIV care and culturally safe practices.

**Methods:** As part of SHAWNA *(Sexual Health and HIV/AIDS: Women's Longitudinal Needs Assessment),* a community-based longitudinal project, we conducted 53 qualitative in-depth interviews with women living with HIV (WLWH) in Vancouver, Canada in 2015, 23 of whom were Indigenous women. Indigenous women participated in the development of the interview guide, the interviews and the data analysis. An adapted Medicine Wheel was used to identify conceptualizations of health. Indigenous women's narratives were analyzed drawing on decolonizing, critical and feminist theories and participatory research with WLWH.

**Results:** Many Indigenous WLWH shared the significance of spirituality and balance in their conceptualizations of health and HIV care. Narratives about health conjured up the legacies of colonialism wherein women recalled how culture, community and safety were stolen from them through colonial policies like the residential schools. Their narratives about interlocking oppression from care providers and agents of the State made suppressing their viral load challenging. Many identified culture as part of treatment but women stated obstacles to cultural revitalization from limited access to urban healing ceremonies and barriers to visiting home communities. Women wanted greater access to HIV services delivered by Indigenous peers, Elders and in groups. Ultimately, Indigenous family-centred HIV care that is responsive to

women's complex realities was not available and the current care landscape further jeopardizes Indigenous WLWH's health outcomes.
**Conclusions:** Despite the high prevalence of Indigenous WLWH, HIV services offer limited engagement with Indigenous epistemologies, spiritualities and collective healing. These stories construct a call for services to be more responsive to Indigenous women. Ultimately, women want their HIV care delivered in culturally safe and holistic ways that honour their resilience and Indigeneity.

## WEPED416

### WORK-RELATED CORRELATES OF ATTITUDES TOWARD ENGAGEMENT IN HIV PREVENTION AMONG VILLAGE DOCTORS IN CHINA

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**Background:** Most of China's HIV/AIDS cases are found in the rural areas[XL1]. China's Village doctors have played a significant role in improved access to health care for people living with HIV/AIDS (PLWHA). Their attitudes toward engagement in HIV prevention can have a direct impact on health and welling of PLWHA. Existing literature suggests the association of quality of working life, job satisfaction and burnout with engagement. However, there is a lack of rigorous academic research on village doctors' attitudes towards HIV prevention and their work-related factors, which can be reflected in poor policy-making and unjust distribution of resources. The purpose of the current study is to examine the work-related correlates of attitudes toward engagement in HIV prevention among a sample of village doctors in China, after controlling for basic demographic variables and others' attitudes. [XL1] Most of people living with HIV/AIDS (PLWHA) in China are rural residents.
**Methods:** A self-administered cross-sectional survey of 230 village doctors 20 to 74 years of age was conducted in Beihai, Guangxi, China. Measures included their demographics, work-related instruments (quality of working life, job satisfaction, and burnout), attitudes toward engagement in HIV prevention and others' attitudes. We correlated burnout with job satisfaction and quality of working life. We also performed multiple regression analysis using work-related factors, others' attitudes, and basic demographic information.
**Results:** Scales showed relatively good internal reliability among the sample of village doctors with Cronbach alphas ranging between 0.68 and 0.88. Correlation analysis showed that burnout, quality of working life, and job satisfaction were significantly correlated with each other ($p < 0.0001$). Multiple regression analysis indicated that attitudes of village doctors toward engagement in HIV prevention were significantly associated with work burnout ($\beta=-.13$, $p < 0.05$) and others' attitude ($\beta=.24$, $p < 0.0001$).
**Conclusions:** Exploring attitudes toward engagement in HIV prevention among the village doctors is especially important, since they are closely related to the health and well-being of PLWHA in the rural communities in China. HIV prevention intervention efforts should help village doctors to prevent work burnout through enhancing their working conditions, and general well-being.

## WEPED417

### PILL TAKING IN A RESOURCE-POOR SETTING IN SOUTH AFRICA: IMPLICATIONS FOR PRACTICE

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**Background:** Since 2011 isoniazid preventive therapy (IPT) has been offered widely to prevent tuberculosis (TB) disease among people living with HIV (PLWH) in uMgungundlovu District, South Africa. Clients who accept IPT take a daily tablet for six months, often in addition to antiretrovirals and other medications. In light of existing pill-burden and the historical mistrust of Western medical intervention in the region, we worked with Zulu communities to learn more about healthcare seeking, explanatory models of TB infection and disease, and the experience of IPT and pill-taking in general.
**Methods:** This study was embedded within a larger research project on the effectiveness of isoniazid. Utilising a hybrid of community-based participatory and ethnographic methods, nine individual interviews with PLWH offered IPT and eight focus group discussions (FGDs) with community members were undertaken in three sites of uMgungundlovu District from October 2014 to May 2015. uMgungundlovu has a high incidence of HIV-related TB, and public hospitals and clinics service predominantly overcrowded, marginalised Zulu communities. Transcripts were coded in NVivo version 10 and analysed using qualitative content analysis. Findings were member-checked and discussed with community advisory teams for validity.
**Results:** For many participants, sickness is represented solely by a physical manifestation of pain. Data suggest a general uncertainty about which health systems are trustworthy (Zulu versus Western healing practices, public versus private health systems). There is also confusion about the quality of pharmaceutical interventions due to unregulated pricing by chemists and street vendors. Lifelong treatment, e.g. antiretrovirals or blood thinners, may take precedence over short-term or presumptive regimens. Daily tablets may necessitate cleansing of the gut from the build up of long-term medications through vomiting practices and the use of suppositories.
**Conclusions:** In an environment with high pill-burden, pill taking for potential prevention appears secondary to treatment for lifelong illness or disease symptoms, especially pain-related symptoms. While the use of local herbalists is common, trust remains an issue in all spheres of health seeking, and transparent guidance on drug content and efficacy is desired. Cleansing practices may affect drug-efficacy, and healthcare providers should discuss optimal timing for cleansing and potential effects on drug action with client.

## WEPED418

### "GOOD MEDICINE": THE IMPORTANCE OF CULTURALLY-GROUNDED COMMUNITY-BASED RESEARCH WITH HIV-POSITIVE INDIGENOUS WOMEN: THE VISIONING HEALTH EXAMPLE

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**Background:** Despite a decade of HIV research in which Indigenous women in Canada have been a priority population, they continue to be inequitably impacted by HIV. Indigenous and non-Indigenous scholars agree that the on-going impacts of colonization that deliberately interrupted the inter-generational transmission of cultural values and teachings is the root cause of ill-health across Indigenous communities; however, the vast majority of research designs do not address this colonial legacy and do little to reconnect participants with their cultural traditions.
**Description:** *Visioning Health* was a strengths-based, culturally-grounded, arts-informed and community-based participatory research pilot project that explored the intersections of health, culture and gender from the perspective of HIV-positive Indigenous women. This academic-community partnership, including Indigenous and non-Indigenous team members, was guided by Indigenous principles and grounded in Indigenous culture in multiple ways that evolved over time. We worked closely with Traditional Knowledge Keepers to ensure that culture, ceremony and traditional teachings were not 'add-ons' but integral aspects of our research practice. We also used Indigenous methods such as sharing circles and arts-informed inquiry using traditional Indigenous art-forms. In total, we engaged 13 women across three research sites in semi-structured group research processes. Total time spent with each group was 50-60 hours. We followed this with participatory analysis and community-driven culturally-grounded knowledge translation and exchange that participants referred to as "good medicine".
**Lessons learned:** Incorporating culture and ceremony into our research design-was an important innovation that enhanced our research practice, and increased relevance and reliability of our research results. Unexpectedly, it also acted as a health promotion intervention by creating a safe space in which participants could explore, re-store and re-connect to their cultural teachings and their cultural identity. In turn, they reported a stronger sense of connectedness, self-determination (self-mastery) and social support.
**Conclusions/Next steps:** *Visioning Health* was a conduit for the positive Indigenous women in our research to reclaim their culture and reconnect to their Indigenous identity. Building on the success of this pilot study, we have secured funding for a culturally-grounded intervention study that specifically explores the connections between the Visioning Health approach and enhanced health for positive Indigenous women in Canada.

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## WEPED419

### DOES INTEGRATION OF TARGETED INTERVENTION PROGRAM WITHIN COMMUNITY ORGANIZATIONS AFFECT OUTREACH AND FUNCTIONALITY?

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**Background:** Avahan phase-III program in India focuses to reduce vulnerabilities among FSWs as well as MSM and make the Community Organizations (COs) strong and sustainable. Program focuses on (i) social protection (social entitlements and schemes) (ii) financial security, (access to formal financial sources), (iii) safety, security and justice, and (iv) institutional development. The earlier phases of Avahan program in India has led to some COs functioning with the Targeted Intervention (TI) program, and some without. This study assesses the differences of functioning between TI based COs and non-TI based COs.
**Methods:** Data were collected from 87 Community Organizations in India on CO level characteristics from May to July, 2015 as part of Avahan phase-III evaluation survey. This study uses data from 75 FSW based COs. Bivariate analysis between various profile and CO functioning indicators, and TI versus non-TI based COs was performed.
**Results:** Outreach of TI based COs was better than that of non-TI based COs, in terms of the number and percent of FSWs who registered as members at the CO. Only 19% COs reported having nodal crisis response teams in all sites. 96% COs responded to violence incidents in less than 24 hours. A higher percentage of non-TI based COs had a help desk compared to TI based COs (76% vs. 54%, p=0.033). There was no significant difference between the TI and non-TI based COs (p>0.05) in; annual financial plan (89%), external auditing (91%), internal auditing (88%) and a sustainability plan (61%). higher proportion of TI based COs reported that auditing was done compared to non-TI based COs (100% vs. 83%, p=0.009).
**Conclusions:** The TI based COs were able to reach a larger population which is an important factor for systematic capacity strengthening of Cos. It may be more beneficial for the program to integrate COs and the TI program. Not only will this encourage collaboration between the different aspects of HIV prevention and vulnerability reduction, it will also enable the COs to expand their outreach and services.

## WEPED420

### MECHANISMS FOR FAITH-COMMUNITY RESPONSE TO HIV: SURVEY OF TWO DECADES OF ENGAGEMENT WITH CASE EXAMPLES OF EFFECTIVE EXPERIENCE

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**Background:** A Fast Track approach calls for accelerated, more equitable and strategic delivery of services, along with advances on human rights issues, with the goal of ending AIDS as a public health threat by 2030. Community responses to HIV are an integral part of this strategy, however, they are not often integrated into national plans or sufficiently funded by domestic resources. UNAIDS estimates that to achieve Fast Track goals it will be critical to increase community-based services and advocacy (including investment for this). Evidence supports awareness that faith-inspired communities provide a range of HIV services, often filling gaps and serving key populations (as demonstrated in a 2015 special edition of The Lancet). These responses are often culturally
(or religiously) appropriate. However, there is limited translation of knowledge about faith-specific community response into policy and planning.
**Methods:** We report on a systematic literature review and linked case study conducted as part of a UNAIDS Best Practice effort. The review assessed literature on the faith response to HIV/AIDS (international scale, 2000-2015). The case study assessed distinctive models of faith-community response to HIV/AIDS by collating findings from a survey, indepth interviews (25) and programmatic documentation. Cases were selected based on assessment of their 'effectiveness' (demonstrating 'good public health' as well as 'good theology'), and variation (geography, religion, and service type).
**Results:** We identify unique intervention models for effective engagement with faith communities. Cases include targeted engagement with key populations such as sex workers; adaptations of ART to including 'blessing' and religious ritual for increased uptake; community financing models through congregational emergency funds; community systems strengthening which improve linkage to care; and theological engagement with religious leaders leveraging their role as 'key influencers' for prevention.
**Conclusions:** We identify positive and negative experiences of engagement with faith communities (which translates into challenges and opportunities for future engagement). There is a major knowledge-translation barrier between information and experience of (faith) community response to HIV, and effective policy engagement. This barrier perpetrates a historic lack of integration of community response into national public health strategy and investment.

## WEPED421

### "WE MUST BE REALISTIC, A LOT OF YOUNG PEOPLE DO NOT ABSTAIN": A QUALITATIVE STUDY TO UNDERSTAND THE EFFECTS OF TRAINING FOR CBO'S TO REACH YOUNG PEOPLE EFFECTIVELY

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**Background:** Developing interventions that target the right needs and take the context into account are essential for young people to have access to quality behavioural HIV prevention strategies and Sexual and Reproductive Health (SRHR) education. Some programmes are mainly based on providing knowledge, without taking the broader context into account. Sometimes programmes are based mainly on moral values instead of facts and evidence.[1] Training of trainers, related to effective intervention development and implementation, could be an effective way to reach a large number of community-based organisations (CBO's) and thus ultimately young people.
[1] Stanger-Hall K.F. & Hall D.W. (2011). Abstinence-Only Education and Teen Pregnancy Rates: Why We Need Comprehensive Sex Education in the U.S.. PLoS ONE 6(10): e24658.
**Methods:** We scaled up a Training of Trainers pilot project in which trainers support CBOs in qualitative programming following the intervention mapping approach. The aim of this study is to understand the impact of this project. Forty seven local trainers working for civil society organisations from 12 African countries were trained. They supported 142 CBO's in their countries in three years. For this qualitative study we analysed results of the training and support for 22 CBO's in 3 different countries, through analysis of; 40 in-depth interviews, 13 quality assessments[1] and 11 monitoring visits.
[1] Kirby, D., Laris, B.A., & Rolleri, L. (2006). The Impact of Sex and HIV Education Programs in Schools and Communities on Sexual Behaviors among Young Adults. Research Triangle Park, NC: Family Health International.
**Results:** Interventions are adapted and improved. Supported staff report to increase meaningful involvement of young people, strengthen linkages with other actors around them, identify the importance to conduct a needs assessment and more effectively address stigma and discrimination and gender inequality. CBO's implemented more activities to create demand among young people to access health services.
**Conclusions:** To fast track the HIV response and reduce other SRHR problems among youth, evidence of effective programming, who are culturally appropriate must be applied in practice on a large scale. From our project it is clear that working with a pool of trainers is an effective approach to support civil based organisations.

## WEPED422

### UNIFIED FACILITATION OF SERVICES TO REDUCE KEY POPULATIONS SOCIAL AND ECONOMIC VULNERABILITIES

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**Background:** Swasti is a health resource centre established in 2002 with a focus on achieving public health outcomes for those who are socially excluded and poor. Swasti had been implementing the Avahan Phase III initiative, supported by the Gates Foundation, across 84 community organisation in 5 states of India (Karnataka, Tamil Nadu, Andhra Pradesh, Telangana and Maharashtra). The Initiative has two major priorities. One is at an individual level, to reduce vulnerabilities of HIV among female sex workers, MSM and Transgender community (which affect risks) and second is to strengthening community organizations to make them robust and sustainable.
**Description:** Key populations (Sex workers, MSM & TG Community) are not able to access the schemes and services due to various reason like stigma, lack of knowledge, illiteracy etc. In order to overcome these challenges, Unified Help Desks (UHD) has been set up and facilitators have been appointed in all the community organizations to facilitate social protection and financial services. They also provide support when crises cases are reported. These facilitators will be the face of the

UHDs. A separate UHD phone number has been provided to each of the UHD and this number has been popularized with the key populations to dial in for any services and products related to social protection, financial services and crisis related incidents. This approach has been very successful and has provided a wonderful way to Sex workers, MSM & TG Communities to access many key services.
**Lessons learned:** Multiple services need to be provided by a community organization to the communities that are served by it, and a UHD helps to channelize all these services by providing a platform for the community. The easy accessibility and low cost of services truly embodies the spirit of "All for One, One for All".
**Conclusions/Next steps:** Within six months of establishment, the UHDs have been able to generate **39,632** applications on social protection and financial products. Apart from these, **4,983** cases of crises have been resolved among female sex workers. This confirms that Unified Help Desk approach is a new phenomenon and a sustainable module for providing services to the most marginalized communities.

## WEPED423

### A QUALITATIVE EXPLORATION OF PSYCHOSOCIAL CHALLENGES FOR PERINATALLY HIV-INFECTED ADOLESCENTS AND FAMILIES IN BANGKOK, THAILAND

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**Background:** Globally, pediatric HIV is becoming an adolescent epidemic, with perinatally HIV-infected (pHIV+) children surviving into adolescence and fewer infants infected at birth. pHIV+ adolescents are at increased risk for a host of adverse behavioral outcomes, yet few evidence-based interventions exist to meet their needs. Although Thailand has the highest HIV prevalence in Asia and is home to nearly 10,000 HIV+ adolescents, with thousands more younger HIV+ children, there are no evidence-based psychosocial interventions for this population. Studies identifying the psychosocial needs of Thai pHIV+ adolescents are sparse, thus the current study aimed to explore those needs to inform intervention approaches.
**Methods:** Focus group discussions (FGD) with pHIV+ adolescents aged 12-16 and their adult caregivers, as well as in-depth interviews with health/social work care providers were conducted at a research/ health care center in Bangkok, Thailand. FGD explored concerns about living with HIV, mental health, and risk behaviors, child-caregiver communication, peer relationships, and issues of adherence, disclosure, and stigma. Interviews examined critical issues for HIV-affected families, including disclosure, adherence, coping and mental health, and perceptions about needed psychosocial interventions. Data were analyzed thematically.
**Results:** Multiple challenges emerged from the data. Adherence to antiretroviral treatment was a significant challenge that was attributed to lack of adult support, medical factors, including side effects or not feeling ill, and not wanting to disclose or acknowledge sickness. Concerns about stigma and discrimination in Thai society emerged strongly, related to difficulty disclosing HIV status to children and to others. Most kept HIV a secret based on fear of rejection. Poor communication, misunderstandings, and conflict between children and caregivers was a key concern, based on the Thai cultural expectation of obedience, generation gaps, and harsh discipline. Respondents also identified positive approaches to addressing these issues including greater social and HIV+ peer support for children and better communication skills for children and caregivers.
**Conclusions:** Significant psychosocial challenges exist for Thai pHIV+ adolescents and families. Interventions to address these issues are needed that are adapted to the Thai context, given the particular cultural, social, and familial environment and the role of HIV stigma/discrimination.

## WEPED424

### STOPPING THE VIOLENCE BEFORE IT STARTS: EVIDENCE FROM A GBV PREVENTION PROGRAMME IN MALAWI

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**Background:** A growing body of evidence from sub-Saharan Africa highlights the interface between gender-based violence (GBV) and HIV infection. Recent studies indicate high levels of school-based violence in Sub-Saharan Africa. Predominantly, girls and women are viewed as victims, with boys and men as perpetrators.
Recent programme evidence suggests that these two populations are rarely tackled together; even fewer programmes focus on young girls and young boys. REPSSI has developed a unique holistic programme to prevent GBV that focuses on boys, girls, and their community.
We report here on results from a pre- and post-test survey.
**Methods:** A total of 497 (88.6%) out of 561 primary school pupils aged 10-18 years from nine schools in Lilongwe District, participated in the follow-up survey. Data was collected using an ACASI interviewer-administered questionnaire, which captured household poverty, mental health, and violence-related experiences and attitudes.
**Results:** At baseline, pupils mean age was 13.4±1.8 years; 50.1% were female. Poverty was high with 8.2% having endured a whole day without food in the past week. A quarter of pupils (25.3%) reported having ever been punched or hit on the head at home, 11.8% and 3.7% lived in households where parents shouted and hit each other at least once a week, respectively. At school, 39.4% reported receiving corporal punishment; 18.2% were teased and bullied, and 13.0% reported not feeling safe around school toilets. Pupils exhibited poor mental health (males=20.6%; females=16.4%. At follow-up, we found no changes in pupil's attitudes to gender based violence, improved mental health, or sexual health knowledge. However, over 70% of girls reported using skills acquired during the programme to prevent physical and verbal abuse. Almost 80% of boys reported using an acquired skill to prevent a girl from being verbally abused.
**Conclusions:** While this programme did not impact attitudes, young people were able to immediately use the skills gained on the programme to defend themselves and their peers. This study provides strong initial evidence that programmes aimed at young people can prevent GBV.

## WEPED425

### COMMUNITY-LED MECHANISM TO IMPROVE ACCESS TO HIV TREATMENT IN WEST AFRICA: A CASE OF THE STOP PROJECT

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**Background:** The Project STOP (Stop Stock Out Project) is a two years project implemented by ITPC West Africa to improve communities' access to HIV treatment through a community based monitoring of ART procurement and use. The project was implemented in Cote d'Ivoire, Gambia and Sierra Leone.
**Description:** Three Rapid Situational Analysis were conducted in countries to understand treatment access and supply chain management issues. Based on information collected, an Advocacy for Community Treatment (ACT) toolkit was developed to train community activists to address threats to treatment access. In addition they were trained on ART monitoring. Community data collection on ART availability and access was carried out by data collectors trained. Data collected were channeled to project national focal point in respective countries for analysis by project focal point. When drug shortage was proven, a Community Consultation Group made up of key populations, PLHIV, discuss on findings from data collectors and write to ITPC-West Africa for advocacy activities.
**Lessons learned:** Knowledge of affected communities on drugs procurement and supply systems in the three countries was strengthened.
Stock-out information were collected all over the 20 health regions in Cote d'Ivoire. This reduced to 3 days maximum breaks stock out which occurred more than 14 days. Ten treatment activists were trained and deployed in 10 health regions in the Gambia to provide feedback on the state of stocks in the Central Medical Stores.
Treatment Supply Chain was monitored in Sierra Leone, thus reducing drugs stock out of ARVs and laboratory equipment's from a maximum of 60 days to 5 days.
**Conclusions/Next steps:** Community mechanisms can generate real-time information that guides effectively drug and commodities quantification and supplies. But also STOP Project is an example of accountability in managing ART and this system involved PLHIV. Strengthen the monitoring of the access to services around local treatment committees at all districts levels.

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Train community representatives in decisions -making committees on the new funding models of Global Funds.
Reinforce the decentralization of point of care and drugs and laboratory equipment distribution in countries.
Establish community friendly feedback and reporting system within medical stores.

## WEPED426

### ROLE OF APPRENTICESHIP IN IMPROVING THE LIVELIHOOD OF HIV-POSITIVE ADOLESCENTS WHO PREMATURELY DROP OUT OF SCHOOL: THE MILDMAY UGANDA EXPERIENCE

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**Background:** HIV& AIDS has adverse effects on the livelihood of adolescents especially when parents die or are poor due to ill health. They are therefore left with no support, thus fail to keep clinic appointments, engaging in anti-social behavior like use of drugs, risky sexual behavior etc. Mildmay Uganda has an apprenticeship programme that helps such children acquire skills with the hope that these skills will help improve their quality of life. This study is aimed at exploring the extent to which this program contributes to the improvement their livelihood.
**Methods:** A retrospective review of data of all adolescents who had been enrolled on the apprenticeship programme from January 2012 to January 2014 was done to document their progress and any lessons learnt. A vulnerability index tool was used to assess vulnerability levels and at same time to measure the progress and improvement of livelihood.
**Results:** A total of twenty [20] adolescents enrolled on the apprenticeship programme during the stated period. Twelve [12] were male and eight [08] were female. They were in the age range of 17-24 years. Six [06] of them dropped out at primary level and fourteen [14] dropped out at secondary level. All the clients studied were orphaned either by one parent or both. The skills given were: tailoring [02], hairdressing [06], mechanics [03], plumbing [01], Jewellery [01], knitting [01], barbering [01], cobbler [01], cookery [04] among others. Sixteen out of the 20 [80%] have been able to use the acquired skills to improve their livelihood. The vulnerability level assessment outcome showed graduation from extremely poor to poor. These adolescents are now able to meet their basic needs, keep clinic appointments and are emotionally stable. Reasons for the 20% failure include distraction from the opposite sex and desire for a better job.
**Conclusions:** Apprenticeship is one way that can be used successfully to improve the livelihood of adolescents who prematurely drop out of school.

## WEPED427

### CHALLENGES TO COLLABORATION BETWEEN COMMUNITY ORGANIZATIONS AND PRIVATE COMMUNICATIONS AGENCIES IN DEVELOPING HIV/AIDS COMMUNICATIONS CAMPAIGNS IN QUEBEC/CANADA BETWEEN 2004 AND 2014

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**Background:** In Canada, since the beginning of the 1990s, community organizations have been collaborating with communications agencies to develop campaigns aimed at preventing new infections and fighting the stigmatization linked to HIV. At the onset of the epidemic, collaboration between the two sectors was facilitated by the urgency of the need to spread information, and the simplicity of the message - HIV = death. Campaign concepts were generally created by agencies, and proposed to community organizations. This aspect of the working relationship was renegotiated starting in the 2000s, as a result of the growing complexity of the messaging and the context of community action.
**Description:** Since the 1990s, COCQ-SIDA has produced numerous communications campaigns. These campaigns were always the result of partnerships with various communications agencies. With the therapeutic advances of the late 1990s and a better understanding of the impact of stigmatization on people living with HIV or AIDS, COCQ-SIDA was looking to renew its communications messages and approach. In light of this, in the early 2000s COCQ-SIDA developed new ways of working, increasing its autonomy in relation to its agencies, with the aim of producing campaigns that better responded to the needs of Quebec's HIV sector at the community level. It accomplished this by
1) choosing local communications agencies
2) introducing preliminary meetings with agencies
3) creating a very detailed client brief for each campaign.

**Lessons learned:** Implementing this changed working relationship between COCQ-SIDA and its agencies was not without challenges. Among other things, it led to the end of a partnership with a large international agency. Additionally, the presentation of nuanced data and the sheer volume of information to transmit did not always allow for the creation of the types of punchy messaging and visuals that were possible in the early years of the HIV epidemic.
**Conclusions/Next steps:** The evolution of the collaboration between COCQ-SIDA and its communications agencies through, among other things, the development of relationships with smaller communications agencies, allowed for the creation of campaigns adapted to the needs of Quebec's HIV sector at the community level.

## WEPED428

### THE RESEARCH IS THE INTERVENTION: STRENGTHENING NETWORKS OF PERSONS LIVING WITH HIV THROUGH PARTICIPATORY ACTION RESEARCH

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**Background:** HIV stigma and discrimination is a perpetual issue among many disenfranchised populations of people living with HIV (PLHIV) and a fundamental barrier to addressing the HIV epidemic. Grounded in the principles of the Greater Involvement of People Living with HIV (GIPA), the first U.S. implementation of the PLHIV Stigma Index was piloted in the greater Detroit, Michigan area. The study engaged PLHIV leadership into each phase of the research process, including data collection, analyses, and advocacy.
**Description:** The PLHIV Stigma Index survey was adapted and facilitated by the convening of The Global Network of PLHIV North America and *UNIFIED-HIV Health and Beyond* to capture the social, cultural and economic challenges. Five diverse HIV-positive leaders from key populations were recruited and trained to administer the survey. The interviewers, along with a coalition of HIV positive community leaders, formed The Leadership Council to govern the direction of the project. We report study implementation perspectives from group and individual interviews conducted with the leadership council (n=7), and study interviewers.
**Lessons learned:** Through community input having participatory-action research by PLHIV members facilitated the recruitment of populations considered "hard-to-reach". The HIV-status and racial, gender, and age diversity of interviewers improved the speed and scope of data collection from diverse PLHIV in the area. Interviewers' backgrounds also facilitated openness and sharing for interviewees, many of who have not had opportunities to feel heard or may be distrustful of organizations based on stigmatizing experiences. The research study increased the capacity of the leadership council to respond to community needs. Solidarity was fostered among council members who shared similar concerns despite belonging to different populations groups. The survey results informed four action priorities for the council: internalized stigma, HIV criminalization, youth and transgender empowerment, and faith-based networks.
**Conclusions/Next steps:** With increased solidarity and capacity across diverse communities, we learned the research itself was in fact the intervention—a stigma reduction approach to community concerns. We discuss opportunities for using community research as a means of reducing HIV stigma in local communities. This framework is currently being used to disseminate The Stigma Index in other North American cities and states.

# ACCESS TO APPROPRIATE PREVENTION, DIAGNOSIS, TREATMENT, CARE AND SUPPORT SERVICES, INCLUDING FOR CO-INFECTIONS AND CO-MORBIDITIES

## WEPED429

### EVALUATION OF DIFFERENT HIV RAPID TEST ALGORITHMS AS AN ALTERNATIVE TO HIV INFECTION CONFIRMATION AMONG MSM IN CHINA

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**Background:** The HIV rapid test is quicker, easier and more cost-effective than the traditional Western Blot (WB) plus Nucleic Acid Test in HIV diagnosis. This study aims to evaluate the performance of different HIV rapid test algorithms and advocate for revision of national guidelines in China.
**Methods:** From July in 2014 to June in 2015, On-site blood specimens were collected from MSM clients at You'an Hospital in Beijing, China. All specimens were screened with 3 rapid test kits and confirmed by WB plus nucleic acid test where necessary. Different combinations of rapid kits algorithms were explored and compared to the conventional standard algorithm. Shanghai Kehua, Xiamen InTec, and Zhengzhou Autobio HIV rapid test kits were selected in this study because of high sensitivity (>99%), high specificity (> 98%) in previous research and wider availability in China.
The results of two-kit or three-kit algorithms were recorded as positive or negative if all kits produced the same results and as indeterminate if any discordant result was produced.
**Results:** Among the 1419 on-site MSM blood specimens, 1046 were negative (2 of them were WB indeterminate, subsequently identified as negative by nucleic acid test) and 373 were WB positive. The sensitivity and specificity of the selected 3 HIV rapid test kits were 99.7 - 100% and 99.6 - 99.9% respectively; With the kits number increase in an algorithm, the positive predictive value(PPV) and negative predictive value(NPV) increased from 98.9% to 100% and 99.7% to 99.9% respectively while because of the indeterminate results, the positive coincidence rate, negative coincidence rate and total coincidence rate respectively decreased from 100% to 99.4%, 99.9% to 99.5% and 99.7% to 99.4%.
**Conclusions:** HIV rapid test algorithms work well, especially the three-kit rapid test algorithms given high sensitivity and specificity of rapid test kits. The findings add to the mountain evidence that revision of national guidelines in HIV detection in which a new three-kit HIV rapid test algorithm is essential.

## WEPED430

### HOW AMBIVALENCES IN THE PROVIDER-PATIENT RELATIONSHIP MEDIATES ACCESS TO CARE AND TREATMENT AMONG PEOPLE LIVING WITH HIV IN WESTERN KENYA: INSIGHTS FROM A QUALITATIVE STUDY

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**Background:** The provider-patient relationship is central to successful navigation through the 'cascade' of care for people living with HIV (PLHIV). Currently there is a paucity of qualitative data relating to the dynamics and consequences of this relationship within the Kenyan context. We aimed to explore the complexities and contradictions within this relationship to elucidate patient trajectories through the HIV 'cascade' of care.
**Methods:** This qualitative study, conducted in Kisumu, Kenya, draws upon 50 in-depth interviews with purposively sampled PLHIV at different stages of the 'cascade' (never initiated on antiretroviral therapy [ART], recently initiated on ART, initiated but defaulted from ART, stable on ART), along with 10 family members of people who died due to HIV, and 8 HIV healthcare workers. Data were collected in 2015-2016 using topic guides which explored patient testing and ART treatment journeys. Thematic analysis was conducted, aided by NVivo 10 software.
**Results:** The patient-provider relation was characterized by ambivalence. The relationship at the point of testing was commonly mutual, with providers often giving tailored, flexible advice and encouragement to diagnosed patients. However, where patients did not enrol at an HIV clinic, there was little attempt by providers to re-engage them. For those that initiated ART, the relationship frequently became asymmetrical with patients less empowered and more coerced, particularly during pre-ART adherence counselling sessions. During treatment, nurses often shifted responsibility for HIV management onto patients, providing limited practical or psychosocial support, making adherence problematic. This was often compounded by abusive communication which could result in patients either ceasing to attend the clinic or seeking healthcare elsewhere. However, where patients conformed to providers' ideal type of patient as an adherer to treatment, the relationship was often cordial.
**Conclusions:** The provider-patient relationship changes at different stages along the 'cascade' and is often characterized by ambivalence which influences patients' interactions with the health care system. Greater efforts to enhance ongoing supportive relationships between patients and providers with tailored and non-judgemental advice could promote patients' engagement in long-term HIV care and treatment and improve ART adherence.

## WEPED431

### OPPORTUNITIES AND CHALLENGES FOR 'TEST-AND-TREAT' IN EASTERN AND SOUTHERN AFRICA: INSIGHTS FROM A MULTI-COUNTRY QUALITATIVE STUDY ABOUT ACCESS TO HIV TREATMENT

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**Background:** In September 2015, the WHO released revised global guidelines to HIV treatment and care, recommending lifelong antiretroviral treatment (ART) for anyone testing positive for HIV - an approach that has been dubbed 'test-and-treat'. Health departments and key stakeholders, across sub-Saharan Africa, are currently developing strategies for to roll-out 'test-and-treat'. In the interest of informing these discussions, this paper draws on findings from a multi-country qualitative study about local perceptions of different HIV treatment programmes, and their influence on access to HIV treatment, to identify possibilities and challenges for the 'test-and-treat' policy.
**Methods:** The study was conducted in 2015-2016 and draws on interviews from 180 people living with HIV (including people who had, and had not accessed ART), 36 health care providers, and 36 family members of people known to have died from HIV. The participants were purposively sampled from sites in Uganda, South Africa, Tanzania, Kenya, Malawi and Zimbabwe. Topic guides explored patient and provider experiences of HIV testing, care and treatment services. Transcripts were imported into NVivo 10 analysed thematically.
**Results:** The analysis revealed three core challenges - cutting across all sites - to the implementation of 'test-and-treat': One, constantly changing guidelines, coupled with hybrid implementation systems, contributed to a general sense of confusion amongst health care staff around who to treat when, although this confusion manifested itself differently between countries. Two, perceptions of need for treatment have not changed in accordance with evolution in policy guidance, particularly amongst seropositive and asymptomatic people. Three, experienced and anticipated HIV-related stigma**,** meant newly diagnosed eligible patients refrained from using health services optimally. On the other hand, challenges pertaining to the interval between HIV diagnosis and ART initiation, and delays experienced by patients who are motivated to start on ART, are likely to be addressed through the introduction of 'test-and-treat'.
**Conclusions:** Country programmes implementing 'test-and-treat' must consider the role of time and readiness in shaping access to treatment. New and shifting guidelines, expanding the eligibility for ART, in combination with old perceptions of need for treatment and stigma, do not provide many PLHIV with the time and space needed to adopt a treatment-enabling patient persona.

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## WEPED432

### IMPACT OF EFFICIENT PSYCHOSOCIAL FOLLOW-UP ON VIRAL LOAD SUPPRESSION RATE AMONG HIV-POSITIVE PATIENTS TREATED WITH ANTIRETROVIRAL THERAPY

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**Background:** Psychosocial services play a great role in the management of HIV infected patients. In Rwanda, we consider this program as a priority for the success of HIV antiretroviral therapy. However, this program is challenged by a high turnover of trained staff, which results in a poor management of HIV infected patients in our health facilities.
To understand the impact of psychosocial follow up on the success of HIV treatment, we considered viral load test. We assumed that a suppressed viral load is a good indicator of antiretroviral treatment success.
**Methods:** This is a retrospective descriptive study, conducted in 35 health facilities from four district hospitals in Rwanda from September up to November 2014.
We assumed that an efficient psychosocial service can have an impact on viral load suppression rate for patients on anti-retroviral treatment.
A regular psychosocial recording in patient files, a psychosocial worker available, trained and working regularly (more than 5 hours daily) in HIV clinic, home visits for patients and availability of adolescent support groups were considered as independent variables. Logistic regression has been used to look for factors associated with viral load suppression.
**Results:** A total number of 35 health facilities were assessed (85.3% of all health facilities in the eligible area). 16 health centers (45.7%) had viral load suppression rate above 80% and 19 health centers (54.2%) have viral load suppression below 80%.
Among variables studied, trained psychosocial staff working regularly in HIV clinic was the only which is associated with viral load suppression rate, statistically significant with P= 0.001, OR= 16 and CI= 3.001- 85.304. Other variables, a regular psychosocial follow up recorded in patient files (P=0.078), home visits for patients (P=0.393) and availability of adolescent support groups (P=0.245) were not statistically significant.
**Conclusions:** This study showed that psychosocial support initiatives have a significant impact on viral load suppression. Availability of social workers in our health facilities is a key component in HIV care. We recommended availing social workers in all HIV clinics working at least 5 hours daily.

## WEPED433

### THE COST OF ACCESSING ART: SOCIO-ECONOMIC BARRIERS TO CONTINUOUSLY ACCESSING ANTIRETROVIRAL TREATMENT (ART) FROM THE PERSPECTIVE OF LONG-TERM ADULT ART USERS AT A PUBLIC HEALTHCARE CLINIC IN DURBAN, SOUTH AFRICA

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**Background:** The South African Antiretroviral Treatment (ART) programme is the largest ART programme in the world, with over 2.5 million people receiving treatment. However, the rapid increase in ART users has resulted in health system barriers that threaten the continuity of access and cause disengagement, which potentially has a significant impact on the success of the ART programme in the future. This ethnographic investigation examined barriers to continuously accessing ART, as perceived by ART users in the public healthcare system in Durban, South Africa.
**Methods:** A mixed methods ethnography was conducted in an urban ART clinic based at one of Durban's largest public hospitals. A total of 190 participants were involved in this study. Ten in-depth interviews, four focus group discussions and 150 questionnaires were completed with adult male (n=57) and female (n=133) ART users, who had been on treatment for more than one year. Participant observation was conducted for a period of 7 months within the ART clinic. The data was triangulated, coded and thematically analysed using NVivo 10 and SPSS software.
**Results:** A number of important social factors were elucidated, including stigma (healthcare, social and work related), gender, personal health beliefs and social support. Stigma due to service design and implementation posed an important obstacle for continued access to treatment. Various economic factors were reported and included transport costs, time off work, monthly visits and irregular income. Borrowing money from relatives was described as a common strategy to navigate costs or lack of funds. However, the monthly visits to access treatment impact on employment, presenting a more challenging obstacle to overcome, since they are beyond the control of the individual.
**Conclusions:** Remaining in care is a challenge that ART users have to face on a monthly basis to ensure their own health and survival. Social and economic factors threaten continuous access to the ART programme, which in the long term may lead to individual disengagement from the programme. The study highlights the importance of conducting implementation science projects to address socio-economic challenges within the healthcare setting to improve long-term ART outcomes and retention in ART services.

## WEPED434

### SOCIAL DETERMINANTS OF RETENTION IN CARE AMONG MEN WHO HAVE SEX WITH MEN (MSM) AND TRANSGENDER WOMEN *(WARIA)* LIVING WITH HIV IN INDONESIA: A CROSS-SECTIONAL STUDY

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**Background:** Many people living with HIV in Indonesia do not consistently visit health care once diagnosed. Accordingly, only 10-20% of all HIV-positive people currently receive ART. As Indonesia is a country where being gay or homosexual is highly stigmatised, MSM and *waria* (Indonesian term for transgender women) living with HIV face unique barriers in accessing health care, compared to other populations. Therefore, we sought to explore the predisposing, enabling, and reinforcing factors that promote retention in HIV care.
**Methods:** This cross-sectional study involved 298 self-reported HIV-positive MSM (n=165) and *waria* (n=133) in seven major cities in Indonesia. Participants were recruited using targeted sampling and interviewed using a structured questionnaire. In this analysis, we defined retention in HIV care as at least one health-care visit every three months once a person is diagnosed HIV positive. A stepwise multivariable logistic regression was applied to test factors associated with retention in care.
**Results:** Of all participants, 66% were adequately retained in care, and about half were already on ART. Overall, MSM participants were younger ($p < 0.05$), and had higher rate of retention in care compared to the *waria* group ($p < 0.01$). Retention was more likely among participants who had been exposed to HIV-related information from the internet (AOR, 2.12; 95% CI: 1.01-4.46), enrolled into a medical insurance program (AOR, 2.81; 95% CI: 1.27-6.21), or were currently on ART (AOR, 6.08; 95% CI: 3.00-12.3). Conversely, individuals reporting stronger social support (AOR, 0.54; 95% CI: 0.32-0.92) and membership in an HIV-related organization (AOR, 0.47; 95% CI: 0.24-0.92) were less likely to be retained in care.
**Conclusions:** Our findings suggest it might be possible that increasing internet-delivered HIV information could improve retention in care, and that it is crucial to provide access to medical insurance for MSM and *waria* living with HIV. More research is needed to identify how social support and organizational membership affect retention in care of these groups in Indonesia.

## WEPED435

### RANDOMIZED CONTROLLED TRIAL OF A PEER NAVIGATION INTERVENTION TO IMPROVE RETENTION IN HIV CARE AND VIRAL SUPPRESSION AMONG HIV+ MEN BEING RELEASED FROM LARGE URBAN JAIL: POTENTIAL MEDIATORS AT BASELINE

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**Background:** Antiretroviral therapy (ART) has both clinical and public health benefits, yet little is known about potential mediators of retention in HIV care and viral suppression (VS) for HIV+ persons released from incarceration.
**Methods:** We recruited 356 HIV+ jail inmates, performed a baseline assessment, and randomized them 1:1 (180 intervention, 176 control) to a peer navigation intervention vs. transitional case-management control upon release. Viral load blood samples were drawn at baseline, & follow-up. The follow-up is underway. Here we report baseline associations of two dependent variables: retention in HIV care (at least 3 primary care visits in 12 months) and VS (viral load < 200) among those prescribed ART. The main independent variables were self-reported access to care (6-item scale, alpha =0.78,), competing basic needs (5-item scale, alpha =0.80), life chaos (6-item scale, alpha =0.81,), and social stigma (12 items scale, alpha =0.77). We conducted separate multivariate logistic regressions of retention in care and VS with each potential mediator independent variable, controlling for sociodemo-

graphics and CD4 count. To gauge the magnitude of the association, we used predictive margins to estimate values of retention and VS for values of independent variable 1 SD above and below the mean, and 95% CI of the difference with p-values.
**Results:** Among 356 participants, mean age was 39.6; blacks were 42%, Latinos 31%, whites 27%; MSM 50% transgenders 15%. Half had annual incomes of $20,000 or less, while 55% were uninsured. Overall 46% were retained in HIV care and 50% had VS. Significant multivariate correlates of both retention in care and VS were access to care, competing needs, and social stigma (Table 1).
**Conclusions:** Access to care, competing basic needs, and social stigma were strongly associated with continuum of care for HIV+ men leaving a large U.S. jail, and make key targets for the intervention underway.

| | Retention | | | Viral Suppression (VS) | | |
|---|---|---|---|---|---|---|
| Potential Mediator Variables (no. items) | 1 SD Above Mean | 1 SD Below Mean | Difference in probability of retention (95%CI of difference) | 1 SD Above Mean | 1 SD Below Mean | Difference in probability of VS (95%CI of difference) |
| 1. Access to medical care (6) | 0.74 | 0.46 | 0.28 (0.14, 0.41)**** | 0.61 | 0.40 | 0.21 (0.07, 0.34)*** |
| 2. Facilitators of care (5) | 0.92 | 0.74 | 0.18 (0.07, 0.30)*** | 0.57 | 0.63 | -0.06 (-0.21, 0.10)ns |
| 3. Competing needs (5) | 0.62 | 0.78 | -0.16 (-0.29, -0.03)** | 0.44 | 0.63 | -0.19 (-0.33, -0.06)** |
| 4. Life chaos (12) | 0.51 | 0.69 | -0.18 (-0.31, -0.04)** | 0.45 | 0.57 | -0.12 (-0.26, 0.02)ns |
| 8. Social stigma (12) | 0.55 | 0.72 | -0.17 (-0.31, -0.04)** | 0.46 | 0.61 | -0.15 (-0.30, 0.00)* |
| 9. Social support (5) | 0.65 | 0.53 | 0.12 (0.00, 0.25)ns | 0.55 | 0.46 | 0.09 (-0.05, 0.22)ns |
| *p<=0.05; **p<0.01; ***p<0.001; ****p<0.0001; ns: p>0.05 Separate multivariate logistic regressions and predictive margins controlling for age, race/ethnicity, gender by risk group, education, income, insurance status, mental health and CD4 | | | | | | |

*[Predictive probability of retention and HIV viral suppression in HIV care with potential mediator variables]*

## WEPED436

### UNMET MENTAL HEALTH AND SOCIAL SERVICE NEEDS OF FORMERLY INCARCERATED WOMEN WITH HIV LIVING IN THE DEEP SOUTH

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**Background:** In the U.S., the Deep South is the epicenter of new HIV infections (CDC, 2014). Additionally, new HIV diagnoses among women have remained steady since 2008. The Southern and female HIV epidemics overlap demographically (rural, Black). Similarly, the psychosocial risk factors for HIV-infection and incarceration dovetail for women, especially substance abuse and victimization. Given the significant need for mental health and social services of this population—women living with HIV who have incarceration histories—we sought to triangulate information about services offered/needed, and utilization/satisfaction with those services.
**Methods:** We focused on two urban areas in Alabama, Montgomery and Birmingham. We gathered three types of data:
(a) We conducted qualitative interviews with HIV-positive women (n = 28) who had been incarcerated 2x or more in jail/prison. We transcribed interviews verbatim and used content analysis with multiple, independent coders to elucidate themes related to their mental health and social services experiences.
(b) We also conducted qualitative interviews with key informants (n = 11), including front-line service providers and managers at non-profits focused on people living with HIV, previously incarcerated women, etc. Finally,
(c) we conducted an internet search for governmental and non-governmental organizations in both cities providing services in ten domains, including health, mental health, post-incarceration/re-entry, transportation, etc.
**Results:** Triangulating across sources, the following themes emerged:
(a) Criminal offenses were primarily drug-related; substance use treatment is available but does not appear to be based on evidence-based practice.
(b) No re-entry counseling was offered to most women for most releases. Re-entry services that address subsistence needs, such as housing and transportation, were judged as vital.
(c) HIV healthcare services provided by university-affiliated clinics were judged as life-saving. And
(d) chief unmet needs across data sources were services to address job training/placement (to promote financial independence) and treatment for trauma/PTSD (which precipitates drug relapse).
**Conclusions:** In Alabama, the most needed and helpful services for formerly incarcerated HIV-positive women were offered by struggling non-governmental organizations. Intense coordination of services across agencies, framed as re-entry counseling, and the addition of long-term services to promote independence, are needed to improve the quality of life of this highly stigmatized, vulnerable group.

# POLICIES REGARDING HIV PREVENTION, DIAGNOSIS, TREATMENT, CARE, PROTECTION AND SUPPORT

## WEPED437

### ARE KEY COMPONENTS OF COUNTRY-LEVEL PEDIATRIC NORMATIVE GUIDANCE KEEPING UP? A TWENTY-COUNTRY REVIEW

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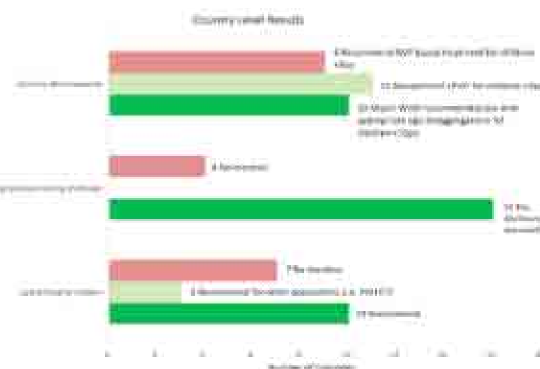
**Background:** As of 2014, 2.8 million children are living with HIV (CLHIV) worldwide, and programming high-quality pediatric HIV care remains a priority.[1, 2] This study examined the national HIV guidelines of 20 PEPFAR priority countries for content related to key components of pediatric service delivery that have changed rapidly in recent years, and as such tend to vary across countries with a high burden of pediatric HIV.
**Methods:** The latest HIV guidelines for 20 PEPFAR priority countries were reviewed for content related to: (1) nurse-managed pediatric HIV service delivery (task-shifting), (2) pediatric disclosure, and (3) first-line pediatric antiretroviral (ARV) regimens. For this review, pediatric disclosure was defined as the process by which a child learns his or her HIV status. The 2015 WHO pediatric ART guideline recommendations were considered the standard of care.[3,4,5]
**Results:** Of the 20 country guidelines reviewed, 10 of the 20 countries (50%) referenced the importance of task shifting to increase access to care for children living with HIV (CLHIV). Language supporting the initiation of the disclosure process during childhood was included in 16 of the 20 reviewed guidelines (80%). The recommended age to start disclosing, however, varied, as did guidance on who should lead the process. Ten country guidelines (50%) included first-line treatment regimens matching WHO recommendations for children < 10 years of age. Only 11 countries (55%) recommended a Lopinavir/Ritonavir (LPV/r)-based ART regimen as first line for children younger than three years of age. In adolescents older than 10 years, all but one of the reviewed guideline (95%) documents matched WHO guidelines. (See Table 1).



*[Country Level Results]*

**Conclusions:** As best practices in the pediatric HIV service delivery evolve, country programs must continue to do so as well. Normative guidance is critical to increasing access to high-quality services for CLHIV. Recommendations on appropriate task-shifting, pediatric disclosure, and effective first line therapies often keep pace with (or even outpace) international normative guidance. This review highlights a few of the current gaps where service providers and policy-makers may improve existing guidelines so that CLHIV increasingly have the opportunity to thrive.

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## WEPED438

### SIGNIFICANT ACHIEVEMENTS FOR THE KEY POPULATIONS MULTI-SECTORAL HIV PROGRAMMING IN UGANDA (2011-2015): EVERY ONE COUNTS

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**Background:** In 2011, Uganda acknowledged that sex workers, MSM, PWIDs, uniformed service men, fisher folks among others, were at increased risk of HIV; with barriers to accessing HIV services compared to the general community. Guided by the global movement to target sources of new infections amidst the primitive socio-cultural and legal environment, the country embarked on a road map to improve HIV response among KPs. This paper describes the programmatic milestones and achievements made in HIV response among KPs in Uganda.
**Description:** Initially Uganda identified barriers to the KP response to include; limited coordination and representation of KP communities, lack of agreed indicators to track interventions, and knowledge on the KPs sizes and profiles, uncoordinated provision of KPs friendly health services, stigma and discrimination. Since 2013, HIV Experts and leaders visited the India BRIDGE and SHARE projects to bench mark HIV programming for KPs in settings with hostile legal environment. Following the visit, the national Multi-sectoral KPs coordination committee was setup to track and re-organize the HIV response among KPs. The committee meets quarterly p.a to guide and direct HIV response among KPs in Uganda.
**Lessons learned:** The KPs have representatives to the Global Fund Country Coordination committee, MARPs steering committee and MARPs sectoral committees that coordinate the HIV response in Government. Due to local KP advocacy, Uganda received a Global fund grant worth USD 1.2million, which has been used to strengthen leadership for KP networks and accelerate HIV services delivery among KPs in 11 districts. Uganda conducted a KPs profile and size estimate study that informed targeting for the national KPs programming.
Over 2000 KPs are accessing HIV services, from the MOH/CSOs collaboration, KPs friendly clinics in four national and Regional level government hospitals.
The repeal of the Anti-Homosexuality Act 2013, resulted in increased demand and access health services by KPs.
**Conclusions/Next steps:** Previously considered hostile, Uganda is fast progressing towards advocating and offering KPs friendly services. The country is embarking on completing the KP priority action plan and guidelines for HIV services provision to KPs. The country plans to conduct nationwide hotspot mapping and KP size estimate to further guide HIV programming.

## WEPED439

### ACCESS TO ANTIRETROVIRAL TREATMENT, TOWARD 90-90-90 GOAL IN ANTENATAL CARE IN THE AMAJUBA DISTRICT

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**Background:** The KwaZulu Natal (KZN) province in South Africa has high antennal HIV prevalence rates, an estimated 40.1% in 2013. Improved access to ART has resulted in declining HIV prevalence rates in some districts of KZN. In Amajuba, for example, the HIV prevalence rate has declined from 46.0% in 2006 to 32.8% in 2013 with a concurrent increase in the uptake of ART among pregnant women.
**Description:** In 2013, the South African Department of Health's (DoH) policy changed from a single dose ART prophylaxis to lifelong ART initiation for all mothers who tested HIV positive. The PMTCT accelerated plan, a national DoH initiative to address high transmission areas, comprising both facility and community based activities initiated community dialogues to encourage service uptake as well as the mothers-to-mothers peer to peer support programme where mentor mothers convened support groups with newly initiated mothers to encourage and offer support with ART.
At the facilities, a steering committee was set up and all clinics were encouraged to produce process maps of their PMTCT facility and regular feedback sessions were held with the clinic staff where they were able to present to other facilities on the progress made and challenges they faced.
**Lessons learned:** These interventions have led to an increase in the uptake of ART with mothers initiated on ART at ANC increasing to a high in 2014. Having more clients on lifelong ART is an important prerequisite for decreasing population level HIV incidence.
**Conclusions/Next steps:** In a setting where almost all mothers present for antenatal care at a health facility, there is a great opportunity to initiate patients who are found to HIV infected. A strong community support initiative running parallel to facility based services can improve ART adherence with wider public health benefit.

| Year | Number of pregnant women initiated on ART |
|---|---|
| 2012 | 754 |
| 2013 | 1754 |
| 2014 | 2448 |

*[Antenatal clients initiated on ART in the Amajuba District of KwaZulu Natal]*

## WEPED440

### ADOLESCENT HEALTH POLICIES IN UGANDA! MAKE THEM REAL

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**Background:** Uganda has a significant young population, approximately 53% of the population are under the age of 15 years; and one in four are aged 10-18. Uganda's Adolescent Sexual and Reproductive Health Policy aims to mainstream adolescent health concerns into the national development agenda; and improve the quality of life of adolescents, who have specific health and social needs. The policy has a number of objectives, including to provide and increase availability and accessibility of quality information and health services to adolescents and to provide policy makers and key actors guidelines for addressing adolescent health concerns. while Uganda has a comprehensive policy, it is not operationalized. Both district health officials and adolescents do not know about the policy.
**Description:** Community Health Alliance Uganda collaborated with two networks of young people to sensitise decision-makers and youths about the adolescent health policy in 2015. The training included 50 decision makers including parliamentarians in the districts of Nakasongora, Luwero, Namutumba and Bugiri. The youth networks trained 150 youth advocates on adolescent health policy. Youth advocates learnt how to identify opportunities and engage in the design, implementation and monitoring and evaluation of programmes for young people. This included specifically demanding youth-friendly services in health facilities, where young people are involved in the design and implementation.
**Lessons learned:** Young people who understood the adolescent health policy were better able to demand health services because they knew the responsibilities of government
Training youth advocates resulted in specific asks for youth-friendly services and spaces managed by young people themselves
**Conclusions/Next steps:** Young people's advocacy has led to greater commitment and intensified support for actual implementation of the adolescent health policy from district level officials, parliamentarians, policymakers, programmers, young people and parents. 50 youth friendly corners were established. The focus on a specific ask for advocacy provided a practical focus of the advocacy skills learned and hands-on experience engaging with decision-makers has established an ongoing dialogue between the various groups.

## WEPED441

### WHAT IS THE STATUS OF NATIONAL COMMITMENTS AND POLICIES FOR MULTISECTORAL HIV AND AIDS RESPONSE FOR VULNERABLE CHILDREN?

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**Background:** With national responses for orphans and vulnerable children (OVC) increasingly incorporated into broader social protection and child protection efforts, the National Commitments and Policy Instrument (NCPI) of the 2014 Global AIDS Response Progress Reporting (GARPR) was revised to evaluate the commitment to HIV-sensitive social protection in national HIV and AIDS programmes. The 2014 NCPI data were analysed to assess: a) the extent to which national HIV and AIDS responses have integrated HIV and AIDS programming into sectoral and multisectoral policy, strategy, and planning; and b) the extent to which children affected by AIDS are supported within child protection, social protection, and other development-focused policy, strategy, and planning.
**Methods:** Quantitative and qualitative analyses were conducted on the 2014 NCPI responses from government and civil society stakeholders; HIV domestic spending data from 2009-2013; and National AIDS Spending Assessments.
**Results:** In 2014, 119 out of 201 countries submitted NCPI reports (59%). The majority of the 119 countries (97%) responding to the NCPI had a national and multisectoral HIV strategy in place. Only two-thirds of respondent countries noted the integration of HIV into poverty alleviation strategies and less than one-fifth reported integration of HIV into a sector-wide approach. Seventy percent of countries re-

porting OVC spending from 2009-2013 show that international sources accounted for 90% or more of total OVC funding. Further, laws and policy environments that negatively impact key populations' access to prevention, treatment, care and support services were also prevalent.
**Conclusions:** An effective national HIV response is premised on strong interactive links between all national sectors, strategies, policies, and planning instruments. This analysis reveals that while some headway has been made to integrate HIV responses into a broader multisectoral and HIV-sensitive approach, more effort is required. Further integration of HIV into poverty reduction strategies, as well as the adoption of a cross-sectoral approach and the commitment of adequate national resources, are encouraged to create a comprehensive policy and planning response to the epidemic, and to meet the needs of orphans, children, and youth vulnerable to HIV.

## WEPED442

### TEST AND TREAT: MINIMUM PROGRAM AND FINANCIAL CONSIDERATION FOR A NATIONAL PROGRAM IN A SCENARIO OF DIMINISHING FUNDING FOR HIV

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**Background:** The global HIV treatment guidelines, aiming to end HIV as public health threat by 2030, evolved from absolute lymphocyte counts< 1200 and CD4 count < 200/cmm to CD4 < 350/cmm, < 500/cmm and recently, to test and treat. Recommendations, though scientifically evidenced, carries lot of operational and programmatic considerations. Cut off of CD4 < 350 is followed as the eligibility for ART in India (soon to be revised to < 500). Clinical stage 3 & 4, pregnant women, children below 5 years, HIV TB and hepatitis C co-infected are eligible irrespective of CD4 count. We attempt to quantify implications of these guidelines.
**Description:** A desk review of number of PLHIV estimated and in HIV care was done. The basic unit costs currently used in the program for ARV and its monitoring were used to calculate financial implications.
**Lessons learned:** There are estimated 2.1 million PLHA in India, 11,70,006 are already enrolled under the program with 9,19,141 receiving ART and rest receiving Pre ART care. Adopting the "treat all" WHO recommendation translates into immediate need for all these 2.5 lakhs PLHIV. There are estimated 220,000 new enrollments in HIV care that would be the additional load on the existing ART centers. The increased work load will need expansion of facilities, commodity supply and additional Human resources.
The detailed immediate implications are tabulated below

| Implication | | Current scenario (CD4<350/cmm) | Immediate additional implication of treat all (2.5 lakh PLHA in pre ART) | Future implications Year 1 (2.2 lakh new estimated enrollments / year) |
|---|---|---|---|---|
| Program expansion | Number of centers | 520 ART centers | 650 ART centers, Additional HR, training and infrastructure costs | Maintain number of centers |
| Commodity cost (considering only ARV, and monitoring treatment as bare minimum) | ARV | Baseline | 28 million USD over baseline | Baseline + 56 million USD every year |
| | CD4 test | Baseline | Baseline plus 1.45 million | Baseline plus 2.9 million USD |
| | Viral load | Baseline | Baseline plus 7.25 million USD | |
| • Not including program management, M & E, supervision costs | | | | |

*[Immediate implications]*

**Conclusions/Next steps:** There is ample evidence on long term benefits of test and treat approach for individual as well as prevention globally. However, adaptation of these guidelines translates into extensive programmatic issues like more service delivery sites, human resources, training and commodities. These factors need to be well thought and planned before the adaptation really occurs and the governments, development and funding partners should consider this if the targets under 90-90-90 and ending AIDS as public health threat is to be achieved by 2030.

## WEPED443

### BUILDING CONSENSUS TO PROMOTE SYNERGY BETWEEN BIOMEDICAL ADVANCES AND HUMAN RIGHTS IN THE CANADIAN RESPONSE TO THE HIV EPIDEMIC

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**Background:** Three national HIV organizations indentified unproductive tensions in Canada between community-based responses to HIV and responses that privilege biomedicine. This dynamic may have contributed to ongoing gaps in the HIV response, including failure to adequately address the complex and inter-related health, psychosocial, and basic support needs of marginalized people living with and affected by HIV. We struck a working group to develop a *Canadian Consensus Statement on the health and prevention benefits of HIV antiretroviral medications and HIV testing*.
**Description:** We
(1) held two focus group consultations with a diversity of stakeholders;
(2) researched and drafted the Consensus Statement;
(3) solicited key opinion leader feedback;
(4) conducted an open, six-week on-line consultation;
(5) finalized the Statement taking into account key opinion and public feedback;
(6) developed communications tools and dissemination strategies for each stakeholder group; and
(7) published the consensus statement and invite signatures from individual and organizations.
**Lessons learned:** Stakeholder groups in the civil society response to HIV in Canada (key populations, heath care professionals and researchers, AIDS service and other community-based organizations) support a national HIV response based on the latest scientific evidence and human rights. Two factors contributed consensus. First, we consulted broadly with stakeholders, through successive rounds, over a prolonged period of time (18 months). Second, we used the draft Consensus Statement to set out in plain language recent scientific and medical breakthroughs in HIV, and the importance of human rights. Significant tensions existed regarding expanding HIV testing. Specific and detailed statements regarding HIV testing were required to achieve consensus. Acceptance of the synergy between biomedical advances and respect for human rights is key to promoting GIPA/MEPA and increasing access to and uptake of HIV testing, ARV treatment, PEP and PrEP.
**Conclusions/Next steps:** We will identify champions to promote the Consensus Statement as a basis to foster collaboration among stakeholder groups committed to developing policies, programs and interventions that integrate biomedical advances and human rights. This ongoing consensus building process and the Consensus Statement can become important tools for addressing the complex needs of the diversity of people living with and affected by HIV in Canada, especially the most marginalized people.

# POLICIES ADDRESSING SOCIAL AND ECONOMIC DETERMINANTS OF VULNERABILITY

## WEPED444

### HARNESSING THE POTENTIAL OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) POLICY AND REGULATION TO SUPPORT AND SUSTAIN GHANA'S AIDS RESPONSE

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**Background:** Ghana's Shared Growth and Development Agenda puts a huge premium on the development of large infrastructure in the energy and oil/gas sectors. Bodies such as ECOWAS, SADC and the AU have strategically prioritized large capital projects as a way to boost economic growth and regional integration. Studies in Lesotho, Mozambique, Namibia and South Africa confirms the direct links between the development of large capital projects and HIV prevalence. Ghana has made huge strides in dealing with the HIV epidemic and has a current prevalence rate of 1.3%. Sustaining these gains require innovative ways of addressing key drivers of the epidemic given the emphasis on infrastructure development. The UNDP/AfDB initiative on strengthening the integration of HIV and gender issues in EIAs aims to ensure the proper estimation of HIV risks and the development of appropriate measures to proactively mitigate the negative social and environmental impacts associated with the execution of large projects.

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**Description:** The overall purpose of the initiative is to strengthen the integration of health and gender issues in Ghana's EIA processes through a partnership with the National AIDS Council, EPA, National Development Planning Commission and the Ghana Health Service.
**Lessons learned:** Though the initiative is in its infancy, it has demonstrated the potential to involve non health sectors for the achievement of health outcomes. This has included (a) creating awareness among public and private sector actors within non health sectors - mines, energy, gender and academia - of the need to work with the NAC and Ghana health services more systematically in the EIA process; (b) development of an 8 point country action plan (2016-2018) focusing capacity development in the areas of health, gender, human rights and occupational safety in university curriculum; and (c) initiation of a process to develop a certification system for EIA practitioners which includes health and gender as requirements.
**Conclusions/Next steps:** Given the rapid expansion of the oil and gas industry in Ghana and the linkages between large projects and health, mainstreaming HIV and gender issues into the EIAs provides an innovative way for non health sectors to contribute to HIV and health outcomes in Ghana.

## WEPED445

### HEALTH, HIV AND GENDER IN INTERNATIONAL ENVIRONMENTAL AND SOCIAL SAFEGUARD SYSTEMS: ARE WE DOING ENOUGH?

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**Background:** Most large capital projects in Sub-Saharan Africa are funded by multilateral development banks (MDBs). All of these developments require an environmental and social impact assessment to be conducted prior to the approval of a loan - both in terms of national environmental legislation and as a funding requirement for most MDBs. There is evidence that shows that in spite of these requirements, HIV prevalence, and other co-morbid conditions are always exacerbated around large development projects. Why is this the case?
**Description:** The UNDP/AfDB initiative on Integrating HIV and Gender Equality into Environmental Assessment Processes in Africa has carried out studies into the causes of this conundrum. One such study involved a desk review of five international environmental and social safeguard systems (ESSs) to determine the extent of integration of social and health issues. The systems chosen included those of the World Bank and IFC, as these are applied globally at government and private sector levels respectively.
**Lessons learned:** All the ESS systems reviewed have weaknesses. The main issue being that none clearly define upfront what is meant by 'social', 'health', 'wellbeing' and 'gender'. The inclusion of health issues is also inconsistent within and between ESSs. In terms of communicable diseases (CDs), HIV and STDs are mentioned by all, but there is no identification of other CDs and their linkages with HIV, such as TB. Other development-induced health issues such as malnutrition and psychological problems including mental health are barely mentioned, while risk factors of non-communicable diseases are not recognised in the context of development project ESIA at all. None of the ESSs reviewed make the explicit link between gender and health and none offer a comprehensive analysis of the underlying causes or drivers of health and HIV issues.
**Conclusions/Next steps:** The study recommended that the terms 'environment', 'social', 'health' and 'gender' should be more clearly defined ESS. If gender, community health and occupational health issues are all given full consideration prior to a loan agreements signed for these projects, there is an opportunity for much greater inter-sectoral cooperation, both within the MDB project appraisal teams and in the host nation's governance structures.

# POLICIES ADDRESSING HIV AND AIDS IN THE WORKPLACE AND EDUCATIONAL INSTITUTIONS

## WEPED446

### WE ARE FAMILY: INCLUSIVE HUMAN RESOURCE POLICIES TO ENSURE GREATER ENGAGEMENT AND OPPORTUNITIES FOR TRANSGENDER EMPLOYEES: EXPERIENCE FROM INDIA HIV/AIDS ALLIANCE

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**Background:** Lack of employment opportunities is one of the biggest challenges faced by transgender people in India. Stigmatization and harassment at the workplace further compound this issue, as transgenders face transphobia in many organizations. An enabling and sensitive work environment is key to address the unique challenges faced by this group.
**Description:** India HIV/AIDS Alliance (Alliance India) follows a community-centric approach in its programmes and actively recruits qualified staff from affected communities. The organization strongly believes in equal opportunity principles and has laid down a clear human resource policy that outlines core values of non-discrimination, including free expression of gender identity. With zero-tolerance for all gender-based discrimination, Alliance India also has a sexual discrimination and harassment policy to respond effectively in the event of any incidents. Periodic sensitisation training programmes are carried out for staff and service providers used by the organization. Alliance India successfully negotiated a comprehensive private health insurance policy that includes provisions for partners of transgender and sexual minority staff. Gender identity, HIV status, and health information of every employee are kept confidential, and sharing such information is up to each staff member. Extra support is granted to ensure equity for staff who face particular challenges due to their gender identities, such as legal assistance to help secure identity documents that reflect chosen gender and subsidies for private accommodation during hospital stays.
**Lessons learned:** Alliance India has succeeded in fostering an inclusive and enabling workplace environment by ensuring the safety, comfort, and holistic development of all staff, including transgenders or gender non-conforming employees. This has enabled workplace integration and helped reduce stigmatizing behaviours and attitudes at the workplace.
**Conclusions/Next steps:** A clear and supportive human resource policy nurtures better psychological health and job satisfaction among all employees. There may be initial costs in ensuring supportive policies at the workplace, such as extending health benefits to partners of LGBT employees or establishing policies responsive to the needs of staff living with HIV. However, sensitive human resource management helps attract and retain talented people, fosters a supportive and innovative workplace, and creates greater value proposition for stakeholders in our work.

# POLICIES RELATED TO TREATMENT ACCESS AND INTELLECTUAL PROPERTY

## WEPED447

### PATENT OPPOSITIONS AS IMPORTANT TOOL FOR INCREASING ACCESS TO HIV/AIDS TREATMENT

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**Background:** Nowadays pharmaceutical companies use bad faith strategies in a sphere of patenting because of existing imperfect R&D model. One of such strategies is evergreening of pharmaceutical patents. Evergreening refers to a variety of legal and business strategies by which companies with medicines patents that are about to expire retain royalties from them by obtaining new unmerited patents. Evergreening patents are dangerous because they may decrease access to life-saving medicines by allowing pharmaceutical companies to keep exorbitant prices for their products for a long period of time.
HIV/AIDS organizations in different countries are seeking opportunities to increase access to medicines by removing evergreening patents. One of the powerful tools for removing evergreening patents are patent oppositions.
**Methods:** Patent opposition is a tool that allows individual or legal entity (mainly patient organization) to oppose a patent application. It may be submitted while

application is still under analysis by a patent office (pre-grant opposition) or after patent has been granted (post grant opposition). In 2002, civil society won its first battle in opposing a patent when Thai AIDS Foundation struck down BMS monopoly on the HIV/AIDS drug didanosine.
At present day, patent oppositions are submitted by HIV/AIDS organizations in different countries around the world (Brazil, Argentina, Ukraine and others).
**Results:** Summing up experience of patent oppositions submitted in different countries around the world following lessons may be learned:
- close cooperation and sharing of data among patient organizations from different countries is very useful (sharing of scientific arguments, joint PR campaign etc.);
- consultations with global advisors with top level scientific experts (such as I-MAK) are also very useful;
- involvement of generic manufacturers in patent oppositions is a good idea. National and foreign generic manufacturers are interested in preventing patent monopolies and they may support patient organizations during patent opposition proceedings;
- advocacy campaign to raise awareness of society, patent office, judges and healthcare authorities about harmful influence of evergreening patents on public health is extremely important.
**Conclusions:** Patent opposition is an important tool for removing of evergreening patents and should be used more often for increasing access to HIV/AIDS treatment around the world.

## WEPED448

### PATENT OPPOSITIONS: BREAKING PATENT MONOPOLIES

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**Background:** The availability of affordable generic ARVs from India has been crucial in providing and expanding treatment for millions of people living with HIV globally. The key contributing factor for this uninterrupted supply have been safeguards in the patent law enabling the generic companies to develop, register and supply generic versions of drugs patented elsewhere. After introduction of product patent regime in 2005 in India restricting entry of generics in the market, use of public health safeguards such as patent oppositions facilitated in protecting generic competition.
**Description:** Our research will showcase all the key patent oppositions filed by patient groups in India on patent claims covering ARV drugs and the impact of these in stopping unwarranted patents from blocking people's access to more affordable medicines. Some of the key patent applications opposed that has been covered in this research include
- Lamivudine/ zidovudine
- Tenofovir
- Nevirapine syrup
- Abacavir
- Lopinavir/ritonavir
- Atazanavir
**Lessons learned:** Patent oppositions for ARVs have been very useful in deterring patent 'evergreening' of HIV medicines. In most cases, patent oppositions have been followed by rejections, with the final result of ARVs being brought into the public domain. This has played a huge role in expanding HIV treatment to 16 million people globally today.
**Conclusions/Next steps:** Opposing patents is increasingly becoming a useful tool for civil society to challenge questionable monopolies, increase competition and access domestically. As PLHIVs today are dying of co-infections such as TB and Hepatitis-C, filing oppositions could pave the way for early market entry of generic versions of new ARVs, direct acting anti-virals (DAAs) and TB medicines.
To encourage more people to file oppositions, a civil society platform in form of Patent Opposition Database has been set and is continously updated with help from experts enagaged in opposition work across the world. This is an online resource for individuals seeking to explore how to challenge the weak patents on essential medicines and actively seek contributions from the public to make the Database as complete and useful a resource as possible.

## WEPED449

### SUCCESSFUL DIALOGUE WITH PATENT OFFICE TO PREVENT PATENT MONOPOLY FOR MEDICINE IN ABSENCE OF FORMAL PRE-GRANT OPPOSITION PROCEDURE

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**Background:** To ensure better economic affordability of one of the direct acting antivirals for treatment of hepatitis C that is very promising for treatment of people living with HIV with co-infection within the project supported by IRF Ukraine (OSF) in 2015 the 'informal' pre-grant patent opposition was tested in Ukraine on patent application filed by the originator company.
**Description:** Although, Ukrainian patent law does not set out any formal patent oppositions procedure, the All-Ukrainian Network of People Living with HIV/AIDS ('Network') and involved patent attorneys conducted dialogue with the Ukrainian Patent Office on not enough inventive nature of pending patent application, the social importance of the patent application and potential public costs, if the patent is granted. As a result, the patent application, which was supposed to be granted in May 2015, was twice preliminary rejected by the Ukrainian Patent Office using provided by civil society activists arguments.
**Lessons learned:** The project shows that in absence of formal pre-grant oppositions procedure it is still possible to conduct effective dialogue with the patent office to prevent granting unmerited patent monopolies. Strong arguments on novelty and inventive step played a key role in rejecting the patent application. Scientific arguments were prepared for the opposition by local patent attorneys and were strengthened with global support from I-MAK. Patent oppositions are easier to control for NGOs as it is not as dependent on political will of state authorities, as it is the case for compulsory licensing.
**Conclusions/Next steps:** For patients' organizations pre-grant patent oppositions is a good instrument in work with patent monopolies, as it is easier to oppose patent application, than already granted patent. The IRF/Network project in Ukraine on opposition to patent application shows that it is possible to do successful 'quasi' pre-grant opposition by conducting close dialogue with patent office, using strong scientific and advocacy arguments, even in the absence of formal pre-grant opposition procedure provided by law. This creates opportunities for patients' organizations in countries without formal pre-grant oppositions procedure to be able to address anticipated unmerited patent monopolies for medicines.

## WEPED450

### USING PEER MOTIVATION TO UPSCALE NURSE INITIATED MANAGEMENT OF ART (NIMART) IMPLEMENTATION IN KWAZULU-NATAL

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**Background:** Section 27(1) of the Constitution of South Africa provides that everyone has the right to have access to healthcare services. This places a duty on the government both from an administrative as well as an implementation point of view, through its employees, to provide health care services to its citizens. It is in the provision of these services that healthcare workers need to be guided by ethical principles to ensure that services are provided in a timely, safe and efficient manner to those deserving.
**Description:** 7 disctricts have been visited to record NIMART documentaries being told by nurses who are implementing NIMART at DoH facilities especialy primary health care settings. Acknowledging the unavailability of skilled personnel whilst simultaneously rejecting the misuse of human resource shortages as justification for paralysis, the NSP had identified task-shifting as a priority. NIMART is one aspect of a broader strategy commonly referred to as task-shifting.
According to the WHO (2008:7), task shifting refers to a process of delegation whereby tasks are moved, where appropriate, to less specialized health workers so that by reorganizing the workforce in this way, task shifting can make more efficient use of the human resources currently available. Task-shifting in the form of NIMART has been advanced as one of the strategies through which the government and citizens of South Africa can make quick gains in reversing the devastating effects of this pandemic.
**Lessons learned:** Service areas that had previously not participated in ART sercices are now coming up with innovative ways of scaling up care using different service point and intergration.
**Conclusions/Next steps:** out of the 1722 trained nurses only 888 were ready for certification in September 2015. the documentaries have increased the number of nurses who are now demanding to complete their portfolios of evidence so that they can be recognized as NIMART trained nurses. The social proof theory states that when people are unsure of the action they should take they seek out the direc-

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tion their peers are following. The documentaries have put NIMART nurses at the limelight where every nurse want to be thus influencing the need for psychological mind shift.

## POLICY ANALYSIS AND INDICATORS OF POLICY EFFECTIVENESS

### WEPED451

### AN ORGANIZATIONAL SELF-REFLECTION ON THE OPERATIONALIZATION OF THE GIPA/MIPA PRINCIPLES: ACCHO, A CASE STUDY

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**Background:** Acknowledging the importance of the GIPA/MIPA Principles in the response to HIV/AIDS, the African and Caribbean Council on HIV/AIDS in Ontario (ACCHO) embarked in a process to assess and improve the ways in which it meaningfully involves and/or creates opportunities for the participation of persons living with HIV/AIDS (PHAs).

**Description:** To gain an understanding of the ways in which ACCHO engaged and involved PHAs, all ACCHO staff members and some executive members completed a "MIPA Assessment Survey‟ developed by the NGO Code of Good Practice Project. They also did one-on-one interviews focused on examining their perceptions of ACCHO's MIPA practices at the time. The data collection methods were intended to be complementary, resulting in a well-informed evaluation process.

**Lessons learned:** Being able to clearly define and articulate what MIPA means was a strength that all ACCHO's key players had. They were able to identify several ways in which ACCHO demonstrated leadership in incorporating the MIPA principles within the organization. There were, however, areas where ACCHO required strengthening and capacity building in order to better implement MIPA. Such areas included communication, increasing the contributions of PHAs at the highest level of decision-making in the organization, diversifying the PHA voices engaged, and strengthening community engagement.

**Conclusions/Next steps:** ACCHO created a MIPA Committee consisting predominantly of PHAs. This Committee organized a "MIPA Retreat" for ACCHO staff, executive members and other key stakeholders, where participants worked together to develop an action plan to improve ACCHO's operationalization of the MIPA Principles. Since then, ACCHO has created a statement affirming its commitment to MIPA, which has been embedded in many ACCHO documents, including committee terms of reference, the collective agreement, etc. ACCHO also signed onto the Ontario Accord - a statement of solidarity with GIPA/MIPA. To this day, ACCHO continues to implement this action plan and to make improvements.

### WEPED452

### FROM POLICY TO PRACTICE: AN ANALYSIS OF TB-HIV INTEGRATION

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**Background:** Despite being preventable and treatable, TB is responsible for one out of three AIDS-related deaths. Recognizing the urgency of this co-epidemic, the WHO put forward guidelines outlining collaborative activities to fight TB and HIV together. ACTION analyzed the extent to which donor programs and national health policies include the WHO guidelines.

**Description:** The policy research focused on the WHO 41 High Burden TB-HIV countries. In addition to country National Strategic Plans, five donor agencies were chosen for review: the Global Fund to Fight AIDS, Tuberculosis and Malaria; the United States President's Emergency Plan for AIDS Relief (PEPFAR); the United Kingdom Department for International Development (DFID); the United States Agency for International Development (USAID); and, the World Bank. All programs, grants, and National Strategic Plans were comprehensively reviewed for inclusion of the 12 WHO TB-HIV collaborative activities.

**Lessons learned:** Despite the WHO recommendations released four years ago, Analysis of donor programs and National Strategic Plans continue to show the burden of implementing collaborative TB-HIV activities falling heavily on TB programs and budgets, which have fewer resources than their HIV counterparts. TB grants had a budget one-eighth the size of HIV grants, yet allocated nearly three times the amount of TB-HIV funding.

**Conclusions/Next steps:** WHO recommendations to integrate TB and HIV programs have not been embraced equally across donors and implementing countries, and efforts to integrate TB and HIV are significantly under resourced. Increased funding, political will and collaboration between TB and HIV programs are needed to achieve the end of this deadly co-epidemic.

## MONITORING AND EVALUATION OF POLICIES AND THEIR IMPACT ON PEOPLE LIVING WITH HIV AND KEY POPULATIONS

### WEPED453

### HIV POLICY IMPLEMENTATION IN SOUTH AFRICA: EVIDENCE FROM A NATIONAL POLICY REVIEW AND HEALTH FACILITY SURVEYS IN TWO RURAL DEMOGRAPHIC SURVEILLANCE SITES

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**Background:** Understanding contradictions between national HIV policies and their implementation in health facilities is essential for improving the effectiveness of national HIV programmes. This study compares national policies on HIV testing, prevention of mother-to-child transmission (PMTCT), antiretroviral therapy and retention in care with survey data from health facilities serving the populations of two South African health and demographic surveillance sites (HDSS) in Agincourt and uMkhanyakude in order to assess implementation of national HIV policies.

**Methods:** Ten national HIV policy documents published in 2003-2015 were reviewed, with content extracted on implicit or explicit adherence to 54 pre-defined indicators likely to influence service access and retention in care across the HIV cascade.

Purposively-sampled health facilities in Agincourt and uMkhanyakude (N=26) were surveyed in October 2013 to May 2014 using a structured questionnaire covering the same HIV services and indicators. Survey data were analysed descriptively and the findings compared to national policy indicators for each site.

**Results:** South African HIV policies closely adhered to WHO recommendations despite several gaps, notably in relation to quality of care, with health facilities in both sites reporting high client loads and limited refresher training in HIV testing and ART delivery. In terms of HIV treatment, facilities in both sites were weaker in terms of medical management and PLHIV support than in service coverage and access. There were policy gaps in relation to access to HIV treatment and retention in care, but these were often compensated by practices in the facilities, notably in relation to provision of Option B+ which was provided in 88% of facilities in Agincourt and 22% in uMkhanyakude, despite the its absence from policy.

**Conclusions:** Despite numerous policy gaps for HIV testing, PMTCT, access to ART and retention in care, we found that implementation within health facilities was broadly similar across these two rural South African sites, and sometimes exceeded national recommendations. Future research should explore factors that facilitate or inhibit policy development and implementation, and assess whether differences in HIV service delivery are reflected in HIV mortality patterns in the two HDSS sites.

### WEPED454

### SECURING THE FUTURE OF WOMEN CENTERED CARE: A COMMUNITY -ASED ANALYSIS OF THE UNMET NEEDS OF WOMEN LIVING WITH HIV IN THE UNITED STATES

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**Background:** The Ryan White program is the largest payer of HIV-specific medical care in the United States, providing a range of medical and social support services. Ryan White is currently up for reauthorization, and the health care landscape for people with HIV is changing under Affordable Care Act implementation.

**Methods:** To determine the unique medical, social and structural support needs of women with HIV in the face of changing health care coverage, service delivery infrastructure, and quality of life concerns, Positive Women's Network - USA (PWN-USA), a national membership body of women living with HIV (WLHIV) facilitated a community based participatory research project led and executed by 16 WLHIV to inform future advocacy. A survey addressing access to care and quality of care for WLHIV was developed by the 16-member research team. The survey was administered in eight geographic areas in the US. A total of 180 WLHIV completed surveys.
**Results:** Data revealed high levels of stigma and multiple barriers to care. Transportation presented the largest barrier to successful engagement in medical care (doctor visits and prescription refills) for women with HIV, whether in rural or urban areas. Nearly two-thirds of respondents had been diagnosed with depression, and 17% had been diagnosed with post-traumatic stress disorder. There was a large unmet need for mental health services and social support, including support groups. Sexual and reproductive healthcare was inconsistently available; less than half of respondents of reproductive age had been asked in the past year whether they were interested in getting pregnant and just over 40% had been informed by a provider that viral suppression would reduce the risk of onward HIV transmission.
**Conclusions:** As women with HIV are changing, so are care needs. Nearly five years after the data from HPTN052 was published, treatment as prevention science still has not penetrated into communities of WLHIV in the US and sexual and reproductive healthcare (SRH) are substandard. In future iterations, the Ryan White program will need to consider delivering SRH care to people with HIV of all ages and genders. Employment services must be integrated, and there is an urgent need to address transportation barriers.

## WEPED455

### SHIFTING POLICE PRACTICES TO SUPPORT HIV PREVENTION: INITIAL FINDINGS FROM AN ASSESSMENT OF A POLICE EDUCATION PROGRAM IN A MEXICAN SETTING

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**Background:** In countries where people who inject drugs (PWID) are disproportionately affected by HIV, policing practices fuel behaviors that increase their vulnerability to HIV, viral hepatitis and STIs. Based on prior findings of adverse police encounters and prevalent extralegal police practice, we designed a police education program (PEP) for municipal police in Tijuana, Mexico. The training bundles occupational safety content with legal knowledge and harm reduction material to align policing practice with HIV prevention goals.
**Methods:** The PEP evaluation includes a pre- and post-training evaluation of all trainees on legal knowledge, harm reduction attitudes, autonomous support, and self-reported practices, to be administered to approximately 1200 active-duty personnel of the Tijuana municipal police. A subsample of 500 officers is randomly selected to receive follow-up assessments at 3, 6, 12, 18, and 24 months in a modified stepped-wedge design. Univariate logistic regression with robust variance estimation using time as a within-subjects effect was used to assess the effect of time (follow-up vs. baseline) on various outcomes of interest.
**Results:** Among the 202 officers completing baseline and 3-mo follow-up thus far, we observed significant shifts between baseline and follow-up reports of risky occupational practices, including breaking syringes (OR=.37; 95% Confidence Interval [CI]:.24-.56) and discarding syringes in the trash (OR=.36; 95%CI: .24-.55). At follow-up, trainees were less likely to report arresting drug users for syringe possession (OR=.41; CI:.29-.59), heroin possession (OR=63; CI: .49-.81) and more likely to report referring drug users to harm reduction services (OR=1.45; CI:1.03-2.06). Respondents also exhibited improved knowledge, including in the domain of understanding the law relating to syringe possession (OR=2.89; CI: 1.96-4.25), heroin possession (OR=4.47; CI:2.79-7.15), and marijuana possession (OR=3.34; CI:2.03-5.49). Officers reported improved attitudes towards harm reduction programs, including opioid substitution therapy (OR=3.06 CI: 2.16-4.34) and syringe exchange (OR=2.09; CI: 1.36- 3.2).
**Conclusions:** Although there a number of existing limited assessments of PEPs designed to align policing and HIV prevention exist, this is the first study to prospectively evaluate the impact of this structural intervention in a longitudinal cohort. Initial results indicate promise of PEP in shifting street-level police practices. Programmatic and policy implications are discussed.

## WEPED456

### THE U.S. RYAN WHITE HIV/AIDS PROGRAM'S SUPPORT FOR COMPREHENSIVE ENABLING SERVICES AND INTEGRATED CARE HELPS PLWH REMAIN IN CARE, ACHIEVE VIRAL SUPPRESSION

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**Background:** The Ryan White HIV/AIDS Program (RWP) funds community-based HIV care and support services for low-income, uninsured, and underinsured people. Until 2014 most people living with HIV (PLWH) in the U.S. could not access private insurance. The 2010 Affordable Care Act (ACA) prohibits preexisting condition exclusions, and removes annual and lifetime coverage limits. Consequently, PLWH can now access subsidized marketplace insurance. Many PLWH without an AIDS diagnosis or dependent children can now access public insurance (Medicaid) in 31 of 50 states. As a result, some have questioned whether the RWP is still necessary.
**Description:** Public policies, peer-reviewed research, conference abstracts, and gray literature were analyzed. Interviews were conducted with researchers and policymakers.
**Lessons learned:** The RWP funds an integrated continuum of HIV health care and support services not covered by insurance, including case management, treatment adherence counseling, housing support, nutrition, and transportation. People living with HIV often have life challenges and complex comorbidities—such as substance use and mental illness—that complicate their ability to maintain treatment adherence and continuous care. The RWP funds services that help many highly vulnerable individuals maintain stability in their lives, and are essential to the success of core medical treatments. Half of the 1.2 million PLWH in the U.S. access RWP services. Nearly half of PLWH on treatment access the RWP's AIDS Drug Assistance Program. Those receiving RWP care are more likely to receive regular medical care, and are more than twice as likely to be virally suppressed, compared with PLWH not in RWP care. The RWP is still needed due to the non-expansion of Medicaid in most Southern states, where 55% of Black PLWH live.
**Conclusions/Next steps:** The RWP funds integrated care and support services that help about 600,000 U.S. PLWH achieve viral suppression and continuity in care. RWP funding, which has remained flat since 2001 even as the caseload has nearly doubled, should be increased. Targeted loan forgiveness, increased support for clinical training, and increased Medicaid reimbursement rates could help train the next generation of HIV specialists. Health and elder service providers should be trained to provide culturally competent, nondiscriminatory care to older PLWH.

# POLICY DEVELOPMENT PROCESSES, INFLUENCES AND CONSTRAINTS

## WEPED457

### CHILDREN (0-14) AND HIV/AIDS PUBLIC POLICIES IN CAMEROON: A CRITICAL ANALYSIS

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**Background:** Three major initiatives directed at Orphans and Children made Vulnerable due to HIV/AIDS (OVC) or children whose survival, well-being and development are being compromised by HIV and AIDS have been implemented in Cameroon : the bi multi-OVC program (2004-2008), the National Support Program for OVC (NSP-OVC 2006-2010) and the Children, HIV and AIDS program (2008-2012). Behind each of these initiatives stands a foreign and institutional operator (UNICEF, the French Cooperation, or the Global Fund). The implementation of these programs has been tricky and quite far from the intended goals. Les than 10% of children in need of treatment have access, and less than 2% of the budget have been dedicated to OVC. Actually, there is no specific program in the National Strategic Plan for children facing HIV/AIDS, despite stated objectives.
**Methods:** This paper outlines the social and political context that shaped the development of AIDS policies targeting children under fourteen. By highlighting the weaknesses of local policy entrepreneurs despite their numbers, but more specifically the passive attitude of program officials and community-based organizations, my aim is to show why the Cameroonian government is failing to respond effectively to the spread of AIDS and its consequences among children.
Based on critical analysis of three National Strategic Plans, in-depth interviews with key stakeholders and observations in medical structures and non-governmental organizations, this study questions and analyzes structural factors such as decision-

making procedures, bureaucratic capacities, political leadership, financial resources and health system. I also question HIV/AIDS global policies, their transformations and their (re) appropriation in national and local contexts.
**Results:** A long-term and effective response to children with HIV/AIDS needs to target children's health as a whole. Instead, each national program (malaria, vaccination, OVC, etc.) has a separate agenda, budget and actors. That means organizations and government policies must create and increase accessibility to health services for every child, especially those who are no longer with their mothers.
**Conclusions:** Children and HIV/AIDS public policies are hampered by institutional constraints, as a result of inappropriate and non-inclusive patterns of political leadership and global policies. There is a need to emphasize on school clinics all over the country.

## WEPED458

### LOBBYING FOR POLITICAL CHANGE UNDER ADVERSE POLITICAL CONDITIONS: LESSONS FROM ADVOCACY WORK IN NORTH CAROLINA

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**Background:** Since 2010, the North Carolina AIDS Action Network has led advocacy and lobbying efforts in North Carolina (NC), a state in the southern United States, related to HIV/AIDS treatment and prevention.
**Description:** Currently there are 36,300 people living with HIV in NC and 7,278 (1,910 female, 5,310 male, 58 transgender) people are enrolled in the NC AIDS Drug Assistance Program (ADAP), which provides free HIV medication.
With the 2010 & 2012 state elections, political control of the NC General Assembly and Governor's Office changed from the Democratic to the Republican Party. Since then, legislative leadership has largely opposed expansion of LGBTQ rights and significant investments in public health initiatives.
Even under adverse political conditions, the HIV/AIDS advocacy movement has experienced successful outcomes by focusing on three key strategies:
1. Build a network/database of educated activists through grassroots organizing and digital outreach, focusing on individuals impacted directly and those living in political districts of key legislative leaders;
2. Sustain investment in building personal relationships with targeted legislators and staff in the NC Governor's office and state health department;
3. Regularly educate journalists about HIV/AIDS, and frequently submit and cultivate HIV/AIDS content in traditional and digital media.
**Lessons learned:** Legislators and lobbyists say that advocacy efforts in NC have had a critical role in achieving these positive outcomes over the last six years:
a. An increase in eligibility for ADAP from 125% of poverty level in 2011 (the lowest in the United States) to 300% in 2016.
b. Overall enrollment growth from 6,241 people in 2011 to 7,278 as of January 2016.
c. Creation of an assistance program that reduces costs for patients who purchase their own health insurance. 90.97% of the 155 patients in the program are virally suppressed, compared to 82.12% of overall enrollment in 2016.
**Conclusions/Next steps:** Policy change is a multi-year process requiring long-term investment resources. Current HIV policy campaigns in North Carolina are focused on further expansions of ADAP to cover full health insurance costs, closing the Medicaid coverage gap so all people with HIV have access to health care, and repealing NC's HIV criminalization health code.

## WEPED459

### POLICY DEVELOPMENT PROCESS TO COMBAT HIV/TB CO-INFECTION IN INDIA: A STAKEHOLDER ANALYSIS

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**Background:** This research is set within the context of evolving HIV/ TB co-infection policy in India. The international-national policy transfer, advocacy and research-policy interface for HIV/ TB co-infection policy development were studied through stakeholder analysis, an approach for policy analysis.
**Methods:** Qualitative research using purposive sampling was carried out among fifty consenting respondents (N=50) group of:
1) policy makers,
2) researchers,
3) advocacy and
4) beneficiaries including the high risk and key populations.
The interviews were audio recorded with prior permission from each respondent. Free listing exercise was performed with 8 community representatives. The transcribed interviews were coded using QSR NUD*IST software version 6.0 and analyzed using grounded theory.
**Results:** Both the Indian policy makers (IPM), and the civil society felt that in the presence of independent programs for TB and HIV in India, a third policy for HIV/ TB co-infection is not needed as the co-infection is not larger than the independent diseases. Policy advocates observe disparities in the national HIV/ TB program and therefore recommended collaborative policy which should be inclusive to address co-infection in all high risk population including intravenous drug users. The policy makers too emphasized evidence based collaborations between the two programs. If researchers and advocates feel otherwise, they should be able to generate preferably local evidences as IPMs are not averse to new evidences and making amendments. Possible role of people living with HIV/AIDS (PLHA) as a DOTS (directly observed treatment, short-course) provider was also recommended. Addressing the issue of community demand and access 'Concept of Health Post' has been suggested to facilitate awareness about co-infection policy and service delivery. Advocacy for HIV/ TB collaborative policy was felt to be in nascent stage requiring consultative and inclusive approaches for communication between IPM and researchers with advocates as catalyzing the process.
**Conclusions:** The IPMs and community align together on the issue of HIV/ TB collaborative policies. Service utilization was considered critical and effective access to services was suggested through 'health posts'. PLHAs, as DOTS provider would be an effective way of strengthening the HIV-TB collaborative activities especially the service provision.

## WEPED460

### UNDERSTANDING AND ADDRESSING CHALLENGES TO THE EFFECTIVE IMPLEMENTATION OF HIV LEGISLATION IN SUB-SAHARAN AFRICA

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**Background:** The law is an important structural tool that can influence individual behaviour, ensure the protection of those living with or vulnerable to HIV, and create the conditions for an effective AIDS response. As of 31 July 2014, 27 countries in sub-Saharan Africa had adopted HIV-specific legislation to address the legal issues raised by HIV.
Whether legislation achieves its objectives and the goals of its drafters depends primarily on its implementation and enforcement. Yet, more than ten years after the first HIV-specific laws in Africa were gazetted; there is very little evidence of their effective implementation and enforcement.
Critical factors that explain the limited implementation of HIV-specific laws in sub-Saharan Africa are to be found in the intrinsic flaws in their normative content.
**Methods:** This study is based on a desk analysis of the implementation challenges that stem from the normative content of 26 HIV-specific laws adopted in sub-Saharan Africa. The analytical framework used in the review and analysis of the implementation challenges in these HIV-specific laws is based on themes and approaches in the implementation literature for developing better statutes with the greatest likelihood to be implemented.
**Results:** This study shows that drafters of HIV-specific laws in sub-Saharan Africa paid limited attention to intrinsic issues in these laws that might have ensured their effective implementation and enforcement. Serious gaps and concerns in the normative content of HIV laws help to understand why in so many countries, their implementation has been less than adequate. These gaps can be summarised into three key elements, namely: (i) the failure of HIV laws to uphold sound public health and human rights approaches; (ii) lack of clarity and vague provisions in these laws; and (iii) limited attention in HIV laws to implementing or monitoring entity.
**Conclusions:** More attention should be paid to the enforcement of protective provisions in HIV legislation. Efforts to develop or reform HIV legislation should include a clear focus on ensuring that key intrinsic flaws that compromise their effective implementation are addressed. These recommendations are also relevant for the development of other health legislation.

## WEPED461

### INCLUDING MEN WHO HAVE SEX WITH MEN IN NATIONAL AIDS PROGRAMS, 2001-2014

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**Background:** In the last decade, men who have sex with men (MSM) have come to the fore of global policy debates about AIDS prevention. In stark contrast to programs and policy during the first two decades of the epidemic, MSM are now identified as "marginalized but not marginal" to the global response. This paper examines predictors of whether and when MSM have been integrated into national AIDS responses consistent with current UNAIDS recommendations.
**Methods:** From 2001 to 2014, UN member countries submitted Country Progress Reports on HIV/AIDS biennially (N=915). Researchers coded all Progress Reports for level of inclusion of MSM in surveillance and prevention activities using an ordinal scale from 1 "No prioritization," to 2 "Weak prioritization," to 3 "Strong prioritization." Data from Progress Reports were combined with country-level data on political/legal context, formal participation in international organizations, informal links to transnational advocacy networks, and levels of development assistance for health (DAH).
**Results:** Although countries generally increased prioritization of MSM, changes were marginal overall. Of countries that did not prioritize MSM at all in their first report (time *t*), less than half (46%) showed evidence of weak prioritization in a subsequent report (time *t*+1). Transitions from weak to strong prioritization were more limited; only 12% of countries transitioned from weak to strong prioritization. Probit models estimating the likelihood of a change in prioritization among aid receiving countries demonstrate that criminalization of same-sex sex presented a significant obstacle to prioritization of MSM. Country engagement in international organizations and links to transnational advocacy networks significantly increased the likelihood that countries expanded programs targeting MSM. Consistent with null findings on the effects of human rights contingencies on aid, levels of DAH from donor countries advocating for decriminalization of same-sex sex did not predict increased prioritization of MSM.
**Conclusions:** As countries have become more accountable to the UN through the use of Progress Reports on HIV/AIDS, many countries are now "talking the talk" of inclusion of MSM. However, far fewer have advanced from planning stages to active, long-term engagement with MSM, suggesting a need for targeted efforts to help countries bridge the gap between policy adoption and implementation.

## WEPED462

### INFLUENCING THE SCOTTISH REGULATORY FRAMEWORK FOR PRE EXPOSURE PROPHYLAXIS (PREP)

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**Background:** The effectiveness of PrEP has been proven by a number of international studies to be an effective method of HIV prevention. PrEP presents Scotland with a major opportunity to reduce rates of new HIV. PrEP is not currently available on Scotland's national fully subsidised healthcare system (NHS). Without advocacy we felt there could be an unnecessary delay in the availability of PrEP, pending approval from the European Medicines Agency and Scottish Medicine Consortium. HIV Scotland is the national policy NGO.
**Description:** HIV Scotland worked proactively on the inclusion of PrEP in Scotland's Sexual Health and Blood Bourne Virus Framework, the policy document that dictates public health policy and practice in this area. The document now includes a commitment that the Scottish Government will monitor the regulatory position of PrEP in Scotland.
A strong Framework has allowed HIV Scotland to argue for and facilitate the creation of a consensus statement and prescribing criteria for PrEP from clinical representatives. HIV Scotland has published good practice recommendations, advocating safe use of and access to PrEP.
This work bought together policy makers, public health funders, clinicians and community stakeholders. HIV Scotland has pushed to place PrEP on the wider public agenda. Coinciding with World AIDS Day 2015, a motion was lodged in the Scottish Parliament affirming the role of PrEP HIV prevention. The motion received cross party support.
**Lessons learned:**
- Cost effectiveness, risk taking behavior and licensing are key concerns for provision of PrEP in the NHS.
- Engagement of key stakeholders has been critical for putting PrEP on the specialist and wider public agendas.
- The voice of community critically informed our work.

**Conclusions/Next steps:** By lobbying the Scottish government to include PrEP in the Sexual Health and Blood Bourne Virus Framework, PrEP has been placed high on the agenda of critical stakeholders, increasing the likelihood of timely inclusion of PrEP as part of the comprehensive prevention package provided by the NHS. This required a highly coordinated linking of political decision makers, funding bodies, clinicians and community members. We argue that HIV Scotland is uniquely placed to enable this work, bridging the gaps that exist between these influential parties.

# ROLE OF MEDIA IN POLICY MAKING

## WEPED463

### KEY CORRESPONDENTS LAC: SIX YEARS AS THE COMMUNITY MEDIA OUTLET IN LATIN AMERICA

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**Background:** Key Correspondents LAC was launched in 2009 in Lima, in 2009, during AIDS Latin American Forum. Twenty community journalists were trained in the first workshop with a clear objective: bring the voices of Key populations, disseminate stories and information of the global and regional HIV the response , in order to generate political change.
**Description:** The Key Correspondents LAC team is now a network of more than 40 volunteer community based journalists, covering all LAC Spanish speaking countries, who join KC-Lac to speak their world and communicate their experiences and advocate/communicate with decision makers. Key Correspondents LAC also play a key role as the watchdog in issues regarding Global Fund grants implementation. In its first six years, thanks to the continued support of International HIV/AIDS Alliance and UNAIDS, Key Correspondents LAC Initiative trained five groups of community journalists, with a total of 150 young men and women, including gay men, transgender women and people with HIV, who developed and strengthened their abilities to write and tell their stories and what happens in their own communities.
A total of 1260 articles have been published in Key Correspondents LAC, in Spanish, that has reached to more than 30,000 people per year around the world. Visit www.corresponsalesclave.org
**Lessons learned:**
1. Meaningful engagement of PLHA, young people and Key Population ensure that your stories are relevant.
2. You need to continuously replenish a volunteer based project.
3. You need to study and adapt media to new trends and technology, like social media, where youth member are critical.
4. Most of the articles need to target decision makers, use them as advocacy tools rather than covering events.
5. You need to be prepare to cover recent new, even some developments that happens on the same day.
6. People in countries and regionals that speak other languages than English needs these tools to learn what is happening worldwide.

**Conclusions/Next steps:** People have the power to access to information. Communities are now using media and social media for change. We must support the mass auto-communication where people build their relevant news. Media is about improving citizen quality of life and watchdog decision makers including governments. You could engage and train people visually.

## WEPED464

### LOUD MEDIA CAMPAIGN IS THE MOST EFFICIENT INSTRUMENT TO OVERCOME CORRUPTION DURING PUBLIC PROCUREMENTS

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**Background:** Over 40% of public funds have been stolen during the national drugs procurement for people living with HIV, tuberculosis and hepatitis because of corruption schemes in the Ministry of Health of Ukraine. It amounts approximately USD 50 million per year. Every day around 1600 Ukrainians die due to the lack of medicines in Ukraine.
**Description:** For more than a year CF "Patients of Ukraine" has been fighting to transfer the function of medicine procurement from the MoH to international organizations. It is the only efficient instrument that will allow to overcome corruption

schemes in the Ministry of Health and save thousands of people living with HIV, tuberculosis and hepatitis.
To confront the pharmaceutical companies blocking this process, CF "Patients of Ukraine" launched an extensive media campaign: two protest actions "4 billion hryvnias cake for the MoH" and "4 barrels with ink for the Cabinet of Ministers", three press-briefings, wide social media campaign, a number of open letters to the MoH, the Parliament and the Prime Minister of Ukraine. The facts of corruption in the MoH during tenders in Ukraine were widely discussed in the mass-media and among higher officials.
These actions triggered national and international media frenzy: 70 TV-spots, more than 30 articles in newspapers and 600+ online publications. This was the major victory for patients and the main success in healthcare reform in Ukraine in 2015.
**Lessons learned:** High resonance through wide media coverage at home and especially abroad made Ukrainian Government transfer the procurement of medicine to international organizations.
Creative media campaign which has the powerful influence on politicians is the only way to fight corrupt system in Ukraine.
Open faces of patients and direct actions shocking the media helped to keep up the constant interest to this topic.
**Conclusions/Next steps:** Now, no official can steal even one Ukrainian hryvnia from severely ill patients, leaving them without medications. Millions of patients will receive the quality treatment on time. We are keeping tender process under control and communicate with media about cost savings due to medicine procurement through international organizations. We will use our media experience to enhance healthcare reform in Ukraine.

## WEPED465

### HOW THE MEDIA PREPPED THE WORLD FOR A NEW HIV PREVENTION OPTION: AN ANALYSIS OF PREP IN THE MEDIA FROM 2009-2015

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**Background:** Media coverage plays an important part in acceptance of new public health interventions. Coverage of oral tenofovir-based pre-exposure prophylaxis (PrEP) has been increasing since 2009. We analyzed media coverage to determine:
· Number of articles published over time and correlation with PrEP milestones.
· Geographic distribution of articles.
· How media's perception of PrEP changed over time.
**Methods:** Using news monitoring site, we conducted a search of keywords related to HIV and PrEP from Jan 1, 2009 through Dec. 31, 2015 among 300,000 news sources. Removing duplicate and irrelevant articles, we calculated numbers of articles per year and where peaks occur. We analyzed content and tone of subset of articles around PrEP milestones to determine how journalists' knowledge and perceptions of PrEP changed.
**Results:** From 2009-2012 peaks in PrEP coverage correlate with positive results from iPrEx and Partners PrEP, along with US FDA approval of Truvada. Flat results from VOICE generated most coverage for 2013, but there is a general decrease in articles published. In 2014, coverage quadrupled as CDC released PrEP guidelines. The number of articles steadily increased into 2015, with PrEP widely accepted as a prevention option by the public and release of positive results from PROUD and IPERGAY.
PrEP media coverage has not always been positive. In 2012 coverage peaks as controversy escalates with public anti-PrEP skepticism campaigns. By 2015, controversy largely disappeared as advocates continued to speak in support of PrEP and media became more knowledgeable on the science.
From 2009-2015, PrEP coverage increased significantly - more than 3,400 articles are written in 2015 than 2009. US coverage dominated, but the number of articles published in other countries also increased: in South Africa, 4 articles published in 2009 vs. 89 in 2015.
**Conclusions:** Analysis shows that media coverage is mostly driven by milestones in research results and expanded roll-out. Skepticism appeared in the news at times, but we found when advocates and researchers work together to educate the media, it resulted in a more balanced and accurate coverage. We conclude that researchers and advocates working together with the media is crucial to public acceptance of new public health interventions.

## WEPED466

### HIV/AIDS AND THE POST-2015 AGENDA: HAS THE GLOBAL CONVERSATION SHIFTED? A PUBLIC SENTIMENT ANALYSIS IN TWITTER DATA FROM WORLD AIDS DAY TWEETS IN 2014 AND 2015

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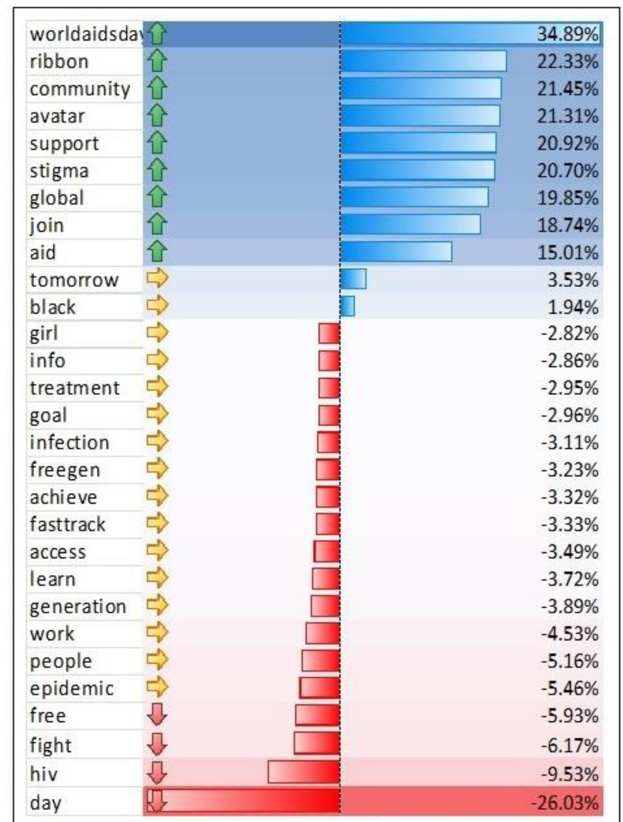
**Background:** Public diffusion of the MDGs successfully raised HIV/AIDS awareness, catalyzed action and directed cooperation to halted the spread and begin the reversal of HIV/AIDS[1]. The MDGs increased public awareness to improve the catastrophic effects of the pandemic (e.g., mother-to-child transmission, HIV education, orphans[1]. The MDGs inspired the belief in an AIDS-free generation and the pandemic's end.
The SDGs build on the success of the MDGs. However, they contain one target, to end the epidemic by 2030[1]. The SDGs are criticized for being broad, difficult to implement and bureaucratic; making them less reachable and uninspiring to the general public[1]. Public support is critical for global unity and for the motivation to drive eradication efforts forward.
Our study sought to explore public sentiment on HIV/AIDS. Tweets were collected during live three-hour, Twitter chats by ABC News' chief health editor; on World AIDS Days 2014 and 2015.
**Description:** A total of 39,940 unique Tweets (10,027,038,772 users) in 2014 and 78,215 unique Tweets (33,370,938,359 users) in 2015 were analyzed. Tweets were extracted with geocodes via NCapture software. Response frequencies were aggregated using natural language processing[2].
**Lessons learned:** Topics tweeted ≥35 times were visualized (Figure 1). Results show decrease in frequency of tweets associated with fighting to end HIV and achieving an AIDS-free generation. In 2015, an increase in tweets associated with an integrative approach, (e.g.,community).




*[Figure1. 2015 Shift in HIV/AIDS Tweet Public Sentiment from World AIDS Day 2014 and World AIDS Day 2015. N= 39,940 (2015) N=78,215 (2014)]*

**Conclusions/Next steps:** As we move from MDGs to SDGs, global conversation shifts are apparent. An increase in tweets regarding a universal, integrative approach speaks to the SDGs theme. However, a decrease in tweets regarding an active fight to end the pandemic and achieving an AIDS-free generation must be explored. Public motivation is critical in meeting the 2030 agenda and must be addressed.

1. Rodney and Hill. International Journal Equity Health 2014:13:72.
2. Liu. Web data mining; exploring hyperlinks, contents usage data. Springer;2006.

## Evidence-informed advocacy regarding policy and budget priorities

### WEPED467

#### PLHIV in Africa demand for viral load testing as the gold standard for monitoring HIV

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**Background:** In 2013, Zambia adapted it's Consolidated Guidelines for Treatment and Prevention of HIV infection to be in line with the World health Organization June 2013 Consolidated Guidelines on the use of Antiretroviral Drugs for Treating and Preventing HIV Infection. One of the key recommendations in the guidelines is the use of viral load testing as the preferred monitoring approach to determine the performance of cART in an individual.
**Description:** ARASA and ITPC conducted short surveys in Botswana, Cameroon, Cote'd' Ivorie, Egypt, Kenya, Malawi, Morocco, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe where it was established that CD4 testing was the standard test in use to monitor HIV in individuals even though the WHO guidelines state that viral load testing should be the gold standard for monitoring HIV. On 30th October 2015, the Viral Load campaign was launched in the 12 countries where the survey was conducted. The main launch was held in Zambia because the country had already adapted and rolled out the implementation of the WHO June 2013 guidelines. Through TALC and its partners, 6 petitions were presented to the Minister of Gender who was representing the Minister of Health, WHO Country Representative, UNAIDS Country Representative, PEPFAR Country Coordinator, High Commissioner of Malawi, COMESA and the National AIDS Council demanding the immediate roll out of Viral Load Testing as the gold standard to monitor HIV in individuals.
**Lessons learned:** Zambia has now rolled out viral load testing to all people living with HIV in line with the new guidelines. Once policy makers realize that citizens know their entitlements, and demand for them, they are bound to find the resources required to fulfill their obligations. If citizens remain ignorant of their rights, policy makers will always take advantage of them and not meet their obligations.
**Conclusions/Next steps:** Citizens must hold their leaders and policy makers accountable to implement and roll out promises they make when they sign international treaties and agreements. Other countries in Africa must adopt the model implemented in Zambia as a best practice for policy advocacy.

### WEPED468

#### Training and education on the risks associated with injecting drugs: from research to legislation

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**Background:** In France, despite the effectiveness of needle exchange programs among injection drug-users (IDUs), the risk of HIV transmission persists, the prevalence of HCV remains high (according to the ANRS-Coquelicot survey, 40 to 60% of IDUs who frequent risk reduction facilities are infected with this virus), and injection site complications often occur. In late 2009, to reduce this risk, Doctors of the World and AIDES, in partnership with Inserm and the ANRS, conducted a study to experiment training and education sessions on the risks associated with injecting drugs (AERLI). The preliminary results were presented to the IAS in 2014. This intervention has led to a reduction in unsafe HCV transmission practices: 44% of the participants reported at least one such practice before the intervention compared to 25% six months after it. On the basis of these research results, AIDES called for the legal recognition of AERLI.
**Description:** Advocacy strategies were defined according to the different players and steps in the legislative process. 1. To take advantage of the fact that healthcare legislation was being prepared for 2015, the results of this research were submitted to the office of the Health Minister. A specific injection support and education provision was included in the first version of this legislation in October 2014. 2. Amendments were proposed to certain key parliamentarians to support and strengthen this provision. 3. A parliamentary watch was conducted to anticipate any risk of backtracking. 4. Scientific results do not always make an effective argument in public debates. To avoid sterile debates, AIDES left the media out of its strategies. 5. To build a favourable environment, AERLI was also promoted among harm reduction stakeholders.
**Lessons learned:** The healthcare legislation was passed in December 2015 and includes a section recognising AERLI.
**Conclusions/Next steps:** These advocacy strategies supported by scientific data proved effective. Implementation now requires enabling texts spelling out the mechanics of AERLI. The Ministry of Health's administration, which is drafting these texts, should now be made aware of the results of this research. It will also be necessary to advocate with the regional health authorities responsible for the territorial implementation of the legislation.

### WEPED469

#### Understanding and optimizing the landscape of antiretroviral treatment regimens in Russia: results and recommendations based on ARVT procurement monitoring project in 2015

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**Background:** Russia remains among the fastest-growing HIV epidemics. The number of people receiving treatment based on official estimates is approximately 200,000. The country has faced numerous access-related challenges: drug stock-outs, limited access to preferred options (including tenofovir) and fixed-dose combinations (FDCs). "Treatment Preparedness Coalition" has been analyzing the government procurement programme to identify gaps and elaborate recommendations for enhancing treatment access.
**Methods:** In 2015, 2380 contracts were included into the analysis (excluding peadiatric formulations). The analysis included 28 international non-proprietary names of antiretroviral drugs registered in Russia based on the website grls.rosminzdrav.ru. The drugs were divided into three groups: nucleoside/ nucleotide reverse transcriptase inhibitors (NRTIs); non-nucleoside reverse transcriptase inhibitors, protease inhibitors (excluding ritonavir), integrase inhibitors, CCR5 inhibitors, and fusion inhibitors; and FDCs containing complete regimens. The number of patients per year for each drug was calculated by diving the total amount of items purchased by the recommended daily dose and 365. The number of patients who could potentially receive treatment was calculated based on the number of third drugs and the number of possible combinations of NRTIs assuming that each combination should contain either 3TC or FTC. The total sum of FDCs containing complete regimens was added to the total number of third-drug regimens.
**Results:** In total, approximately 158,000 patients could receive treatment based on the sum of third drugs and FDCs containing complete regimens. The most widely used third drugs are lopinavir/ritonavir (54,500) and efavirenz (53,000). In the NRTI group, the number of patients who could potentially receive regimens containing either 3TC or FTC is approximately 134,300. The number of patients who could potentially receive TDF-based regimens is approximately 4000; the number of D4T-based regimens is 8,600. The number of patients receiving FDCs containing complete regimens (ABC/3TC/AZT; 3TC/AZT/NVP; FTC/TDF/RPV) is 250.
**Conclusions:** The number of patients who could potentially receive antiretroviral treatment in Russia can be 20% lower than the official estiames. Only 2,5% receive TDF-based regimens. Less than 1% receive FDCs containing complete regimens; none of them receives the preferred WHO option 3TC(FTC)/TDF/EFV as a single pill. These data should be used as a basis for optimizing procurement and provision policy.

### WEPED470

#### Community engagement in universal access to DAA hepatitis C treatment: the Portuguese case

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**Background:** Moving from low efficacy and high adverse events rate regimens to new DAA's was a priority in Portugal from 2013 to 2015. Special nominative authorisations of use were possible, but less than 100 people accessed new treatments. Several meetings took place (Sitges 2007-2014, FDA and EMA consultations, 2008) and position papers were issued between 2009 and 2014, along with bilateral meetings with government officials and pharmaceutical industry representatives; pressure for an agreement led the agenda.

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**Methods:** GAT promoted contacts during 2 years, raising awareness about new treatment options, pressuring stakeholders to pursue an affordable universal access program using new DAAs, and helping set this agenda in Europe.
Community mobilization of people living with HCV and PUD, high level meetings with government, pharmaceutical and regulatory agency and leading clinicians kept the issue of affordable access a political priority, and attracted media.
Although not part of the official negotiation committee, GAT worked with several of the negotiators on defining the scope of the agreement which, after 7 different proposals, was finally signed (February 2015).
**Results:** Currently, in Portugal, DAAs are the standard of care, theoretically accessible to everyone with Hepatitis C, with priority criteria such as co-infection with HIV, liver fibrosis stage, cirrhosis and people with higher risk of transmission.
Payment is on a cost/volume framework, the final price being applied to all treatments and only cures are paid for. A centralized funding mechanism avoids Hospitals' budget constraints.
Real time data on treatments is available at the National Regulatory Agency's website; a committee monitors the implementation of the agreement. Recent data (February 1st) indicates 5992 initiated treatments, of which 1202 successful and 49 unsuccessful.
**Conclusions:** The community's involvement and pressure were key to keep the issue on the agenda and reach an agreement.
A step in the right direction, the agreement still includes only one company (two molecules); people who use drugs and people in prison have low access levels, and there is no investment in diagnosis (estimated 50-100 000 people living with HCV in Portugal; approximately 13 000 in the Health System). These issues will be on the advocacy agenda over the next years.

## WEPED471

### ADVOCACY IN ZIMBABWE CHALLENGING PEPFAR AND THE GLOBAL FUND: GAME-CHANGING PARTNERSHIPS

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**Background:** The US Presidential Emergency Plan for AIDS Relief (PEPFAR) and Global Fund (GF) were created to help save the lives of PLHIV. Both PEPFAR and GF contribute above 50% of HIV response in Zimbabwe. Annually, PEPFAR country team develops a Country Operational Plan (COP), which is the basis of PEPFAR's funding. The COP lays the important decisions regarding how money will be allocated, what interventions will be supported, where PEPFAR will focus geographically and programmatically, and what goals the country program will work to achieve. However, before 2012, civil society's involvement in the process was tokenistic compared to GF. The Global Fund Country Coordinating Mechanism (CCM) in Zimbabwe provides an important platform for engagement and advocacy. Significant pressure from civil society resulted in meaningful engagements - a game changing partnership.
**Description:** In 2012, civil society leaders in advocacy in Zimbabwe engaged PEPFAR Zimbabwe team demanding meaningful involvement in the COP process. Little space was created. However, civil society felt the engagement was piecemeal and wrote to Ambassador Eric Goosby expressing concerns about how the COP process sidelined civil society. Significant pressure was exerted on the CCM for meaningful engagement in the CCM.
**Lessons learned:** There is usually flexibility in determining the budget for a PEPFAR COP—but it requires evidence informed advocacy. When spaces are denied, write to the in country PEPFAR team and copy the Coordinator. PEPFAR team listens and accommodates well organized CSO coalitions. Fragmentation of CSO leads to limited meaningful input into grant decisions especially the Global Fund Concept Note.
**Conclusions/Next steps:** A costed CSO PEPFAR Engagement Plan was crafted and planning is already underway to meaningfully consult on GF HIV Concept Note as well as key CSO writing team members, way ahead of the application and country dialogue process. The advocacy team and PEPFAR team will be meeting quarterly going forward. CSO CCM reps are chairing all committees-HIV, TB, Malaria, Management ethics and HR and oversight committees.

## WEPED472

### INTRODUCING RIGHTS-BASED HIV PROJECT IN MYANMAR (REACT) AND ITS IMPACT

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**Background:** According to sentinel surveillance, HIV prevalence among female sex workers aged 15-19 and 20-24 was 5.5 % and 7.9% respectively (2013), compared to adult HIV prevalence at 0.53% (2011). UNAIDS (2014) estimated that 23 percent of HIV-infections in Yangon and Mandalay occurred among sex workers. Government of Myanmar and UN figures (2013) estimate that 40,000 to 80,000 of Myanmar women aged 15 to 49 are engaged in paid sex work.
The Suppression of Prostitution Act 1949 criminalizes sex work with penalties of imprisonment of one r to three years. The Act also limits sex workers' access to healthcare and makes them vulnerable to threats and harassment from law enforcement.
**Description:** The REAct (Rights, Evidence and Action) project, a community-based monitoring and response system on human rights-related barriers to accessing HIV and health services, was started in Myanmar at the end of 2014. The Alliance in Myanmar works with four CBOs (2 for sex workers and 2 for MSM) to monitor and document cases of rights violations experienced by young people from key population groups. The beneficiaries receive emergency responses and support and referrals to a continuum of HIV, SRH, health and legal services.
**Lessons learned:** A total of 47 cases were documented using REAct. 10 cases from young men who have sex with men were documented and have resulted in all of the individuals being released from arrest. Of the 37 sex worker cases 13 are still in custody of law enforcement, despite all of the legal aid and services provided. We found that sex workers generally lack awareness about their arrest rights and because of their low legal literacy they are easy prey to police intimidation and harassment.
**Conclusions/Next steps:** In addition to documenting cases and providing emergency responses, additional skills in legal literacy and skills and negotiation are needed amongst sex workers and MSM. REAct data can be used to gain support and support policy makers and law enforcement to understand the impact of criminalization on HIV risk and key populations.

# DEFINING AND MEASURING THE QUALITY OF HIV SERVICES AND PROGRAMMES

## WEPEE473

### REDUCING LOSS TO FOLLOW-UP AMONG HIV EXPOSED INFANT IN MANICA AND SOFALA PROVINCES IN CENTRAL MOZAMBIQUE

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**Background:** To reduce of mother to child HIV transmission to less than 5% by 2015, care improvement in pediatric HIV cares and early ART for HIV-positive infants are strategic priorities for the Mozambican Ministry of Health (MOH).
Beira Operations Research Center, is conducting an implementation research study to address high postpartum (PP) loss-to-follow-up (LTFU) of mothers and HIV-exposed infants in six health facilities in the Sofala and Manica provinces of central Mozambique.
**Description:** The study goals is to Determine early diagnosis time among HIV-exposed infants in central Mozambique, Determine the proportions of HIV-exposed infants from maternities enrolled in Child-at-risk clinics and pediatric HIV care. Determine the proportions of HIV-exposed infants from PP care enrolled in CCR and pediatric HIV care.Determine the proportion of HIV-positive PP mothers provided with FP services.
**Lessons learned:** The waiting time from PCR sample collection to sending of the sample to the laboratory ranged from 1 to 12 days with an average of 5 days. The waiting time since sample was send to the referral lab and arrival at HF ranged from 14 to 43 days with an average of 28 days. The waiting time from sample collection to initiation of ART ranged from 35 to 136 days with an average of 86 days.The median age of HIV diagnose was 3 months, minimal of 2 and maximal of 18 months. We learn that no early HIV infant diagnose is occurring in central Mozambique and we need some intervention to address the challenge.
**Conclusions/Next steps:** Despite the efforts undertaken at the HF level to reduce time of HIV diagnosis in HIV exposed infant, there are still many difficulties in this process. The waiting time for PCR test results continues to be a big gap hinder-

ing early diagnosis of HIV in exposed infant and delaying early initiation of ART. At the community level stigma is still high for HIV positive people, interfering with initiation and retention in HIV care services. And Nex step is to design and conduct an intervention to improve retention of HIV exposed infant and they mothers in cascade of care.

## WEPEE474

### EVALUATING HIV PREVENTION PROGRAMS DELIVERED BY CDC-FUNDED COMMUNITY-BASED ORGANIZATIONS IN THE UNITED STATES

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**Background:** Since the late 1980s, CDC has partnered with community-based organizations (CBOs) to expand the reach of HIV prevention in affected communities. Because of their accessibility, history, and credibility in the community, CBOs are important partners in providing comprehensive high-impact HIV prevention (HIP) to people living with and at greatest risk for HIV infection.
**Description:** To reach populations lacking access to treatment, prevention, care and support services, CDC currently funds U.S. CBOs to deliver HIP through two Funding Opportunity Announcements (FOAs). PS11-1113 (September 2011- September 2016) funds 34 CBOs to provide HIV prevention to young men of color who have sex with men and young transgender persons of color and their partners; PS15-1502 (July 2015-June 2020) funds 90 CBOs to reach members of racial/ethnic minority communities and members of groups at highest risk for acquiring and transmitting HIV, regardless of race/ethnicity.
CDC developed Rapid Feedback Reports (RFRs), one of several mechanisms, to describe program achievement and progress towards meeting FOA goals for PS11-1113.
**Lessons learned:** RFRs use data reported by CBOs in Annual Progress Reports. In three years of funding, PS11-1113 CBOs conducted HIV testing among 41,350 individuals, identified 1,294 new HIV-positive individuals, and linked 84% of newly identified HIV-positive individuals to HIV medical care.
CBOs used RFRs to inform HIV testing priorities, share best practices with other CBOs, and enhance funding applications and reports. RFRs also stimulated discussion at CDC about how to best measure CBOs' performance.
Challenges included differences in how CBOs interpreted FOA objectives and variation in data collection and quality assurance. RFRs can be improved by reporting on all critical indicators and should consider local conditions and their effect on performance.
**Conclusions/Next steps:** RFRs are a first step in evaluating CBO HIV prevention program performance. For PS15-1502, CDC will expand data sources to include National HIV Prevention Program Monitoring & Evaluation (NHM&E) data and continue to incorporate other mechanisms for providing feedback for continuous program improvement.
NHM&E data are standardized variables that align with the National HIV/AIDS Strategy and CDC's HIP approach. NHM&E data and RFRs allow CDC to evaluate CBOs' progress towards reaching populations at highest risk for acquiring HIV.

## WEPEE475

### TREKKING THE JOURNEY ALONG THE HIV CASCADE: TRENDS IN TRANSITION TIMES FROM HIV DIAGNOSIS TO ENROLLMENT IN CARE AND ART INITIATION, NAMIBIA 2003-2015

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**Background:** Recent studies have demonstrated immense individual and public health benefits when antiretroviral therapy (ART) is initiated early and patients achieve HIV viral load (VL) suppression. This has prompted WHO to introduce new test-and-treat guidelines recommending ART for all patients living with HIV. We investigated the trends in transition times from HIV diagnosis to the time of ART initiation and the median CD4 cell counts among patients enrolling in HIV program in Namibia.
**Description:** We performed a retrospective cohort analysis of a complete census of national program data of patients enrolling in HIV program during 2003 - 2015. We evaluated time from HIV diagnosis to enrollment in care and time from enrollment in care to ART initiation. Differences in percentiles by gender and age group we assessed using quantile regression.
**Lessons learned:** 224,099 patients (63%; Females) were included in the study comprising 209,624 adults (≥ 15 years) and 14,475 children. During the evaluation period, the median time from HIV diagnosis to enrollment in care declined from 387 (IQR,67-1305) days to 8 (IQR,0-37) days among adults, and from 423 (IQR,59-601) days to 7 (IQR,1-32) days among children. Median times from HIV diagnosis to enrollment in care were significantly higher throughout study period (p< 0.01) for adult females.
The median time from enrollment into care to adult ART initiation steadily increased from 0 (IQR,0-21) days in 2003 to a peak of 105 (IQR,29-665) days in 2011 before declining to 28 (IQR,4-210) days in 2015. The median time from enrollment into care to pediatric ART initiation steadily increased from 0 (IQR,0-14) days in 2003 to a peak of 43 (IQR,16-213) days in 2011 before declining to 10 (IQR,0-35) days by 2015. The median CD4 count among adults at ART initiation increased from 108 (IQR,57-177) cells/µL in 2003 to 297 (IQR,163-426) cells/µL in 2015.
**Conclusions/Next steps:** To maximize individual and public health benefits of ART, programmatic monitoring of time from HIV diagnosis to ART initiation should become important quality measures of HIV programmes. Namibia HIV program will maximally benefit from early ART initiation by implementing interventions to reduce transition times from HIV diagnosis to ART initiation.

## WEPEE476

### EVALUATING TURNAROUND TIMES FOR EARLY INFANT DIAGNOSIS SAMPLES IN KENYA FROM 2011-2014

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**Background:** Delays in sample processing can hinder the success of early infant diagnosis (EID) programs. In Kenya, it can take up to 8 weeks for infant HIV DNA PCR test results to be returned to hospitals. The HITSystem is an eHealth intervention that alerts clinicians and lab technicians when services are overdue or samples are delayed.
**Methods:** We conducted a retrospective analysis of 3669 HIV-exposed infants enrolled in the HITSystem from 2011-2014 at 15 hospitals, served by three laboratories in Kenya. We assessed mean and median turnaround times (TAT) from when a:
1) sample was obtained to when it was shipped to the laboratory,
2) sample shipped to when it was received at the laboratory,
3) sample received to when a result was available, and
4) sample obtained to result available.
TAT were compared by lab, year, and month of sample collection.
**Results:** Of the 3669 samples collected, 3625(98.8%) had results posted by end of 2014. For all labs, the average TAT from sample collection to shipping was 5.23 days (median=3; range = 0-698 days), from when a sample was shipped to received at the lab was 2.00 days (median=0; range=0-253), and from when it was received at the lab to a result posted was 17.44 days (median=13; range=0-744). All said, it took an average of 24.70 (median=19; range=0-776) days from when a sample was obtained until when the result was posted. There was significant variation in TAT between labs, particularly in processing times once received at the laboratory. TAT was significantly higher in December and showed a decreasing trend from 2011-2014.

| | N* | Mean Days (SD) | Median Days (Range) | P-value |
|---|---|---|---|---|
| TAT: Obtained - Shipped to Lab | | | | |
| All Labs | 3582 | 5.23 | 3 (0-698) | <.0001 |
| Lab 1 | 1823 | 6.47 (10.02) | 5 (0-277) | |
| Lab 2 | 1388 | 4.55 (19.89) | 2 (0-698) | |
| Lab 3 | 371 | 1.66 (3.75) | 1 (0-63) | |
| TAT: Shipped – Received at Lab | | | | |
| All Labs | 3565 | 2.00 | 0 (0-253) | <.0001 |
| Lab 1 | 1814 | 1.52 (9.32) | 0 (0-238) | |
| Lab 2 | 1382 | 3.09 (15.97) | 1 (0-253) | |
| Lab 3 | 369 | 0.34 (2.07) | 0 (0-34) | |
| TAT: Received at Lab- Results Available | | | | |
| All Labs | 3539 | 17.44 | 12 (0-744) | <.0001 |
| Lab 1 | 1797 | 17.62 (15.43) | 14 (0-185) | |
| Lab 2 | 1442 | 12.51 (21.46) | 10 (0-744) | |
| Lab 3 | 300 | 40.18 (26.60) | 35 (0-126) | |
| TAT: Obtained – Results Available | | | | |
| All Labs | 3544 | 24.70 | 19 (0-776) | <.0001 |
| Lab 1 | 1800 | 25.55 (21.55) | 21 (0-438) | |
| Lab 2 | 1444 | 20.07 (33.15) | 15 (0-776) | |
| Lab 3 | 300 | 41.89 (26.61) | 36 (1-127) | |

*Total sample size varies dues to missing data.

*[Table 1. Mean and median turnaround times in days by laboratory]*

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**Conclusions:** Compared with TATs reported in other Kenyan studies, the HITSystem achieved shorter TAT of PCR results. However, significant variation between laboratories indicates the need to strengthen protocols and infrastructure to ensure that all laboratories throughout Kenya can provide rapid, high-quality services.

## WEPEE477

### EVALUATION OF HIV CARE QUALITY INDICATORS DURING THE IMPLEMENTATION OF ELECTRONIC MEDICAL RECORDS IN A LARGE SUB-SAHARAN HOSPITAL IN KENYA

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**Background:** The revision of the WHO guidelines will result in an unprecedented increase in individuals requiring HIV care and treatment. Monitoring of quality of care will require robust systems. Previous studies have reported improved completeness of medical records, reduction of errors and ease of patient outcomes data analysis through electronic medical records (EMR) implementation. Little is known about variations in quality of care and the performance of HIV care indicators during and after EMR implementation. The objective of this study was to evaluate EMR as a quality improvement tool during EMR implementation.
**Methods:** A cross -sectional study design was used to analyse data from 466 patients. Bi-phasic EMR implementation comprising of a paper based central data entry step followed by a transition to real-time (provider based) EMR. Repeated measures methods were used to test the changes in documentation of HIV quality of care indicators (Cochran's Q test) and mean time interval between CD4 tests (Friedman's test) in the three implementation phases, Paired comparisons were carried out using McNemar's test and Wilcoxon matched pair signed test.
**Results:** Documentation of quality of care indicators improved as data management system transitioned to provider-based EMR. Documentation of weight improved significantly (p<0.001) throughout the implementation period from 89.5% Pre-EMR to 100% in the provider-based EMR period. Both TB screening and adherence assessment documentation by clinicians increased significantly throughout all the EMR implementation phase (p<0.001). Documentation of laboratory tests increased during real-time EMR from 90.3% to 92.9 % (p<0.001) but did not significantly improve during the paper-based central data entry phase. This study reported significant (p<0.001) improvement in clinicians' compliance to CD4 patient monitoring guidelines from a median time interval of 9 months (IQR 6.0-14.0 months) between CD4 test ordering during pre-EMR phase to 6 months (IQR 5.0-7.0 months) during the real-time EMR.
**Conclusions:** In the background of expected increased in numbers enrolled in HIV care, this study finds the implementation of provider based 'real-time' electronic medical records beneficial in the improvement of HIV quality of care.

## WEPEE478

### CONTRIBUTING FACTORS OF LOSS TO FOLLOW-UP OF HIV EXPOSED CHILDREN IN CENTRAL MOZAMBIQUE

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**Background:** Early diagnosis of HIV infection in children is fundamental to ensure early treatment and reduce the mortality of HIV-infected children. In Mozambique, HIV prevalence is 11.5% (IDS-2011) and the retention of HIV exposed infants in the cascade of care is less than 50%. CIOB[i] is conducting a study to determine the factors contributing to loss to follow-up (LTFU) of HIV exposed infants.
[i] Beira Operations research Center.
**Methods:** Cross-sectional study with mixed methodology and design of the intervention were escalated based on formative research results. Study population was HIV + exposed infants identified in post-partum clinic and in the high risk child clinic. Six health facilities, all of which offer Option B+, were selected to be study sites. They are all located in the Beira Corridor (Munhava, Macurungo, Dondo, Primeiro-de-Maio, Nhamaonha and Gondola). We observed waiting times, collected registry data, and conducted individual and group interviews. Data was analyzed using Excel.
**Results:** Waiting times of 240 HIV+ women were observed. The median of waiting time at CCR was 94 minutes (maximum time 5 hours) average time spent at health facility was roughly 5 hours (4 hours 57 min). Median turnaround time for PCR results to the health facility was 28 days (max 56 days) in Manica province and 24 days (max 82) in Sofala province. PCR results were communicated to caregivers with an average time of 30 days (max 120 days) in Manica province and 28 days (max 100 days) in Sofala. Triumune baby was frequently stocked out at health centers (maximum time 7 days). Focus groups identified stigma as a major contributing factor (in 87% of respondents) in loss to follow up as was lack of male involvement.
**Conclusions:** LTFU of HIV exposed infants occurs in all stages of the cascade of care, but particular weaknesses were identified in high risk child clinic and ART clinic. Prolonged wait times for services, delays in receiving PCR results, stigma and lack of male involvement were all found to contribute to LTFU and poor retention of HIV exposed infants.

## WEPEE479

### ANALYZING QUALITY OF CARE OF ANTIRETROVIRAL TREATMENT IN NIGERIA: AN APPLICATION OF ITEM RESPONSE THEORY (IRT) METHODS

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**Background:** Substandard quality of care of Antiretroviral treatment (ART) accounts for the largest losses in survival and quality of life, because treatment effectiveness is maximized when patients receive proper regimens of antiretroviral drugs and other elements of care such as psychological and nutritional support are provided. Proper measures of health providers' levels of competence - or knowledge - are scarce in the literature of HIV health services. We analyzed medical vignettes data from the ORPTHEN study of costs and quality in Nigeria.
**Methods:** We used data from 115 facilities providing ART services in Nigeria. Medical vignettes were developed according to WHO and country-specific treatment guidelines, and administered to a sample of 146 doctors, 58 nurses and 51 counselors (n=255), to assess knowledge of the content of baseline and follow-up examinations. The data were analyzed using Item Response Theory (IRT) methods, in order to select the critical elements that distinguish between providers with high and low competence. A competence score was generated with Principal Component Analysis (PCA) and Pearson correlations with provider and facility characteristics are reported.
**Results:** The location parameter of the logistic equations showed that the most difficult items (i.e. those that providers struggled the most to answer correctly) at baseline clinical evaluation were: i) staging with immunological classification, ii) development of adherence strategy, iii) evaluate nutritional status, and iv) evaluate psychological status. For follow-up evaluation of eligible ART patients, the most difficult items were: i) check for cancers, ii) check for pregnancy, iii) ask about fatigue and iv) ask about appetite changes. Bivariate analyses showed that patient load and the number of hours/week correlated positively with competence. With respect to facility characteristics, no differences in competence were found between public and private facilities, or between levels of care.
**Conclusions:** The analysis showed that medical vignettes of ART provide sensible data to obtain plausible and accurate indicators of competence. Substantial variation in the competence score was found in the sample, which suggests opportunities for improvement. Provider characteristics related to different levels of competence can assist in hypothesis generation of the supply-side determinants of quality of care and its trade-off with cost-efficiency.

## WEPEE480

### CONDUCTING EXTERNAL QUALITY ASSESSMENTS FOR VOLUNTARY MALE MEDICAL CIRCUMCISION (VMMC) PROGRAMS: EXPERIENCES FROM FOUR COUNTRIES

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**Background:** Funding from the President's Emergency Plan for AIDS Relief (PEPFAR) has been supporting implementation of Voluntary medical male circumcision (VMMC) programs in 14 priority countries, since 2010. In order to ensure VMMC quality, External Quality Assessments (EQAs) were conducted at selected sites within these countries, by interagency (CDC and USAID) PEFAR teams. In 2014, additional PEPFAR reporting requirements (SIMS) necessitated identification of a more efficient system of data collection to facilitate the VMMC EQA process. The USAID ASSIST project was funded to develop a VMMC EQA mobile application, as well as to support USG EQA teams in 4 countries. This paper describes these experiences.
**Description:** From Sep2015-Jan2016 four EQA/SIMS visits were conducted, in Swaziland, Lesotho, Zimbabwe and Tanzania. USG EQA teams comprising staff from OHA, in-country USAID missions, USAID ASSIST, HC3-JHU and MOH conducted a total of 24 site-level EQA/SIMS visits. In all countries there were 2-3 EQA teams.

Each team comprised between 5-8 members, and visited 4-7 sites over a five day period. At each site, a joint EQA / SIMS tool derived from WHO/UNAIDS normative standards and PEPFAR SIMS guidance was used. The EQA team performed document and chart reviews; observations of facilities, VMMC procedures, equipment and clients; and discussions with key personnel at the site. Site-level data was collected and the team also observed in-person communication, group and individual counseling, VMMC procedures and follow up review. Briefing meetings were held with MOH and in-country USAID missions prior to and following EQA/SIMS visits. Detailed site-level and country-level EQA and SIMS reports were provided to USAID 2-3 weeks following the EQA/SIMS visits. All four countries responded enthusiastically to the joint EQA/SIMS visits.
**Lessons learned:** Conducting joint EQA/SIMS visits has allowed for greater program efficiencies and reductions in costs, as one site visit may be utilized to fulfill two purposes. It has also allowed for creativity, innovation and improvement in the overall EQA design and process, through engagement of various stakeholders, including USAID ASSIST.
**Conclusions/Next steps:** The success of joint VMMC EQA/SIMS visits can be attributed to the engagement of various stakeholders working towards a common goal.

## WEPEE481

### THE PREVALENCE, TYPES OF ERRORS AND FACTORS ASSOCIATED WITH IRRATIONAL PRESCRIPTIONS OF ANTIRETROVIRAL THERAPY FOR CHILDREN UNDER 15 YEARS IN EAST CENTRAL UGANDA

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**Background:** HAART is instrumental in improving growth and immune responses in HIV-infected children. To be beneficial, children must receive HAART according to standard treatment guidelines. However, prescribing HAART in children is complicated by weight bands, age, CD4 counts, PMTCT exposure and TB co-infection creating high chances of error, failure to achieve desired treatment response and development of ARV resistance. The level of irrational prescriptions and associated factors is unknown in Uganda.
**Methods:** We conducted a retrospective cross-sectional study in one public and one private hospital in East Central Uganda, between April and September 2013. Data on prescriptions for children under 15 years was collected from patient files. We reviewed facility records to determine site-specific factors and prescribers completed semi-structured questionnaires to highlight prescriber-related reasons for errors. Data was entered into Epi data software and analyzed using STATA.
**Results:** A total of 166 children were observed, 63% from the private facility and 37% from the public health center. Overall, 58.4% (n=97) of children had at least one irrational ARV prescription. 71.1% of these were from the private site. While in the public facility most (60.7%) of the children had one irrational prescription, in the private setting, majority (46.1%) had 2- 4 irrational prescriptions.
All 12 children newly initiated on ART had an irrational prescription. Errors of commission, majorly prescribing adult formulations, were the commonest types of errors (71%) followed by integration errors such as regimens that were not HAART (18%). Mid-level prescribers wrote majority of the irrational prescriptions at 44%.
Children on treatment for less than a year were 14 times more likely to have an irrational prescription as compared to those on treatment for more than a year (95%CI: 2.75-72.09, P-value=0.002). Children attending the private facility were 2.7 times more likely to have irrational prescriptions in comparison with those in the public setting (95% CI: 1.28-5.60, P-value=0.009).
**Conclusions:** There is high prevalence of irrational prescriptions among children in Uganda putting them at risk of treatment failure and drug resistance. Quality improvement strategies that reduce patient load and automate decision-making should be implemented to mitigate the incidence of irrational prescriptions.

## WEPEE482

### CLIENTS' PERCEPTIONS AND SATISFACTION WITH HIV COUNSELLING AND TESTING: A CROSS-SECTIONAL STUDY IN SOUTH AFRICAN HEALTH FACILITIES

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**Background:** Client satisfaction serves as a predictor for acceptance of HIV Counselling and Testing (HCT) services. Hence, clients' perception and satisfaction studies provide insight to improving HCT programmes in many countries.
**Objectives:** The aim of this study was to assess clients' satisfaction with HCT as well as describe perceived barriers and facilitators of HIV testing by HCT clients in South Africa.
**Methods:** A cross-sectional survey was conducted through interviews with 494 clients purposefully selected at the end of an HCT visit at 56 HCT sites throughout the country.
**Results:** All study participants had tested for HIV with 98.8% receiving their results. The vast majority (75.5%) of clients reported that they had decided to be tested for HIV by themselves. Most participants were females (62.2%) as compared to males (37.8%). High levels of satisfaction with HCT service (89.8%), low levels (27.7%) of difficulty in making the decision to have an HIV test, and the high levels of perceived confidentiality (94.6%) of the HIV test results, were reported in this study.
The most cited perceived barrier to HIV testing was lack of awareness about the HCT service (98%), while staff attitudes (37%), confidentiality (29.6%) and privacy (23.6%) were perceived facilitators. In logistic regression, sex, age, relationship status, facility type, geotype, length of time for counselling, length of time to receive HIV test results and staff attitude, were not statistically significant predictors of clients' satisfaction.
However, when adjusted for all the other factors, staff attitude was statistically significant in predicting client satisfaction.
**Conclusions:** Uptake of HIV testing in this study is high, with most making a decision to test by themselves and a commendable proportion of participants reporting receipt of their test results. Although not all significant, client related and service-delivery factors contribute as predictors of satisfaction with HCT in this study.

## WEPEE483

### IMPROVING HEALTHCARE SERVICE DELIVERY TO PLHIV THROUGH THE DUAL ADMINISTRATION OF A STANDARDIZED MONITORING TOOL AND TARGETED CAPACITY-BUILDING: EXPERIENCES FROM KEBBI STATE, NORTHERN NIGERIA

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**Background:** Despite efforts to improve Tuberculosis (TB) and HIV collaborative services to PLHIV in Nigeria, delivery of these services remains low. Management Sciences for Health implements the USAID-funded ProACT Project which administers PEPFAR's Site Improvement through Monitoring Systems (SIMS) as a standardized monitoring tool for assessing quality of service delivery at site-level. This study examined the effect of the dual administration of the SIMS tool at routine facility visits and targeted capacity building of health workforce, on improving HIV service delivery at Sir Yahaya Memorial Hospital (SYMH) a government-owned secondary health facility in Kebbi State, Northern Nigeria.
**Description:** The SIMS Tool was administered at SYMH on 9th June 2015 to assess two Core Essential Elements (CEEs) of HIV service delivery; provision of routine HIV testing and counseling to all adult and adolescent Tuberculosis patients and routine HIV testing in children. This revealed that 30% of HIV-positive adult TB patients had documentation of ART initiation and 0% of pediatric in-patients had documented HIV testing and counselling. An innovative approach that involved targeted mentoring of the Directly Observed Therapy Short Course (DOTS) focal person on appropriate documentation in the Tuberculosis Register and conducting a Continuing Medical Education program for Physicians and Nurses on HIV testing in pediatric patients, was developed and implemented. The SIMS Tool was re-administered on 15th July 2015 and 2nd October 2015 to assess the same CEEs.
**Lessons learned:** Documentation of ART initiation in HIV-positive adult TB patients increased to 70% (2nd visit) and 80% (3rd visit); while HTC for pediatric in-patients remained at 0% at the 2nd visit but rose to 70% by the 3rd visit.

**Conclusions/Next steps:** The implementation of the SIMS standardized monitoring tool (SIMS) at the site-level to assess the quality of healthcare services was beneficial to tailoring interventions to address noted gaps. Developing healthcare workforce capacity to conduct HIV testing within TB departments, establish adequate complete referral systems between departments and manage co-infected patients are vital to the implementation of quality TB-HIV collaborative services. This intervention was shown to improve healthcare service delivery to PLHIVs in Kebbi State, Northern Nigeria.

## WEPEE484

### HEALTHCARE TRANSITION PRACTICES ACROSS THE BAYLOR COLLEGE OF MEDICINE INTERNATIONAL PEDIATRIC AIDS INITIATIVE (BIPAI) NETWORK OF PEDIATRIC HIV CLINICS

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**Background:** The Baylor College of Medicine International Pediatric AIDS Initiative (BIPAI) network has provided care to over 250,000 HIV-infected and -exposed children and youth resulting in a large number of youth that will transition from pediatric- to adult-model care. The purpose of this study is to describe the characteristics and current healthcare transition practices of BIPAI clinics in order to assess transition-related needs and identify ways to improve the transition process.
**Methods:** Seven of eight BIPAI sites responded to a 40-item survey: Gaborone, Botswana; Maseru, Lesotho; Lilongwe, Malawi; Mbabane, Swaziland; Mbeya, Tanzania; Mwanza, Tanzania; and Houston, Texas, USA. The survey elicited information about clinic staffing, patient demographics, current healthcare transition-related activities, and perceived barriers to youth healthcare transition.
**Results:**
***Demographics:*** A total of 16,453 active patients were enrolled at the 7 sites, ranging from 127 to 5320 patients per site; 53% were female, 18.6% were adolescents (15-19 years), and 17% were youth ≥20 years of age. Almost all patients were perinatally infected.
***Clinic Structure:*** Each clinic described a multidisciplinary model of care including medical and psychosocial services as well as significant additional support services for adolescent and young adult patients including support groups, nutritional support, camps, and life skills education.
***Transitioning:*** A total of 263 patients were transferred from BIPAI clinics in the past year. The number of patients transitioned ranged from 5 to 87 patients per site. Reasons for transferring patients included age, pregnancy and changes in residence, school and/or work location. Clinic respondents cited concerns regarding transition-readiness of patients and the lack of support services outside of the pediatric clinic as potential barriers to healthcare transition.
**Conclusions:** Across the BIPAI network there is a significant and rapidly increasing number of patients to transition to adult-model care. The number of patients transitioned varied widely by site due in part to concerns about patient readiness and the potential loss of services available in the pediatric clinic. Improving patient readiness and active linkage to community support services may reduce resistance to transition. A systematic evaluation and improvement of the transition process at each site and follow-up of those who have transitioned is recommended.

## WEPEE485

### THE PEPFAR PIVOT: ENGAGING ORGANIZATIONS LED BY KEY POPULATIONS TO MAXIMIZE REACH

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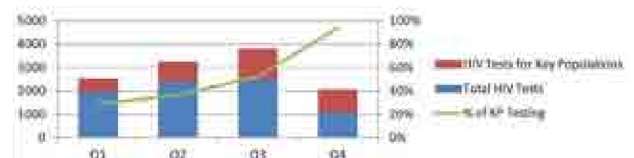
**Background:** The United States' President's Emergency Plan For AIDS Relief (PEPFAR) is transitioning its focus from direct service delivery to technical assistance and collaborative support. PEPFAR has continued to shift its support to programming for key populations (KPs) most-at-risk for HIV and simultaneously building capacity for KPs service delivery, promoting targeted, evidence-based interventions for these groups.
**Description:** This 'Pivot' has streamlined service provision in strategically positioned areas where KPs are concentrated; it focuses on Region 4 of Guyana - the most densely populated administrative region - where the most reported cases of HIV positives were recorded, and primarily reaching men who have sex with men (MSM), transgender persons, and sex workers. Since the shift, KP-led organizations have recorded a surge in the numbers of KPs that have been met with HIV Prevention Interventions, including Voluntary Counseling and Testing for HIV (VCT). The KP-led organizations subsequently included through contract with USAID's Advancing Partners and Communities (APC) Project showed significant improvement in contributing to meeting targets for the fiscal year, with these organizations contributing 33% of the overall reach, despite only joining the project for the last four (4) months.
**Lessons learned:** As the findings demonstrate, KP-led organizations have proven to be more effective at reaching their peers with HIV prevention interventions in the Guyana context.
Given the data above, of the eight (8) total grantees now under the project, only three (3) were providing HIV prevention services for KPs, which showed a 94% contribution to the total number of persons tested, as compared to 52% just four (4) months before.
**Conclusions/Next steps:** Given this evidence, national AIDS programs and donor partners should engage KP-led organizations to reach their peers and maximize uptake of HIV prevention services among KPs. This greater involvement of KPs, as a fundamental strategy, will demonstrate more effective results towards universal access.



*[Graph showing increase of KP testing]*

## FACILITY-LEVEL QUALITY IMPROVEMENT (QI) INITIATIVES

## WEPEE486

### TELEPHONIC DEFAULTER TRACING BY MENTOR MOTHERS

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**Background:** An EMTCT strategic framework launched in 2012 by the Kenyan Ministry of Health identified five strategic directions which included meaningful involvement of HIV- positive mothers as Mentor Mothers (MMs), which led to the development of guidelines for implementation of the Kenya Mentor Mother Program (KMMP). KMMP seeks to improve PMTCT uptake and retention in care through peer education and psychosocial support.
**Methods:** mothers2mothers implement KMMP at 20 high volume facilities in Kenya. On first contact, MMs record client details in a longitudinal register which is updated each time the clients returns to the facility for priority PMTCT services up to 18 months post-delivery, when the final infant HIV test is done. Any time clients miss appointments; MMs relay a reminder through SMS or phone call, depending on the client's consent. When clients return, MMs enquire and record the reason for missing the appointment. We reviewed program data on missed priorities by randomly sampling 199 HIV positive clients who had defaulted for the period January - December 2014 to better understand the process.
**Results:** Results indicate that 99% of the sampled clients had given consent for follow up via telephone, 64% through SMS and 41% of the clients consented for home visit follow up. Most (74%) of the clients who defaulted returned to the facility after only one phone call. Sixty percent returned and took up the service, 22% relocated and reported accessing services elsewhere, while 8% declined and 3% were not traced. The health service associated with most defaulters was ARV/HAART refill at 24%, maternal CD4 Test uptake at 22% while the health services associated with the lowest numbers of defaulters were infant PCR test and infant cotrimoxazole uptake at 8% each. Reasons for missing appointment were as follows: 22% had travelled, 16% had transferred out and 9% cited fear of stigma and denial.
**Conclusions:** Close monitoring of the key priorities via a telephonic follow up is important to achieving the desired retention level within health facilities. More education and support need to be provided to clients initiating ART/HAART to decrease the defaulter rate.

## WEPEE487

### HIV KNOWLEDGE AMONG TEEN CLUB PARTICIPANTS IN LESOTHO

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**Background:** Teen Club, a peer psychosocial support group for HIV-infected adolescents, was introduced at the Baylor College of Medicine Bristol-Myers Squibb Children's Clinical Center of Excellence-Lesotho (COE) in 2007. Due to an expanding population, there is younger group for those 11-14 years of age and an older group for those 14-18 years of age. Five Baylor College of Medicine Texas Children's Hospital Bristol-Myers Squibb Satellite Centers of Excellence (SCOEs) each have one group for those 11-18 years of age. The Teen Clubs at the SCOEs also invite HIV-infected adolescents receiving medical care at nearby facilities. In an effort to better quantify and improve the HIV-specific knowledge of Teen Club participants, a Health Knowledge Survey (survey) was developed.
**Methods:** Between February and May 2015, the survey was administered to 629 Teen Club participants at the COE and three SCOEs. The survey is a modified version of HIV-KQ-45, a comprehensive, validated survey. Forty questions were written in English with Sesotho translations included and with possible answers of True, False and Don't Know. All survey responses were entered into a database and then coded as correct, incorrect, don't know or excluded (no response or multiple answers selected).
**Results:** The older COE Teen Club demonstrated the highest level of HIV knowledge with 63% of questions answered correctly and the younger COE Teen Club the lowest level at 42% correct responses.
**Conclusions:** Administration of the survey has established a baseline for HIV knowledge among Teen Club participants. All groups show opportunities for increasing and improving the quality of HIV knowledge and practical application to life skills. Facilitators will use the results of the survey to develop new topics or improve existing curricula. An annual follow-up survey is planned to track learning over time in Teen Club participants.

| Group | Completed surveys | % Correct | % Incorrect | % Don't Know |
|---|---|---|---|---|
| COE, younger | 201 | 42% | 33% | 19% |
| COE, older | 202 | 63% | 25% | 10% |
| SCOE #1 | 100 | 52% | 29% | 15% |
| SCOE #2 | 74 | 59% | 23% | 16% |
| SCOE #3 | 52 | 55% | 25% | 16% |

*[Survey results by support group]*

## WEPEE488

### PROVIDER-INITIATED TESTING AND COUNSELING FOR CHILDREN UNDER 15 YEARS AT INPATIENT WARD, QUALITY IMPROVEMENT EXPERIENCE FROM MOROGORO REGIONAL HOSPITAL, TANZANIA (JANUARY-DECEMBER 2015)

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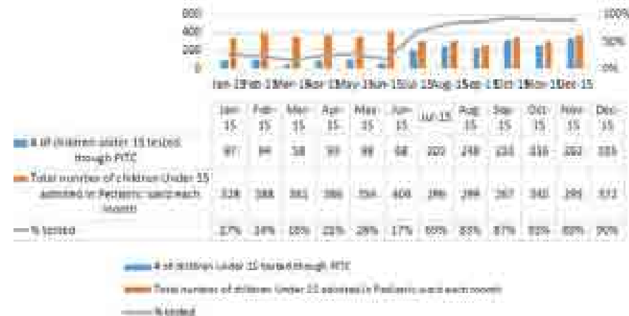
**Background:** In 2015, WHO released a Consolidated Guideline for HIV Testing Services (HTS). One of the approaches advocated in high burdened countries is Provider Initiated HIV testing and counseling - PITC. According to the Tanzania Third Health Sector HIV and AIDS Strategic Plan (2013 - 2017), PITC should be offered to 80 % of patients attending health facilities. However, assessment conducted at our facility in February 2015 revealed that, only 27% of children under 15yrs were tested in January 2015.This is a missed opportunity for identification of HIV infected children. This is a write up to document the quality improvement work done to increase number of children below 15 years admitted in pediatric wards who are tested through PITC.
**Methods:** At the inception, facility staffs were assisted to analyze PITC performance, identity reasons for low uptake of HIV test and set facility PITC improvement goal and target. Then the facility staffs were supported by team of quality improvement coaches to form quality improvement teams. The QI team was supported to document the improvement plan in monitoring journals every month. Through PDSA cycle, improvement teams tested changes to improve staff performances, availability of HIV test kits and acceptability of HIV test to parents.
**Results:** HIV Counseling and testing among children less than 15 years admitted in pediatric wards increased from 27 % in January 2015 peeking to 93 %, in October and 90% in December 2015. A total of 2095 children were tested in 2015 from inpatient ward, 75 among them were positive resulting to 4% positivity rate.
**Conclusions:** QI approach improved uptake of HTC among children less than 15yrs admitted in Pediatric wards. However, efforts to ensure matching demand and supply of test kits with facility PITC targets is important to avoid missed opportunities.



*[Figure. Annual profile inpatient pediatrics tested for HIV at Morogoro Regional Hospital - 2015]*

## WEPEE489

### IMPROVING CLIENT FOLLOW-UP IN VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) PROGRAMS THROUGH CONTINUOUS QUALITY IMPROVEMENT CQI: EXPERIENCES FROM SOUTH AFRICA

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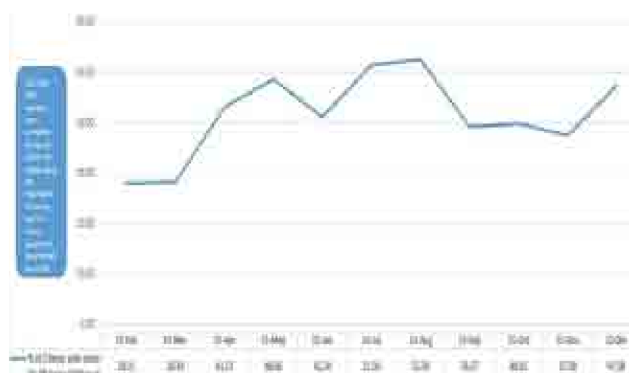
**Background:** Continuous Quality Improvement (CQI) in health care is a systematic approach to making changes that lead to better patient outcomes and stronger health system performance. This approach involves the application of CQI, which provides robust structure, tools and processes to assess and accelerate efforts to test, implement and scale up. CQI is the complete process of identifying, describing and analyzing strengths and problems and then testing, implementing, learning from and revising solutions and spreading good practices. The USAID ASSIST project has been implementing CQI for VMMC programs in South Africa since June 2014.
**Description:** Over 100 VMMC sites received baseline CQI assessments to determine the existing service delivery levels. The quality gaps identified formed a basis for introducing CQI methodology (identify, analyze, develop and test and implement and PDSA cycles). At all sites, CQI teams were set up, comprising site-level staff. Monthly and quarterly CQI mentoring and coaching visits were conducted by ASSIST staff at sites, according to performance. CQI site teams were mentored on analyzing, reviewing data, documenting program performance and problem solving.



*[Percentage of 48 hour follow up of VMMC clients in 83 CQI facilities]*



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**Lessons learned:** Using CQI methodology and tools, all site teams started documenting programmatic data, compiling common quality indicators, analyzing quality gaps and discussing possible interventions. All sites are seeing an improvement in documentation of their client follow-up rate since they began plotting indicator changes on the graphs. Eighty three sites showed significant improvement in 48 hour client follow up, from 28.1% to 47.5% between February - December 2015.
**Conclusions/Next steps:** Since the onset of CQI support, it has been noted that site level CQI teams have gained a positive attitude and are motivated to develop interventions and site-level action plans. While shown to be effective within the VMMC program, CQI tools and methodologies can be applied to all health programs as teams can implement skills gained and lessons learnt across board.

## WEPEE490

### HEALTHCARE PROVIDERS GO BEYOND THEIR CALL OF DUTY IN AN ART PROGRAMME IN RURAL KWAZULU-NATAL

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**Background:** Nurses and counsellors play an important role in HIV healthcare delivery and their behaviour likely influences the success of antiretroviral therapy (ART) scale-up and quality care provision. Providing patient satisfaction feedback as way of initiating discussion may give healthcare providers a better understanding of patient perceptions regarding the care they receive and reflection space to respond or change behaviour.
**Methods:** In 2012 we carried out a qualitative study with nurses and counsellors in eight (of 17) randomly-selected primary healthcare (PHC) clinics in a rural district in KwaZulu-Natal, South Africa. Twenty-five ART healthcare providers (16 nurses and 9 counsellors) were engaged in a discussion about challenges faced by them and their patients, to inform understanding of factors affecting provision of quality care. Discussions were based around aspects of satisfaction reported by patients in a previous survey in the same setting (overall satisfaction, communication, contact time, respect, privacy, cleanliness, and waiting times). Discussions were recorded and transcribed; all data were managed using Nvivo 10 and thematic analysis used to identify emerging themes and patterns from the data.
**Results:** Two broad theoretical constructs emerged: healthcare providers' empathy and responsiveness to individual patient's challenges; and feelings of helplessness and inability to address structural barriers within the system. Lessons learnt included healthcare providers feeling unable to respond to issues of staff attitude, respect and the long waiting times for individuals, in a system where many logistical challenges to delivering high quality care existed. Further, healthcare providers felt they had limited capacity to bring about change because of limited resources. However, lessons on resilience emerged as healthcare providers described their adopted solutions to deal with these issues including working longer hours and using personal resources to support patient needs.
**Conclusions:** Broad lessons learnt are that using results from a patient exit survey to engage nurses and counsellors works well. The healthcare providers' responses show a commitment to providing quality care and their profession. There is need to strengthen human resources for health especially in light of the new ART initiation guidelines for universal treatment to support healthcare provider's efforts.

## WEPEE491

### LONGITUDINAL NORTH-SOUTH PARTNERSHIP IN PEDIATRICS TO IMPROVE HIV/AIDS CARE AND TREATMENT: A MODEL FOR SUSTAINABILITY IN ETHIOPIA

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**Background:** Teaching hospitals in the global south confront a diminishing supply of physician-educators. In Ethiopia, this has adversely affected the quality of teaching, research, and patient care. Although north-south partnerships (NSPs) hold promise for bolstering under-staffed programs, to date few have done so sustainably.
**Description:** In 2008, a partnership was established between University of Gondar Hospital (GUH, Ethiopia), Baylor College of Medicine International Pediatric AIDS Initiative at Texas Children's Hospital (BIPAI), and the Jewish Joint Distribution Committee (JDC) to supplement the GUH teaching faculty with 3 American pediatricians. In 2010, the collaborating parties identified six objectives for the partnership: create a sustainable apparatus for pediatric training, especially HIV/AIDS, advance research in child health, improve patient care, institute a clinical outreach program, exchange knowledge and faculty between participating organizations, and procure medical supplies. To promote sustainability, the partnership created an accredited pediatrics residency program and trained the residents in teaching, research, quality improvement (QI), and outreach. In their second year, residents were mobilized to advance partnership objectives.
**Lessons learned:** From 2008 to 2013, mean examination scores among 5th year medical students remained stable (range 66%-71%) despite a 50% increase in student volume. Nine research publications were generated from 2012-2013, and the number of projects underway per year increased logarithmically (from zero to 16, 63% of which were resident-driven). Nine QI projects demonstrated improvements in process or outcome, and the number of projects underway per year increased logarithmically (from zero to 15, 60% of which were resident-driven). By 2013, a resident-driven outreach program was active in 18 schools and 3 regional health care centers. The faculty exchange and supply procurement objectives were poorly defined, limiting program evaluation. The first residency class graduated in December 2013 and replaced its expatriate mentors on faculty. By building local HCW capacity, expansion of pediatric HIV/AIDS prevention, care and treatment has been scaled upward.
**Conclusions/Next steps:** This NSP addressed intermediate-term staffing shortages in a resource-limited teaching hospital. The residency program advanced the department's medical education, research, patient care, and outreach objectives and ensures a continued focus on HIV/AIDS. This initiative is currently being replicated at the BIPAI Centre of Excellence in Mbabane, Swaziland.

## WEPEE492

### IMPROVING THE CHRONIC MEDICATION PRE-PACKING SYSTEM AT NOKUTHELA NGWENYA CHC

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**Background:** Nokhuthela Ngwenya CHC as part of the ideal clinic ICSM model uses a booking system for patient appointments. The facility was having problems with identifying the specific consulting rooms which patient pre-packed medication and pre-retrieved files should be allocated to before the patient arrives for their appointment. The objective of the quality improvement (QI) project was to develop an effective patient medication pre-packing system which will result in reduced waiting times for patients and confusion for staff.
**Methods:** Through the use of QI methodology, root cause analysis was performed to identify the causes. The results were:
- No proper system for allocating patients to rooms
- No system for correctly pairing medication with patients

The change idea bundle tested was:
- To pre retrieve booked patient files the day before
- To label all pre-retrieved patient files booked for an appointment with a consultation room number
- To attach the pre-packed medication to the pre-retrieved patient file on daily basis.
- To allocate the patient to the correct consulting room when they arrive for their appointment.

**Results:** The project was monitored consistently for a period of 12 weeks. We found that 90% of the patients were matched correctly to their consulting room and to their medication.
The waiting times were also reduced from 3-4 hours to 1Hr 45 min in the same period.
The project has also enabled clinicians to be able to track how many patients come to the facility without appointments and this enabled them to plan accordingly.
**Conclusions:** When designing our systems, we must consider our patients. Creating unnecessary waiting times can result in patients leaving the clinic prematurely. An efficient medication pre-packing system has resulted in an enhanced facility re-organization process and has enabled management to plan accordingly to ensure that the right resources are allocated correctly. This leaves ample time for clinicians to concentrate on managing patients' health as required.

## WEPEE493

### DISTRICT-LEVEL IMPLEMENTATION OF THE 90-90-90 STRATEGY IN A HIGH HIV- AND TB-PREVALENCE DISTRICT

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**Background:** South Africa has one of the highest burdens of human immunodeficiency virus (HIV) and tuberculosis (TB) diseases in the world. The country is currently implementing the 90-90-90 initiative, a bottom-up, outcome-based approach; aimed at reducing HIV and TB morbidity and mortality. We describe the strategic approach to implementation of the 90-90-90 strategy in the eThekwini district.
**Description:** Districts in KwaZulu-Natal were required to monitor three indicators for the financial year(FY)-2015/16, and to develop plans to monitor 12 indicators for the FY-2016/17. Firstly, provincial and municipal staff, and district partners were trained; and a district technical working group (TWG) was formed. Thereafter, all district facilities were divided into five training groups i.e. a priority group comprising provincial facilities that had the poorest performance for the FY-2014/15 (n=26), the remainder of provincial PHC facilities (n=28), provincial hospitals (n=17), and two groups for municipal PHC facilities (n=24 and n=28). Facilities were guided to develop quality improvement plans (QIPs) for improving performance on the FY-2015/16 indicators, and were required to graphically monitor progress. Additionally, facilities were trained to conduct bottleneck analyses (BNAs) and develop action-plans to address gaps in performance, for FY-2016/17 indicators. Implementation at facilities, and trends in indicator performance, were monitored from the district level.
**Lessons learned:** Monitoring of implementation revealed that the majority were compliant with graphically monitoring progress, though less so with monitoring action plans, for FY-2015/16. Similarly, more facilities had attempted BNAs for indicators, and devised plans to address gaps, though had not finalised their plans for FY-2016/17. Monitoring of district-level performance showed improvements in two of the three FY-2015/16 indicators. Cross-cutting issues identified, which impacted facility- and district-level performance, included: i. sub-optimal data management and blood result review processes, ii. incomplete coverage across all service delivery platforms, iii. lack of health educational materials, and iii. poor inter-sectoral coordination.
**Conclusions/Next steps:** It is important to closely monitor and support implementation at facility-level, in order to improve performance on indicators, and to ultimately improve HIV and TB outcomes in eThekwini. Monthly district TWG meetings will be convened to monitor district-level performance, and quarterly meetings with facilities have been proposed to supervise facility progress.

## WEPEE494

### OVERCOMING THE STRUCTURAL BARRIERS TO IMPROVING QUALITY HEALTHCARE SERVICE DELIVERY TO PLHIV: LESSONS FROM GENERAL HOSPITAL MINNA, NORTH CENTRAL NIGERIA

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**Background:** Provision of quality healthcare services to people living with HIV (PLHIV) remains a challenge in sub-Saharan Africa with challenges including delays in the initiation of eligible patients on anti-retroviral therapy (ART), poor clinical screening for tuberculosis (TB), and poor clinic attendance by HIV-positive pediatric patients. Management Sciences for Health (MSH) implements the USAID-funded ProACT Project which supports the provision of comprehensive HIV care and treatment services at General Hospital, Minna, Niger State, a public healthcare facility with a client load of over 7,000 HIV-positive patients. The study reviewed the effect of implementing an innovative facility-level Continuous Quality Improvement (CQI) program, on improving the quality healthcare service delivery to PLHIVs.
**Methods:** A baseline study of randomly selected folders of adult and pediatric patients with attendance at the HIV clinic between July and December 2013 was conducted to evaluate select performance indicators including the prompt initiation of eligible adult patients on ART, TB screening, and clinic attendance by pediatric patients. To address the noted gaps, a strategic quality plan was developed to provide guidance on delivering safe and quality care. This included the setup and capacity-building of a Quality Improvement Team to implement targeted Quality Improvement Projects, the conduct of an integrated capacity-building training on TB/HIV & adherence counselling and provision of technical assistance through targeted quarterly mentoring visits to the facility CQI team. A subsequent study of randomly selected folders of adult and pediatric client folders of patients with clinic attendances between January and June 2014 was conducted to reassess the same indicators.
**Results:** The initiation of eligible adult patients on ART increased from 0% to 100%; clinical screening for TB increased from 6.56% to 60.8%, and clinic attendance by HIV- positive children increased from 84.6% to 100%.
**Conclusions:** This study suggests that the use of CQI was feasible and acceptable. It required the collection and analysis of patient care data, and reduction of redundant or overly complex steps in caring for patients. Strong leadership support, stakeholder engagement, focus on strengthening systems and commitment to CQI are important in making and sustaining significant changes.

## WEPEE495

### BEST PRACTICES: IMPROVED VIRAL LOAD MONITORING THROUGH FACILITY-BASED INNOVATION AT THE SEKHUKHUNE DISTRICT OF THE LIMPOPO PROVINCE OF SOUTH AFRICA

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**Background:** South Africa (SA) has initiated over 3.1 million people on antiretroviral therapy (ART). Limpopo province contributes 251,427 (8.1%) of ART patients in the country with 45,445 (18.1%) resident in Sekhukhune district. Viral load (VL) analysis is imperative in monitoring the efficacy of antiretroviral therapy. The SA Antiretroviral treatment guidelines of 2010 advocate that VL analysis should be monitored at 6 months following ART initiation, repeated at 12 months and annually thereafter. In 2014, the SA VL completion rate ranged between 40-46% with Sekhukhune district being among the poor performing districts regarding this indicator (29%) performing even lower than the national average. The district embarked on implementing a simple strategy to improve Viral Load Completion Rate from 29% to 70% over a 1 year period by 30 June 2015.
**Description:** In July 2014 following site-level data interrogation, an action plan was derived to improve the performance of the VL completion indicator. The intervention included a district Data Quality Assessment (DQA) which highlighted gaps in clinical practice. Novel approaches were discerned in collaboration with facility managers and included Data Captures generating lists for patients due for blood draws on a daily basis, annotating patient files to indicate the need for a blood draw at the next patient visit, and a reminder system for phlebotomists by completing laboratory forms and placing them on patient files at the beginning of each month.
**Lessons learned:** Following these site-level interventions, cohort data showed a significant improvement in VL completion rate from 29% at baseline to 56% by June 2014. Over a 12 month period from June 2014 to June 2015 the VL completion rate was at 73%, exceeding the target by 3%. This site-level practice is simple to implement and easy to follow. It has been adopted by the Limpopo Province and is a recommended practice shown to improve VL completion rate on a cost-effective and efficient basis.
**Conclusions/Next steps:** Analysis, interpretation and utilization of data plays a major role in improving programme performance as it informs planning and decision making. The insights of local health systems are imperative in addressing challenges in an informed and context-relevant manner.

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## WEPEE496

### USING A QUALITY IMPROVEMENT APPROACH TO BUILD THE CAPACITY OF HEALTH CENTERS TO RETAIN PEOPLE LIVING WITH HIV IN CARE

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**Background:** With an adult HIV prevalence rate of 3.7%, Cote d'Ivoire has the highest HIV prevalence in West Africa. The low retention rate of PLHIV on treatment after 12 months (67% in 2013) poses a great challenge to the aim of ending the AIDS epidemic. Cote d'Ivoire's Ministry of Health and Public Hygiene is actively seeking means to improve services for people living with HIV/AIDS (PLHIV). Through funding from CDC/PEPFAR, from 2013-14 Jhpiego implemented a quality improvement (QI) program in 10 health centers in Cote d'Ivoire, with the aim of improving HIV care & treatment services, including PMTCT.
**Description:** The QI intervention was implemented in two general hospitals and 8 primary health centers in northern Cote d'Ivoire from March 2014 to February 2015. Checklists of minimum performance standards and verification criteria (VC) in line with national and international guidelines for PMTCT and HIV care & treatment services were used to carry out periodical internal and external audits. All VC had to be met to consider attainment of the standard of care.
**Lessons learned:** Audits of HIV treatment services showed an improvement in adherence to the 5 performance standards (table 1) for the follow-up of PLHIV on treatment from baseline to endline, after 12 months of QI program implementation. Of the nine facilities with data at both time points, two maintained the minimum of 80% to be considered offering quality ART follow-up care, six improved to meet 80%, and one remained the same (table 2).

| Standard | | #VC | Sample Verification Criteria |
|---|---|---|---|
| 1 | Adequate welcome of patients | 5 | The provider greets the client; The provider introduces him/herself |
| 2 | Assessment of adherence to treatment | 12 | Ask if the client missed a few doses in the past few days and why; Evaluates the social conditions of the client; Set a date for the return visit |
| 3 | Clinical assessment of patient | 11 | Review all medications that the client takes; Ask about side effects relevant to the drugs the client is taking and manage appropriately; Determine nutritional status |
| 4 | Laboratory evaluation of patient | 5 | Order, interpret, and document in the client record routine investigations every 6 months: CD4, Hb, etc.; Order a viral load if suspect clinical or immunological failure |
| 5 | Adequate system to maintain patients in care | 3 | Verify if the facility has a system of home visits |

*[Table 1: Standards of care for follow up of clients on antiretroviral therapy]*

| | Facility | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Percent of standards achieved for follow up of clients on antiretroviral therapy before and after QI intervention | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Baseline | 60% | 40% | 80% | 20% | 60% | 60% | 60% | 60% | 80% |
| Endline | 100% | 100% | 80% | 80% | 80% | 80% | 60% | 80% | 80% |

*[Table 2: Percent of standards achieved for follow up of clients on antiretroviral therapy before and after QI intervention]*

**Conclusions/Next steps:** Results from the implementation of the QI program in Cote d'Ivoire show that the approach has the potential to improve the retention of PLHIV in care by improving the quality of services offered to patients via its positive effect on adherence to standards of care by health centers.

## WEPEE497

### QUALITY IMPROVEMENT OF DRIED BLOOD SPOT SPECIMENS SENT FOR HIV PCR TESTING

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**Background:** Early diagnosis and treatment of HIV-positive infants significantly reduce HIV disease progression and mortality. Poor quality dried blood spot (DBS) specimens are usually rejected by virology laboratories, affecting early infant diagnosis of HIV. Laboratory specimen rejections can lead to abandonment of the test request, compromising the linkage of HIV-exposed infants to care. As a quality improvement plan, the department of Virology (DOV) at Inkosi Albert Luthuli Central Hospital in KwaZulu-Natal province, South Africa used various interventions to address the challenges with DBS specimens.
**Description:** The quality improvement plan targeted laboratories, nurses and doctors within the province. Monthly and weekly trend analyses of specimens and request forms aided the laboratory in identifying referring laboratories which sent poor quality specimens. Re-education of staff at these laboratories allowed them to recognize quality issues prior to specimen referral, preventing unnecessary delays and follow up visits. Trend analysis also allowed the generation of facility reports. These were crucial in informing strategic health programs run by the provincial department of health which provides intensive training to nurses on Prevention of Mother to Child Transmission, and can be focused according to needs in various locations. Interactions with doctors were both via structured training programs such as intern orientation to virological services, as well as telephonic consults regarding individual patients with electronic dissemination of surveys, training materials and posters. The quality improvement plan allowed a multi-disciplinary collaboration and helped improve awareness and knowledge of specimen quality in the province.
**Lessons learned:** Despite significant increases in workload (88 481 specimens received in 2014 and 142 027 received in 2015), there was a significant improvement in specimen quality in 2015, as shown in the table.

| Outcome | Number of specimens in 2014 (%) | Number of specimens in 2015 (%) | 2015 vs 2014 p-value |
|---|---|---|---|
| Total number of specimens sent to the laboratory | 88 481 (100.0%) | 142 027 (100.0%) | - |
| Number of specimens tested | 85 114 (96.2%) | 139 816 (98.4%) | <0.0001 |
| Specimens with no results due to analytical problems | 91 (0.1%) | 75 (0.05%) | <0.0001 |
| Total number of specimens rejected | 3 276 (3.7%) | 2 211 (1.6%) | <0.0001 |
| Rejected due to insufficient volume | 1 602 (1.8%) | 551 (0.4%) | <0.0001 |
| Rejected due to inadequate information | 794 (0.9%) | 478 (0.3%) | <0.0001 |
| Rejected due to incorrect clinical indication | 504 (0.6%) | 799 (0.6%) | 0.84 |
| Rejected due to poor specimen quality | 376 (0.4%) | 308 (0.2%) | <0.0001 |

*[Overview of specimens received in 2014 and 2015]*

**Conclusions/Next steps:** Analyzing laboratory trends and collaboration with referring laboratories, clinical colleagues and provincial health services can help to reduce specimen rejections, which may improve early infant diagnosis.

## WEPEE498

### INDEX TRACKING MODEL AS A STRATEGY IN FINDING CHILDREN AND ADOLESCENTS, AND IMPROVING EFFECTIVE REFERRALS

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**Background:** The prevalence of HIV in Lesotho is 23% among adults, and it is estimated that around 15,000 infants are born to HIV-infected women annually. While 57% of HIV-positive adults receive ART, only 43% of children and adolescents do. Many young people may not even be aware of their HIV status. Therefore, finding undiagnosed HIV-positive children and adolescents, and linking all to treatment, is imperative. One approach is a targeted community-based approach of tracking index family members at risk.
**Methods:** PSI/Lesotho introduced the index tracking model in April 2015 and community testing started in May 2015. Mapping of high volume facilities in relation to high ART uptake, and sensitization of District Health Management Teams (DHMTs) were conducted. HIV-positive patients from seven facilities in Maseru, Berea and Leribe districts were identified, and considered index patients. Counsellors requested consent from index patients to test their family members who were unaware of their status. Then counsellors followed an index patient's household to provide testing to their family members. Routine data gathered between May and December 2015 was analysed to assess the feasibility of this approach to finding HIV-positive children and adolescents.
**Results:** The households of 992 index patients were visited, and 2,604 family members were tested. Among those tested, 71.1% were children (2-14 years) and 8.8% were adolescents (15-19 years). The intervention led to a 2% yield of HIV-positive children and adolescents (2% among children and 3% in adolescents), comparable with the national figure of 2.4%. The 2% positive yield was from biological children

and adolescents of index patients. All those testing positive were referred to the health facilities for follow-up, and 88% went.
**Conclusions:** Results indicate that the index tracking model can be a viable method for reaching children who are HIV-positive. Referral uptake is high and will contribute towards high ART coverage among children and adolescents. This model has the potential for community adaptation and scale-up by increasing coverage to other districts not currently covered.

## Quality improvement (QI) collaboratives

### WEPEE499

#### Improving early infant diagnosis for HIV exposed infants: a quality improvement approach in Kaabong hospital

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**Background:** Early infant diagnosis (EID) is critical for the survival of HIV exposed infants (HEIs) as subsequent care and management depend on dry blood spot (DBS) outcomes. In Kaabong hospital, located in Karamoja region in North Eastern Uganda, access to DNA-PCR testing for HEIs was low with only 20% of HEIs tested at six weeks of age, by June 2014. Baylor-Uganda supported Kaabong hospital staff in developing quality improvement (QI) strategies to improve DNA-PCR testing for HEIs at six weeks of age.
**Description:** 24 health facility staff were trained and mentored in EID continuous QI approaches. Facility QI team was constituted and prioritized to improve DNA-PCR testing for HEI's at six weeks. The QI team analyzed data to determine the magnitude of the problem and brainstormed possible root causes of low testing rates for HEIs. Possible root causes identified included lack of awareness among mothers about EID services, loss of mothers between service points (mother baby care point (MBCP) and laboratory), loss of mother/infant pairs in the communities, absence of tracking systems for lost mother/baby pairs and absence of Work Improvement Teams at the EID service point. To address the root causes, the QI team created awareness on EID for mothers through health education, conducted continuous medical education (CME's) for health facility staff, integrated laboratory and EID services in the MBCP, identified expert clients and peer mothers to track and link lost mother/baby pairs to the MBCP and introduced performance monitoring at the MBCP for DNA-PCR testing.
**Lessons learned:** Overall, DNA-PCR testing at 6 weeks increased from 20% to 100% between June 2014 and July 2015 and was sustained at 100% thereafter until January 2016. However, there were two dips recorded in DNA-PCR testing trend (67% in September 2014 and 75% in June 2015) which were addressed by use of expert clients and peer mothers respectively at those time points.
**Conclusions/Next steps:** Similar set of interventions will be replicated to improve and sustain 1st DNA-PCR testing for HEI's in health facilities within Karamoja having low rates of DNA-PCR testing.

### WEPEE500

#### The results of the HIV, AIDS, STI and TB audit, trends over time 2013-2015 for quality improvement within the Western Cape Province in South Africa

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**Background:** The Western Cape Province continuously aims to improve and strengthen the quality of services it offers to patients accessing its health care facilities. The Integrated HIV, AIDS, STI and TB (HAST) Audit Tool further enhance this process, as it aligns to the WHO suggested key TB/HIV package using the 'Conditions for Effective Framework' and incorporating the domains of: Availability, Access, Quality, Integration and Continuity of care.
**Methods:** The Integrated HAST Audit is conducted annually within the July-September period. The data collection method is a 10 folder review per HAST tool, which equates to roughly 90 folders audited per facility. These HAST tools are for each of the HAST programmes: HCT, HIV, STI, ART, TB, DR TB, PMTCT Labour Ward, PMTCT ANC and PMTCT PNC. The audit tool also includes a consultation room audit and the facility manager questionnaire.
**Results:** The findings include the following:
- On average 80% of clients accessing HCT were screened for TB and consent for HCT was taken 97% of the time.
- A significant improvement in Medical Male Circumcisions discussed from 9% in 2013 to 62% in 2015.
- An improvement in the prescribing of TB medication with a valid script from 47%-68% as well as TB contacts investigated from 58%- 65%.
- A steady improvement of DR TB commencement times, more patients commenced on treatment in < 5 days in 2015 as compared to 2013.
- Nutritional Therapy offered to patients still a huge gap between TB, DR TB and ART programmes.
- Action plans implemented has improved from 68% to 81% respectively.

**Conclusions:** Although there is room for improvement, there has been evident year on year progress across all the domains and indicators for each of the HAST programmes.
The HAST Audit is dynamic and subjected to annual review to ensure alignment with policy. It has found its rightful place in evaluating quality, availability, access, integration and continuity of care.

## Engaging clients and communities in quality improvement (QI) activities

### WEPEE501

#### Mitigating opportunistic infections aggravated by biomass fuel indoor pollution in PLWHA in poor rural households in Sub-Saharan Africa: a case study of Kisumu County, Kenya

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**Background:** More than a third of the global population burn Biomass Fuel (BMF) for cooking, heating and lighting. In humans, HIV infection causes increased bacterial infections, pneumonia and TB. HIV infection has been associated with mild airway obstruction and loss of gas transfer, with severe impairment occurring in the presence of Pneumocystis jiroveci infection. HIV has also accelerate the development of COPD in humans. PLWHA are at greater risk of pulmonary complications caused by BMF indoor pollution
The health effects of BMF indoor pollution may arise after a single exposure and/or long or repeated exposure. The levels of exposure to pollutants are often 100 times greater than recommended maximums in poor households.
**Description:** YUSUD launched a project to investigate the health effects in poor rural households of PLWHA in Kisumu County when switching traditional BMF sources to simple low cost Green Energy Solutions, including solar, bio-diesel, biomass, and biogas, over a period of 12 month. The data collected analysed the general changes in health indicators and household management.
**Lessons learned:** 95% of the PLWHA reported reduced incidences of respiratory Tract infections within 21days. There was a significant deceleration in the development of COPD, ALRI and heart diseases amongst PLWHIV after just 6months. More than 95% of the PLWHIV recorded over 70% reduction in the short-term effects of BMF indoor pollution which includes irritation of eyes, nose and throat, headaches, dizziness, and fatigue.. Overally, due to a 50-80% reduction in household energy expenditures, the savings resulted in increased access to better nutrition, personal development, and medical services, thus enhancing quality of care and health outcomes for PLWHA.
**Conclusions/Next steps:** BMF indoor pollution is responsible for the deaths of 1.6million people annually, with PLWHA as increased risk. Improved indoor air quality using alternative green energy could lower the health risks associated with BMF indoor air pollution, decreasing the risk of opportunistic infections in PLWHA. New, innovative approaches to accessing green energy within communities at risk with necessary to improve health outcomes, and will require involvement between public and private entities to ensure success.

## WEPEE502

### COMMUNITY-DRIVEN ACCOUNTABILITY THROUGH ADVOCACY COMMITTEES: A VEHICLE FOR IMPROVING HIV AND REPRODUCTIVE HEALTH SERVICES FOR WOMEN LIVING WITH HIV

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**Background:** Women living with HIV experience more rights violations in HIV and reproductive health services than HIV negative women. This discourages women from seeking services and compromises the health of women and children. To address poor quality care, 12 community-based Women's Rights Protection Committees (WRPCs) were established in Lilongwe, Malawi.
**Description:** WRPCs have the following responsibilities: sensitize women living with HIV to the importance of HIV and reproductive health services; identify cases of unmet needs and poor quality care; and coordinate with health facilities to facilitate quality service delivery. Committees were established after sensitizing local facilities to the importance of public accountability. Committee members are comprised of women living with HIV who were chosen by local HIV support groups. Committees were trained and have a working relationship with local health facilities.
**Lessons learned:** An initial evaluation was conducted 5 months after WRPCs were established using observational data from committee meetings, meeting minutes, and 12 focus groups. Data provide an initial assessment of the feasibility and potential impact of community-based accountability groups in low-resource settings.
WRPCs reported identifying and addressing unmet needs and poor quality care for women's health on a regular basis. The most commonly reported complaints received from women were rude behaviour by providers and delayed services. The most commonly reported needs addressed were antenatal services, neonatal HIV testing, and family planning services for women living with HIV.
Committees also acted as a bridge between facilities and communities, providing a platform where concerns about health services were discussed and mutual understandings were established. Based on committee successes, health facilities are increasingly seeking collaboration with WRPCs to respond to loss to follow-up and improve the quality of services.
Committees who regularly met with health facilities reported more motivation for and capacity to complete their work. Having facility personnel regularly visit WRPCs improved WRPCs' ability to address poor quality care and increased community buy-in for committee activities.
**Conclusions/Next steps:** Community-driven accountability led by women living with HIV is a viable option to address poor quality of and poor access to HIV and reproductive health services. Regular engagement with local health facilities is essential for committee success.

## WEPEE503

### THE PERCEIVED ABILITY OF WOMEN LIVING WITH HIV TO INFLUENCE POOR QUALITY CARE: THE ROLE OF HEALTH FACILITIES IN CLIENTS' EMPOWERMENT

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**Background:** Poor quality care remains a major concern for people living with HIV, especially women who have less agency than men. Public accountability through direct involvement of clients is one way to improve quality care; however, many female clients do not feel able to take action against poor services, limiting the feasibility of public accountability strategies. We conducted a mixed-methods study to examine predictors of women's perceived ability to influence quality care in Malawi.
**Methods:** We conducted 225 surveys with women living with HIV who attended HIV support groups and 25 exit interviews with women living with HIV who accessed health services from three major health facilities in Lilongwe, Malawi. Ordered logistic regression models and constant thematic analysis were used to identify predictors of women's perceived ability to influence quality care.
**Results:** Only 42% of survey respondents believed they were able to influence the quality of care provided. Perceived influence was positively associated with reporting poor services in the past year (AOR 1.61, 95% CI 1.17-2.21). Respondent's primary health facility for HIV services (AOR 1.98, 95% CI 1.04-3.74) and length of time attending a HIV support group were both associated with respondents perceived influence on services - time in a support group was positively associated with the outcome (AOR 1.14, 95% CI 1.04-1.24).
The organization of health services in local facilities impacted respondents' perceived influence on quality care. Five facility-based factors that promoted women's perceived ability to engage in public accountability strategies were identified: the facility had an active quality care committee comprised of women living with HIV; clients knew where to report poor services; facility personnel quickly responded to reported cases; medical consultations were conducted in a private manner; and providers actively solicited feedback from clients.
**Conclusions:** Clients' perceived ability to influence health services is an important component of implementing public accountability strategies. The organization of health services influences these perceptions. Importantly, facility-based facilitators that can improve women's engagement in public accountability are easy to implement and could improve quality of care for all clients, not only women living with HIV.

## WEPEE504

### IMPROVING ENGAGEMENT TO CARE AND TREATMENT IN THE HIV COMPREHENSIVE CARE CLINIC AT ISIOLO DISTRICT HOSPITAL USING WELTEL KENYA 2 SHORT MESSAGE SERVICE (SMS)

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**Background:** Despite high uptake to care and treatment for HIV patients in Kenya, there are still challenges in retention in care, especially in the Northern Arid Lands (NAL). These are as a result of poor communication/transport, poor access to medical facilities and community cultures. The study aims to analyze the effect of WelTel SMS service in improving client engagement to care and treatment.
**Methods:** HIV patients are routinely scheduled 3 monthly clinic appointments. Registered clients in the Weltel SMS platform receive weekly SMS to check in on their status, the clients are expected to respond within 48 hours. Four months data on appointment status of WelTel and Non-WelTel clients was obtained from Electronic Medical Record, daily attendance charts and WelTel platform. The appointments were classified as Attended - client attends the clinic on the scheduled day of appointment, Delayed - client attends the clinic not on the appointment day but came within 30 days from the appointment day and Defaulted - clients who do not appear at the clinic after 30 days of their missed appointment.
**Results:** As at October 2015 WelTel SMS platform had enrolled 510 clients out of the 1236 active clients at the HIV Comprehensive Care Clinic (CCC). In the months of July, August, September and October these were the results; 68 (53.54%), 125 (64.1%), 75 (60.0%) and 78 (63.93%) clients respectively enrolled on WelTel SMS platform attended their appointments on time as compared to 94 (44.34%), 219 (61.17%), 141 (52.03%) and 100 (51.81%) clients respectively, who were not enrolled on WelTel SMS platform (p-0.0806) While 55(43.31%), 62(31.79%), 43(34.4%) and 28(22.95%) clients respectively enrolled on WelTel SMS platform delayed on attending their appointments as compared to 93(43.87%), 123(34.36%), 96(35.42%) and 49(35.42%) respectively of non-WelTel clients(p-0.0806). Only 4 (3.15%), 8 (4.1%), 7 (5.6%) and 16 (3.11%) clients respectively enrolled on WelTel SMS platform defaulted as compared to 25 (11.79%), 16(4.47%), 34(12.55%) and 44(22.8%) respectively of non-WelTel (p- 0.0099).
**Conclusions:** The CCC Clients who received weekly SMS check-ins via the WelTel service were more likely to attend their appointments on time and less likely to default HIV care and treatment.

## WEPEE505

### THE IMPACT OF NIMART (NURSE INITIATED MANAGEMENT OF ANTIRETROVIRAL TREATMENT) AND CCMDD (CENTRALIZED CHRONIC MEDICINE DISPENSING AND DISTRIBUTION) IN DECONGESTING PRIMARY HEALTH CARE FACILITIES

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**Background:** There are about 6.3 million people living with HIV in South Africa. One innovative strategy that has been introduced in South Africa to scale up treatment to all clients in need is the introduction of task shifting approach that allows nurses to initiate and manage ART (NIMART). Although the NIMART strategy has significantly increased access to ART, it has resulted in congestion at the facilities due to large numbers of clients accessing treatment. A Centralized Chronic Medicine Dispensing and Distribution (CCMDD) intervention was implemented to streamline processes in ART treatment facilities.
**Description:** CCMDD was implemented on the 5th May 2015 at Fordaville Clinic. NIMART-trained nurses identified stable clients who had been on treatment for a year to be referred to CCMDD program. The treatment is pre-packed while ensuring adherence to good pharmacy practices. The pre-packed treatment is then delivered to the pick-up points by pharmacy assistants at a community level, where clients will access the treatment with ease on appointment system which involves a given date and time. Data capture captures all the visits in their clinical charts.
**Lessons learned:** Prior to the introduction of the CCMDD initiative in 2014, 1039 were visiting the facility per year. One year after the introduction of the CCMDD, the number of patients accessing the facility had dropped by 35% to 480 per quarter. The defaulter rate was reduced from 5 (0.04%) to 4 (0.03%) per month as clients were allowed to send treatment buddies to collect treatment on their behalf. The proportion of clients collecting medication from pick up points has increased by 76% to 92%. Clients were referred to pick-up points thus reducing waiting times from 4 hours to 2 hours in the facility. NIMART training has increased initiation skills and competency levels.
**Conclusions/Next steps:** Introduction of CCMDD initiative at Fordeville clinic has resulted in reduction of waiting times from 4 hours to 2 hours, resulting in direct impact to quality care given to clients.
Thus it is recommended that whilst the program progresses, outreach teams distribute medication to chronic clubs and households to improve quality of care.

## WEPEE506

### IMPACT OF NIMART (NURSE INITIATED MANAGEMENT OF ANTIRETROVIRAL TREATMENT) ON EMTCT (ELIMINATION OF MOTHER TO CHILD TRANSMISSION)

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**Background:** Great progress has been made in the (MTCT) prevention of Mother to Child Transmission with rates decreasing from 5.9% in 2014 to 5.2% in 2015. Part of the success of the programme has been due to task- shifting to nurses through the NIMART programme and trained nurses are able to now initiate ART in all pregnant women on the same day that she is identified as being HIV positive at the health facility. This analysis / project reports on the impact of the NIMART programme towards the elimination of MTCT in the Injisuthi Clinic.
**Description:** According to PMTCT guideline commencement of FDC (Fixed Dose Combination) was issued by the midwife attending pregnant women at Ante Natal Care (ANC) Room. In 2014 Injisuthi Clinic linked NIMART nurse to ANC Room. NIMART nurse is specifically skilled to interpret, analyze viral load test results, monitor treatment response, counsel on adherence and manage side effects thus ensuring EMTCT. NIMART nurses are confident and knowledgeable in initiating treatment to ANC clients and managing exposed infants from HIV positive mothers than midwives. A NIMART nurse was allocated to an ANC room to initiate pregnant women on FDC. In case where there is no NIMART nurse allocated to ANC room, ANC client will be initiated by midwife on FDC while ensuring referal to NIMART nurse before leaving the facility.

**Lessons learned:**

| YEAR | PCR TEST + | YEAR | PCR + |
|---|---|---|---|
| January to June 2013 | 9/150 (6.0%) | July to December 2013 | 4/153 (2.6%) |
| January to June 2014 | 6/115 (5.2%) | July to December 2014 | 1/126 (0.7%) |
| January to June 2015 | 5/111 (2.9%) | July to December 2015 | 2/86 (2.3%) |

*[6 Week PCR Testing]*

Due to the linkage of NIMART nurse to ANC clients, pregnant women initiated on FDC improved from 90.2% in 2013 and 92.8% in 2014 to 100% in 2015.
**Conclusions/Next steps:** From the above it becomes clear that linking NIMART trained nurse to ANC improves clients initiated on ART consequently reducing mother to child transmission.

## WEPEE507

### COMMUNITY QUALITY IMPROVEMENT TEAMS; A VEHICLE FOR IMPROVING RETENTION OF HIV PATIENTS ON ANTIRETROVIRAL TREATMENT: EXPERIENCE FROM EAST CENTRAL UGANDA

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**Background:** Retention in care is critical to the health of people who are on antiretroviral treatment (ART). The contribution of community quality improvement (QI) teams in promoting facility-community linkages and retention on ART is considerable and should not be underestimated. STAR-EC, an eight-year district-based project funded by USAID and implemented by JSI and its partners, in collaboration with the USAID/ASSIST project, cognizant of this unexploited contribution, implemented community QI interventions to support health facility care and treatment outcomes between Oct 2013 and Sept 2015.
**Description:** The project selected 14 villages near served by two high-volume, poorly performing health facilities that had retention rates of less than 85% and kept clinic appointments of less than 70%. Eight health workers and 70 village health team members, including persons living with HIV (PLHIV), were trained in basic HIV chronic care and QI principles. Those trained were supported through monthly onsite mentorship meetings on data collection, monitoring improvement changes, effective use of referral tools, educating clients about patient self-management and quarterly learning session to promote sharing of best practices. The teams monitored three indicators: rate of clinic appointment-keeping; number of PLHIV linked to community support structures; and retention on ART over a period of two years.
**Lessons learned:** During the implementation period, the rate of clinic appointment-keeping improved from 85% in October 2013 to 96% in September 2015. The program saw the percentage of PLHIV linked to community support structures increase from 50% to 87%, and retention on ART from 70% to 90% during the same period.
**Conclusions/Next steps:** Community QI teams are very important in promoting community-health facility linkages and HIV-client ART retention. These community structures should be used by health care systems because they can be implemented with minimal financial and zero additional human resources. Community QI teams have potential of helping HIV&AIDS programs achieve the last '90' of the UNAIDS 90-90-90 target.

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# BUILDING COUNTRY-LEVEL CAPACITY FOR QUALITY IMPROVEMENT

## WEPEE508

### IMPACT OF THE CHILDREN AND ADOLESCENTS HIV QUALITY CARE NETWORK (CAN) ON HIV VIRAL LOAD TESTING AND VIROLOGIC SUPPRESSION AMONG HIV-INFECTED CHILDREN, THAILAND, 2014

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**Background:** The Children and Adolescents HIV Quality Care Network (CAN) aims to improve the care and treatment of HIV-infected children and adolescents in Thailand. The CAN supports and provides activities to establish multidisciplinary pediatric HIV care teams in HIV clinics, conduct regular performance measurement and quality improvement (QI) activities, conduct provincial CAN trainings, and create and sustain provincial referral and consultation networks. CAN trainings were expanded to 76 of Thailand's 77 provinces during 2011-2013. Four regional trainers conducted the trainings for provincial and large community hospitals. Once trained, provincial trainers conducted CAN trainings for community hospitals in their provinces. We compared the viral load (VL) testing coverage, virologic suppression rate, and the death rate of children receiving care in hospitals receiving CAN training by regional trainers (directly participating hospital, DP), by provincial trainers (indirectly participating hospitals, IP), and non-participating hospital (NP).
**Methods:** We analyzed data from HIV-infected children < 15 years old in the National AIDS Program database in 2014. Hospitals with >5 HIV-infected children were selected for analysis. We compared the proportion of HIV-infected children and adolescents who had viral load testing, virologic suppression (< 50 copies/mL), and death rate of DP, IP, and NP hospitals using Kruskal-Wallis test.
**Results:** From October 2013-September 2014, 6,372 HIV-infected children from 471 hospitals in 76 provinces were included in the analysis; 3,570 (56.0%) children receiving care in 149 (31.6%) DP hospitals, 1,832 (28.8%) in 288 (61.1%) IP hospitals, and 970 (15.2%) in 34 (7.2%) NP hospitals. A total of 4,894 (83.5%) of 5,860 ART eligible children received antiretroviral treatment (ART). Median annual VL testing rate of children receiving ART for >6 months was higher in DP (92%) and IP (100%) than NP (76%) (p< 0.01). Median virologic suppression rates were higher among children in CAN participating hospital (82%) than NP (75%) hospitals (p= 0.04). The mean death rates among children were lower in IP (0.08%) compared to NP (0.29%) and DP (0.25%) (P< 0.001).
**Conclusions:** Coverage of VL testing and the virologic suppression rate was higher in CAN participating hospitals than non-participating hospitals. Network activities should continue and be expanded to all hospitals in Thailand.

## WEPEE509

### EVALUATING THE IMPACT OF INNOVATIVE STATE QUALITY IMPROVEMENT PROJECT IN HIV PROGRAM: EXPERIENCE FROM NORTH-WESTERN NIGERIA

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**Background:** Driving competition among health facilities and staff through regional or state quality improvement (QI) projects could solve the problem of improving quality of HIV services. This study evaluated the impact of state QI project compared with hospital-specific project developed based on identified gaps from biannual National Quality program (NigeriaQual) between 2014-2015 in USAID-funded ProACT project implemented by MSH in Kebbi state, Nigeria.
**Methods:** A baseline study was conducted between Jan-June 2014 using NigeriaQual data abstraction questionnaires to extract information on the quality of care provided for 1200 randomly selected patients who assessed HIV care across 6 hospitals between July-December 2013. Each hospital then developed hospital-specific QI projects based on indicators needing improvement. A similar subsequent study was conducted between Jan-June 2015 on 1200 randomly selected patients who assessed HIV services across the same hospitals between July-December 2014 to evaluate cross-cutting lowest performing indicators. These indicators were scored and ranked resulting in three indicators with highest priority scores that formed Kebbi regional QI projects: to improve access to CD4 for adult and pediatric people living with HIV (PLHIV) from 53.5% to 90%; dried blood spot (DBS) access for exposed infants from 32.1% to 90% and access to rapid test at 18 months from 34% to 90% all between July-December 2015. The state Technical Working Group provided technical assistance and a progress report of individual hospital and state average performance was shared with hospital QI committee members every 2 months.
**Results:** By December 2015, access to DBS collection for exposed infants increased from Kebbi state average of 32.1% to 90%, access to CD4 for PLHIV improved from state average of 53.5% to 86% while rapid testing at 18 months improved from 34% to 38% with 4 of the 6 facilities achieving more than state average. Hospitals achieved greater improvement in similar quality indicators with state QI than hospital-specific QI project.
**Conclusions:** Regional or state-wide quality improvement projects developed based on HIV quality indicators needing improvement across board has been shown to yield better results. The study will help stakeholders to know how best to stimulate competition for better quality of HIV services.

## WEPEE510

### APPLYING CONTINUOUS QUALITY IMPROVEMENT (CQI) IN VOLUNTARY MEDICAL MALE CIRCUMCISION PROGRAMS IN SOUTH AFRICA

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**Background:** South Africa (SA) is home to 6.4 million people living with HIV, with an estimated HIV prevalence of 18.9% amongst 15-49 year old adults. The National Department of Health (NDOH), in partnership with PEPFAR, rolled out Voluntary Medical Male Circumcision (VMMC) services as a key HIV prevention strategy. With programmatic expansion, quality issues were noted. In June 2014, the USAID ASSIST project was funded to implement Continuous Quality Improvement at 134 PEPFAR-supported sites to improve the quality and safety of VMMC services.
**Description:** Baseline CQI assessments in 134 facilities, across 9 provinces demonstrated quality gaps in compliance with 8 key VMMC Quality standards (Leadership and planning, management systems, monitoring and evaluation, registration, group education and counselling, individual counselling and HIV testing, infrastructure, equipment and supplies, surgical procedure and infection prevention and control). Based on performance, sites were classified for intense (monthly), light (quarterly) or collaborative (annual) support by the ASSIST team. During CQI support visits, facility-level CQI teams were established, quality gaps identified, analyzed and improvement interventions tested, adapted and scaled up to address these gaps. Implementing partners (IPs) played an important role in implementation. Additionally, Four CQI trainings were conducted, attended by 6 provinces. Basic CQI concepts, methodology and tools were discussed and applied during group work. Three CQI learning sessions were conducted, where provinces, DOH facilities, IPs and private providers shared lessons on best practices as well as what did not work. During learning sessions, individuals and groups were given the opportunity to learn from colleagues. Quarterly site re-assessments were conducted.
**Lessons learned: Lessons learned:** Within a 12-month period, provision of CQI by ASSIST staff led to improved overall compliance with all 8 VMMC Quality standards. This resulted in improved quality of VMMC services and better collaboration between DOH and VMMC implementing partners.
**Conclusions/Next steps:** Implementation of CQI has yielded tangible results in VMMC service delivery in South Africa.

## WEPEE511

### CAPTURING OF 'EXPERIENTIAL KNOWLEDGE' BY NATIONAL AIDS CONTROL ORGANISATION OF INDIA TO REPLICATE ACROSS INDIAN STATES AND GLOBALLY

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**Background:** The Experiential Knowledge is unwritten, unspoken, and vast storehouse of knowledge held by the implementers of HIV/AIDS programme within their mind and is based on day to day experiences, insights and observations. With the support of the World Bank (WB), National AIDS Control Organisation (NACO) attempted to identify and capture these experiential knowledge and innovations for strengthening the HIV prevention and control services and to cater to the demands of some of the Asian and African Countries.
**Description:** With support from the WB, NACO has trained over 150 implementers of the HIV/AIDS programme in India on the art of capturing experiential knowledge since May 2015. Using a prescribed check-list of the World Bank, NACO has identified good practices across its programmes. A total of 98 good practices including 29 on Prevention; 10 in Basic Services; 11 in Care, Support & Treatment; 22 in Country Ownership & Stewardship and PPP; 25 Program Support systems & MIS, etc were identified. In the prevention, 20 best practices were captured and documented. These 'knowledge assets' are being recorded systematically in the form of a video document, and textual formats, which was developed using the standard templates of the World Bank. The template enabled to capture the 'how' aspects of the good practices.
**Lessons learned:** Capturing of experiential knowledge is an effective and efficient way to meet the implementation challenges. Motivating implementers to capture their own experiences was a challenge, since knowledge capturing initiative is not institutionalized. It required hand-holding support from S2S Knowledge Sharing Secretariat.
**Conclusions/Next steps:** It is therefore essential to capture, share experiential knowledge and promote peer to peer learning. The captured knowledge will be shared within NACO, between states and other countries through systematic knowledge sharing methods. NACO is in the process of building a resource pool as well as an online interactive knowledge sharing system where anyone can access these documented experiential knowledge.

# PROGRAMMATIC DATA ON QUALITY OF HIV PREVENTION AND CARE CONTINUA

## WEPEE512

### "WE ARE PART OF A FAMILY". BENEFITS AND LIMITS OF COMMUNITY ART GROUPS IN THYOLO DISTRICT, MALAWI: A QUALITATIVE STUDY

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**Background:** In 2012 Community ART Groups (CAGs) were piloted in Thyolo District, Malawi as a community-based model of ART delivery to overcome patients' barriers in accessing treatment and decrease health care workers' workload. CAGs are self-formed groups of patients on ART who rotate at the health facility for drug pick up for all group members. We conducted a qualitative study to assess the benefits and challenges of CAGs from the patients' and health care workers' (HCWs) perspective.
**Methods:** Fifteen focus group discussions, 15 individual in-depth interviews and 2 days of participant observation were performed in 2 health centres. The 94 study participants included CAG members, ART patients eligible for CAGs but in conventional care, former CAG members who returned to conventional care and HCWs. They were purposefully selected from ART registers considering their socio-demographic characteristics. Narratives were audio-recorded, transcribed, and translated from Chichewa to English. Data was analysed through a thematic analysis. The study was approved by the National Health Sciences Research Committee of Malawi.
**Results:** Patients as well as HCWs highly appreciated the practical benefits of CAGs in reducing frequent clinic visits, resulting in fewer transportation and occupational costs for patients and a reduced workload for HCWs. Additionally peer support was perceived as an added value of the groups allowing not only sharing of the logistical constraints of drugs refills, but also enhanced emotional support, with the group acting as a forum for understanding and support to adhere to ART. Barriers to join a CAG were a lack of information on CAGs, unwillingness to disclose ones HIV status, mobility and group conflicts. HIV related stigma persists and CAGs were perceived as an effective strategy to minimize exposure to discriminatory labelling by community members.
**Conclusions:** CAGs are an acceptable model for ART delivery for PLHIV and HCWs. The CAGs addressed patient's practical barriers to accessing ART and improved peer support, a factor patients considered fundamental to their wellbeing. CAGs had a limited impact on reducing HIV-related stigma. Further expansion of this model of ART delivery should be considered in similar settings.

## WEPEE513

### TACKLING THE FIRST 2 90S IN ZIMBABWE: HIV TEST YIELDS AND LINKAGE TO CARE IN MAKONI AND MUTARE DISTRICTS, MANICALAND PROVINCE

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**Background:** Reaching ambitious 90-90-90 targets will require increasing the proportion of people living with HIV who know their status and strengthening linkages to care and treatment. In Zimbabwe, with an estimated adult HIV prevalence of 16.7%, health information in paper-based registers precludes routine reporting of entry point disaggregated or individual outcomes in the HIV Care and Treatment program. Objective of our targeted assessment was to establish current rates of HIV test yields and linkage of HIV positive (HIV+) individuals to care and treatment from different healthcare entry points.
**Methods:** Eleven (11) health facilities in Makoni and Mutare Districts were selected using a simplified probability proportional to size technique. In October 2015, we conducted a retrospective cohort analysis tracing all individuals testing HIV positive from January to March 2015 through facility registers. De-identified, age and sex disaggregated data on HIV testing entry point and linkage to care and treatment was entered into MSExcel and analyzed descriptively using StataV12.
**Results:** Among 3,816 HIV tests conducted, only 34.5% (n=1,318) were among men. Overall, women testing in PMTCT settings accounted for over 1/3 of all HIV tests (n=1,374). Observed prevalence was 10.7% in adults (15-45+) and 6.9% in children tested. The majority of individuals testing HIV+ were tested for the first time (64%; n= 2,815). Among age and sex disaggregated groups, males age 45+ (17%) had highest positivity rate. Entry points with highest positivity rates included TB (30%), index cases (24%) and outpatient departments (22%). Linkage to care and treatment was recorded in 64% of all individuals testing HIV+. Highest linkage rates were observed in PMTCT (82%) and lowest among young people aged 15-24 (49%). Higher volume sites serving 1500+ patients on ART had lower linkage rates (range 44-59%) than those serving between 200-1500 ART clients (range 53-100%).
**Conclusions:** Findings demonstrate there are groups in need of enhanced support to increase HIV test rates (men) and linkages to care and treatment (young people) to reach the first 2 90s in Zimbabwe. Evidence on effective differentiated models of care for increasing test rates in low testing, high yield sub populations and providing support for linkage and retention are required.

## WEPEE514

### ACCEPTABILITY OF OPTION B+ AMONG PREGNANT AND BREASTFEEDING WOMEN IN SELECT DISTRICTS IN ZIMBABWE

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**Background:** Zimbabwe's MOHCC adopted the 2013 World Health Organization (WHO) PMTCT guidelines recommending the initiation of HIV positive pregnant and breastfeeding women (PPBW) on lifelong antiretroviral treatment irrespective of their clinical or immunological stage (Option B+). Option B+ was officially launched in November 2013. . The acceptability and uptake of lifelong treatment by women accessing health care facilities was unknown. We explored the acceptability of and adherence to lifelong antiretroviral therapy among PPBW, and described experiences and perceptions regarding Option B+ service delivery in order to identify potential areas to improve service delivery and uptake.

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**Methods:** A qualitative study was conducted at selected sites in Harare (urban) and Zvimba (rural) to explore Option B+ acceptability, barriers, and facilitators to ART adherence and service uptake. In-depth interviews (IDIs), focus group discussions (FGDs) and key informant interviews (KIIs) were conducted with PPBW, healthcare providers, and community members. Medical Research Council of Zimbabwe approved the study. All interviews were audio-recorded and then transcribed and translated. Data was coded and analyzed in MaxQDA.
**Results:** 43 IDIs, 22 FGDs, and five KIIs were conducted. The majority of women accepted lifelong therapy for the health of their babies. There was however, a fear of commitment to taking life-long medication because they were afraid of defaulting, especially after cessation of breastfeeding. There was confusion around dosage, and concern about fear of side effects, not having enough food to take drugs, and the lack of opportunities to ask questions about the new regimen. Participants reported that the time for counseling was less with the implementation of the Option B+ program. Facilitators were the low pill burden, ability to continue breastfeeding beyond six months like HIV negative women and partner, community and health worker support. Barriers were distance to health facility, non-disclosure of HIV status, knowing someone who had negative experience on ART.
**Conclusions:** PPBW in this setting are accepting of lifelong ART. However, continued counseling is essential to reduce fears and confusion around lifelong ART therapy. Counseling, including ongoing counseling after initial post-test session, needs to be strengthened to ensure that women receive the necessary information.

## HIV AND OTHER VERTICAL PROGRAMMES, E.G., TUBERCULOSIS, SEXUALLY TRANSMITTED INFECTIONS, DRUG TREATMENT, FAMILY PLANNING

### WEPEE515

#### INTEGRATION OF HIV TESTING, CARE AND TREATMENT SERVICES INTO TB CLINIC IN NORTHERN NAMIBIA HAS DRAMATICALLY IMPROVED QUALITY OF HIV SERVICES: A REAL WORLD EXPERIENCE

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**Background:** Nearly half of TB patients in Namibia have HIV co-infection. HIV and TB services are not integrated. This affects HIV testing, linkage-to-care, anti-retroviral therapy (ART) initiation, retention and TB infection control (TB IC). We integrated HIV testing, care and treatment services into TB clinic in Oshakati hospital to improve HIV testing uptake, linkage-to-care and ART initiation.
**Description:** We trained healthcare workers (HCWs) on HIV testing, care and treatment; optimized minimum available resources and introduced the integrated model. In this model, TB patients access point-of-care HIV testing and counseling, linkage-to-care and start ART in TB clinic without referral to HIV clinic setting. Prescription and dispensing of anti-retrovirals is also done in TB clinic. Upon completion of TB treatment, patients are transferred to HIV clinics for continued care and treatment.
**Lessons learned:** HCWs and patients welcomed the model. In 12 months, 338 patients received TB treatment. All with unknown HIV status were tested. HIV positivity was 42.6%. We conducted cohort analysis to measure time from HIV testing-to-enrollment into care and TB diagnosis to ART initiation. Thirty patients who started ART in HIV clinic during the year before integration were taken as historic controls and 59 who started ART in the integrated model as intervention group. We compared average time-to-enrollment into care and time-to-ART initiation. Average time, from testing to enrollment was 71.8 and 3.2 days (T=2.61, P=0.01) and TB treatment initiation to ART was 44.0 and 18.3 days (T= 2.75, P=0.008) among the control and intervention groups, respectively. We used Cox Proportional Hazards Regression for time-to-event analyses. After integration, there were 82% [HR= 0.18 (95% CI=0.09-0.37, P< 0.0001)] and 53% [HR= 0.47 (95% CI=0.27-0.82, P< 0.007)] reductions in time-to-enrollment into care and time-to-ART initiation, respectively. No patient in the intervention and 6.8% in the control group received inappropriate ART regimens. Following experience-sharing visits to this facility, four other hospitals adapted the model.
**Conclusions/Next steps:** Facilities can provide integrated HIV and TB services with minimum resources. Integration enhances HIV testing uptake, strengthens linkage-to-care and significantly reduces time-to-enrollment and time-to-ART initiation. It improves patient safety and TB IC. Programs may progressively adapt integrated model of TB/HIV services.

### WEPEE516

#### KEY POPULATION-FRIENDLY SEXUALLY TRANSMITTED INFECTION MANAGEMENT IN NIGERIA

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**Background:** Sexually-transmitted-infections-(STI) is known to increase the potential for HIV-transmission particularly for key-populations (KP).Despite the dire-need for STI-programming, the country had no standardized-protocol, tools and systems for STI-management.Society-for-Family-Health, a-principal-recipient of The-Global-Fund, piloted a one-year STI-syndromic-management-services as against etiological-management in two-states of Lagos and FCT-Abuja with the objective of providing KP-friendly-STI-management-services as one of the strategies for reducing the spread of HIV-infection, minimising missed-opportunities and high-cost of laboratory-investigations.
**Description:** The programme adopted a three-prong-approach of Institutional-support, Service-provision, and Strengthening-of-monitoring-and-evaluation. The implementation process involved the-assessment of gaps in training-protocol, manual and Health-system for KPs. Training of 120 health-care-workers from 40 health-facilities made up of primary, secondary and private-healthcare-facilities using a revised national-STI-Syndromic-management-guideline, provision of STI-drugs and consumables to the selected health-facilities, referral of KPs for STI-treatment by community-mobilizers, data-management by 40 trained officers in the facilities and effective primary-prevention of STIs to KPs through promotion of appropriate-STIs-care-seeking-behavior, provision of HIV-testing-services and provision of condoms.
**Lessons learned:** A technical review of the programme by an independent consultant revealed that the use of the flow charts simplified diagnosis by the health-workers and reduced time spent in health-facilities by KPs, every flow-chart represents a compromise between diagnostic accuracy, technical and financial realities, improved mutual-trust between the health-workers and KPs, commitment of pharmacists to the programme was low in terms of tracking drugs because they were not trained, there was no formal-structure or curriculum for stepping-down the training to other members of staff in the facility thereby limiting-capacity-building of other staff in the facilities, integration of Syndromic-management-of-STIs into the entire hospital-clients' management varied thus operated like a parallel programme in some facilities, drug-logistic-management was more effective in the private and primary-health-facilities than secondary facilities.
**Conclusions/Next steps:** The Syndromic-management-of-STI made treatment accessible-and-affordable to a large-majority of the key-population. Data-collection and collation on syndromic-management commenced for the first time with the successful implementation of this pilot project which will be scaled up in the new funding model of The-Global-Fund. On a medium and long-term, syndromic-management of STIs for KPs should be included in the pre-service training-curricula for health-care-workers and incorporated into the community-health-services-programmes.

### WEPEE517

#### USING MIXED-METHODS TO UNDERSTAND HIV TREATMENT CASCADE AMONG OPIOID AGONIST THERAPY (OAT) PATIENTS AND PEOPLE WHO INJECT DRUGS (PWIDS) IN FIVE UKRAINIAN CITIES

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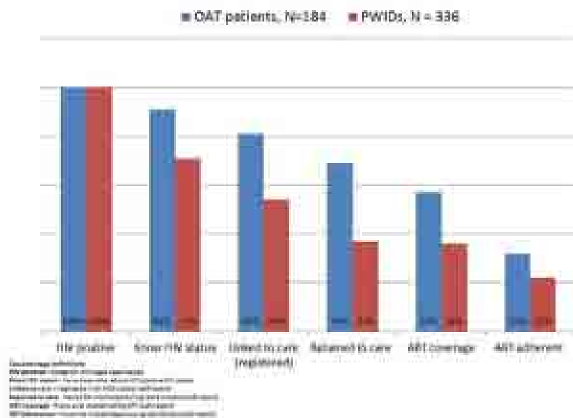
**Background:** It is estimated that among 310 000 PWIDs in Ukraine, 61 070 are HIV infected. OAT is effective for engaging and retaining PWIDs in HIV treatment and care, however, multilevel barriers hinders its effective implementation in Ukraine. It is necessary to explore HIV treatment cascade to inform the decision-makers about OAT scale-up and its integration with HIV services.
**Methods:** During 2013-2014 within the NIH-funded project "Expanding medication assisted therapies in Ukraine" mixed-methods study was conducted using focus group discussions followed by participant-led structured on-line survey and HIV rapid testing. We analyzed a sub-sample of HIV-positive participants recruited through random sampling from OAT sites (N=184) and respondent-driven sampling (N=336) of PWIDs in 5 major Ukrainian cities representing distinctive geographical regions. We compared proportions at each stage of HIV treatment cascade for

OAT patients and PWIDs accounting for the sampling strategy (sampling weights). We further explored qualitative data for possible explanations of differences in HIV treatment cascades.
**Results:** HIV treatment cascades indicate the differences between OAT patients and PWIDs in levels of HIV diagnosis (91% vs. 71%), linkage (81% vs. 54%) and retention in care (69% vs. 37%). Data demonstrates the positive effect of OAT on linking HIV positive PWIDs to HIV care. Cascade indicates an important general gap between those who started taking ART and are adherent.




*[HIV treatment cascade for OAT patients and PWIDs in 5 major Ukrainian cities]*

For OAT patients this gap is representing poly-pharmacy and pharmacokinetic interactions between ART and OAT which was voiced during focus groups. There were no major differences in treatment cascades between genders for OAT patients, however, female PWID reported higher proportions at all the stages of the cascade.
**Conclusions:** These results support the importance of OAT for linking HIV positive patients to HIV care in resource constraint settings. Findings support international recommendations to scale-up OAT and integrate it with HIV services to improve ART adherence.

## WEPEE518

### COMMUNITY ADVOCACY AND EDUCATION TO END STIGMATIZING LANGUAGE IN TB AND HIV RESEARCH AND PRACTICE

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**Background:** Research has shown that stigma impacts on the willingness of people with TB and HIV to undergo screening, seek treatment and remain in care. Stigma is multidimensional, and one source of stigma is the incriminating terminology used to describe people with TB and TB/HIV. Stigmatizing terms like "suspect" and "defaulter" remain widespread in TB/HIV research and clinical care despite the guidance from the Stop TB Partnership on patient-centered language and Community calls to discontinue these terms.
**Description:** The Community Research Advisors Group (CRAG), the community advisory board (CAB) to the Tuberculosis Trials Consortium (TBTC), and Community Partners (CP), a group of community representatives working across the 5 National Institutes of Health HIV/AIDS clinical trials networks, formed a collaboration to end the use of stigmatizing terminology in TB/HIV research. Advocacy strategies included sign-on petitions to professional societies and academic publishers; internal memos addressed to investigators at research networks; community participation in guidelines development; and education on stigma for TB/HIV programs.
**Lessons learned:** Advocates and CABs have worked with public health and scientific stakeholders to replace stigmatizing terminology with language that maintains clarity required for clear clinical discourse while respecting the dignity of people with TB and TB/HIV. Eliminating stigmatizing language requires interventions at multiple levels including community education; research planning and conduct; research results communication and publication; and the translation of research into policy and practice. Community advocacy and education is effective in reducing stigmatizing language in TB and HIV research and practice as shown in the Table.

| Research planning and conduct | Research communication and publication | Translation of research into practice |
|---|---|---|
| ACTG memo to replace „research subjects" with „research participants" | Letter to the International Union Against Tuberculosis and Lung Disease requesting action to provide guidance on avoiding stigmatizing language in conference abstracts and journal articles | Intervention by CP member replaced „mother to child transmission" with „perinatal transmission" on DHHS pediatric ARV guidelines panel |
| CRAG memo to TBTC leadership outlining non-stigmatizing terms | | Development of education and marketing materials on TB stigma by CRAG member presented to US TB programs |

*[Community engagement interventions to end the use of stigmatizing language]*

**Conclusions/Next steps:** The collaborative advocacy by CRAG, CP and CABs adds to the growing body of TB/HIV work that may offer a model for patient and community groups seeking to combat stigma in clinical research and care. Eliminating stigmatizing language may help to reduce the stigma of TB or HIV infection and the dual stigma of co-infection by improving the terms through which people engage with medical research and public health.

## WEPEE519

### CHALLENGES TO THE INTEGRATION OF HIV AND M/XDR-TB SERVICES IN SOUTH AFRICA: A QUALITATIVE STUDY OF FRONTLINE HEALTH PROVIDERS

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**Background:** One-fifth of all MDR-TB cases occur in South Africa; 60-80% are HIV-positive. Fewer than half of MDR-TB patients successfully complete treatment, and outcomes are significantly worse among patients with XDR-TB and those coinfected with HIV. Decentralization of M/XDR-TB treatment and integration of HIV and M/XDR-TB services are thus crucial components of the national TB agenda. A better understanding of frontline challenges is needed to ensure that strategies under development are not only efficacious but also acceptable to patients and providers.
**Methods:** In 2013, we conducted a qualitative study to highlight personal, professional, and programmatic factors underlying health care providers' capacity to deliver optimal care for M/XDR-TB and HIV. Focus groups and individual interviews were completed with a purposive sample of 17 providers at a tertiary TB facility in KwaZulu Natal. A grounded theory analytic framework yielded several themes that were contextualized to enhance their applicability to other high-burden settings.
**Results:** Participants included four doctors, eleven nurses, and two allied health providers, with median 4.5 years' experience treating HIV and/or M/XDR-TB (range, 0.5-20); 9 participants were primarily responsible for providing M/XDR-TB care and 8 for HIV care. Their personal infection control practices, specifically face-mask use, were weakened by a workplace culture characterized by low motivation, disparate risk-perceptions and practices in the workforce hierarchy, physical discomfort, and difficulties managing patients with treatment-induced hearing loss. Patient-provider interactions were stronger among nurses, compared to doctors, and in the delivery of HIV, compared to M/XDR-TB, care due to a greater focus on patient empowerment, empathy, and support. The stigma associated with M/XDR-TB was considered worse than with HIV, and perpetuated by the health system, particularly within primary health care facilities with little/no exposure to cases of M/XDR-TB. Providers struggled with the daily tedium of M/XDR-TB treatment supervision, and supported treatment literacy and self-administration. Administrative restrictions, clinic norms, and vertical provider mindsets impeded the effective integration of HIV and M/XDR-TB care.
**Conclusions:** The comprehensive, decentralized management of M/XDR-TB/HIV coinfection mandates greater attention to patient-provider trust, treatment literacy, and traditional workplace norms that continue to perpetuate fragmented service delivery and exposure to nosocomial infection.

## WEPEE520

### COMMUNITY-LED TUBERCULOSIS SCREENING OF PEOPLE LIVING WITH HIV FOR EARLY DIAGNOSIS AND LINKAGE: A CASE STUDY FROM INDIA

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**Background:** Care and Support Centres (CSCs) under Vihaan project in India work closely with NACO ART centers and provide expanded and holistic care and support services for People Living with HIV (PLHIV) through a community led model. Community-based outreach is the backbone of CSC, serving as a comprehensive approach to provide support for retention in treatment, adherence, positive living, referrals to other health services, linkages to social welfare schemes, and strengthening enabling environment for PLHIV. There are 350 CSCs implemented by PLHIV networks, community-based organizations, and Non-Government Organizations. Tuberculosis (TB) and HIV services were integrated in CSC services to address dual infection.

**Description:** Through an integrated approach HIV-TB services were included into CSCs. Tuberculosis screening among PLHIV based on four symptom screening, linkage to ART for those diagnosed with TB, counseling for treatment adherence of HIV-TB co-infected clients, referral and contacts screening for TB were the activities integrated to CSC services. Trainings were conducted for all CSC staff and monitoring indicators were defined. The findings and lessons learned from these activities implemented during October to December 2015 are presented in this paper.

**Lessons learned:** Total 55,582 PLHIV were screened for TB, among them 1,354 (2.43 %) were from HRG groups. 9,494 PLHIV were referred by CSCs for TB testing among whom 762 (8 %) were diagnosed with TB and linked for starting TB treatment. 334 family members who were TB symptomatic were also referred to TB diagnostic centers. The table of results is attached:

| Indicators | Male | Female | Trans-gender | Male Children (<15 Years) | Female Children (<15 Years) | Total |
|---|---|---|---|---|---|---|
| Number of PLHIV screened for TB symptoms (4S) through ICF | 25629 | 26756 | 117 | 1756 | 1324 | 55582 |
| Number of TB symptomatic PLHIV referred to nearest TB diagnostic centres | 4589 | 4483 | 12 | 216 | 199 | 9499 |
| Number of Key Population (HRG) among PLHIV screened for TB through ICF | 687 | 565 | 79 | 12 | 11 | 1354 |
| Number of Key Population (HRG) among PLHIV referred for TB testing | 245 | 173 | 35 | 2 | 1 | 456 |
| Number of referred PLHIV got tested and detected TB positive | 451 | 277 | 7 | 7 | 20 | 762 |
| Number of TB symptomatic family members / partner of registered PLHIV referred to TB testing facility | 151 | 153 | 0 | 9 | 21 | 334 |

*[Result of Community led Tuberculosis screening of People Living with HIV]*

**Conclusions/Next steps:** The findings of intervention suggests that community based care and support centres involvement in TB/HIV are effective supplement in efforts to diagnose TB early and thereby add to the ongoing efforts of national program to collaborate HIV-TB activities aimed at improving outcomes of those co infected with HIV and TB.

## WEPEE521

### HARM REDUCTION: LIMITATION OF HIV PREVENTION INTERVENTION FOR INJECTION DRUG USERS IN NIGERIA

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**Background:** Strengthening HIV Prevention Services for Most at Risk Populations (SHIPS for MARPs), a USAID-funded project implemented by Center for the Right to Health (CRH) aims to reduce HIV prevalence among Injection Drug Users (IDUs) despite limitations in providing Drug-User-Specific interventions such as needle syringe program. The prevalence of HIV among IDUs in Nigeria is 4.2% (IBBSS 2010) which is greater than the National Prevalence of 4.1% (ANC 2010) with prevalence among female IDUs about 7 times higher than among male IDUs (IBBSS, 2010).

**Description:** CRH is currently implementing HIV Prevention intervention for Injection Drug Users in 4 States in Nigeria (Lagos, Rivers, Akwa Ibom and Cross Rivers). The Minimum Prevention Package Intervention (MPPI) strategies were developed to address key challenges identified during a baseline survey conducted prior to the project commencement. Procedure for implementing strategy for intervention include Peer education which involves targeted messages to address issues related to behavioral change and healthy living interactively discussed in modules.
Between January 2015 and December 2015 a total of 1063 IDUs have been reached with these strategies. IDUs reached across States reported Reduction in needle & syringe sharing, Reduction in unprotected sexual activity, Access to safer sex products.

**Limitations include:**
· Other interventions, in particular access to ART, Hepatitis and Tuberculosis diagnosis, prevention and treatment, are not documented or lacking, including the evidence.
· The concept of harm reduction is not fully accepted yet in Nigeria, including among the stakeholders.
Drug detoxification and rehabilitation services are limited in the country

**Lessons learned:**
- Intervention for IDUs requires holistic approach.
- Building capacity of target beneficiaries promotes sustainability
- Lack of harm reduction component often results in relapse and ineffective outcome in HIV prevention intervention program.
- Income Generating Activities should also be incorporated along side HIV prevention Intervention program

**Conclusions/Next steps:** There is urgent need to provide intervention for IDUs through holistic approach of harm reduction.
Policies regarding harm reduction must be changed to create enabling environment for such programs in Nigeria.
Increased rate of unemployment and poverty contributes to increasing numbers of IDUs. Thus the need incorporate IGAs in HIV programming.

## WEPEE522

### INTEGRATED TB AND HIV SERVICES FOR PREGNANT WOMEN LIVING WITH HIV IN MASHONALAND EAST PROVINCE, ZIMBABWE: OPPORTUNITIES AND CHALLENGES IN LOW-RESOURCES SETTINGS

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**Background:** HIV prevalence has been followed by increases in tuberculosis morbidity and mortality in PLHIV. In Zimbabwe approximately 69% of TB cases are co-infected with HIV. With pregnant women accessing antenatal care (ANC) services reporting 15.9% HIV prevalence, an integrated approach for TB/HIV services is required for good maternal health outcomes and elimination of new HIV and TB infections among children. in partnership with the Ministry of Health and Child Care, Mashonaland East Province assessed opportunities and challenges to integration of TB/ HIV services for pregnant women in ANC.

**Description:** In November-December 2014, the PEPFAR/USAID funded OPHID Families and Communities for the Elimination of HIV (FACE) program supported an assessment of integration of TB/HIV services for pregnant women. A total of 10 health facilities (four hospitals and six primary health facilities) in two of 56 districts supported by OPHID were randomly selected for assessment using routinely collected program data and interviews with nurse-in-charge at each facility.

**Lessons learned:** Between October 2013 - September 2014, 15.9% of 3,477 pregnant women who accessed ANC services were HIV positive. Although, 99% of the HIV positive women were symptom screened for TB, only 1% (4/554) successfully received TB diagnosis and care services. The large number of women accessing ANC services reflects an important opportunity for integrating TB/HIV services particularly early detection of TB in high risk PLHIV prior to presentation of symptoms. However, challenges were presented in offering integrated TB/HIV services: lack of documentation of the screening outcomes; weak or poor communication and sharing of information systems between services, specifically in referral based model of integration at hospital level; and inconsistency of sputum sample collection at primary healthcare facilities.

**Conclusions/Next steps:** Strengthening integration of TB/HIV services for pregnant women in ANC in Zimbabwe has potential to significantly contribute to the reduction of TB morbidity and mortality in PLHIV and prevent secondary infections in infants. Addressing the structural challenges affecting provision of integrated services at both primary and hospital levels through coordinated monitoring and documentation of services provided can support active follow-up of patients by healthcare providers and hence minimise lost opportunities along the TB/HIV continuum of care.

## WEPEE523

### A FRAMEWORK FOR PROVISION OF INTEGRATED MATERNAL AND CHILD HEALTH (MCH) AND HIV SERVICES IN PRIMARY HEALTH CARE (PHC) CLINICS IN ONE DISTRICT OF KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Post-natal follow up of HIV infected mothers and their infant's remains challenging despite high immunisation coverage over the same time period; many HIV-infected mothers and their babies leave well-child/immunisation clinics without receiving ongoing HIV care. Co-delivery of services is one approach to improve accessibility and uptake of services. Our project aimed to develop a replicable framework for implementation of integrated MCH/HIV services for mothers and babies attending well-child clinics.
**Description:** A multipronged quality improvement intervention was implemented in five PHC clinics from October 2013- September 2014. A minimum package of care for mother-baby pairs was defined in partnership with the clinic team, as well as roles and responsibilities for all health workers providing MCH services. Using a patient-centred approach the care pathway for mother-baby pairs through the clinic was re-organised, and staff and equipment re-deployed to provide comprehensive care efficiently and effectively. A skills audit identified skills gaps and relevant training was provided. The community was empowered to demand integrated MCH and HIV services through engagement with community health workers (CHWs).
These changes were achieved through two-weekly mentoring visits with clinic teams, including CHWs, over the one-year intervention period, and quarterly peer-to-peer learning sessions. Formal training was provided for enrolled nurses and CHWs.
**Lessons learned:** The intervention was supported by a framework comprising strong leadership and vision at all levels, supportive policy framework, and monitoring and evaluation. Three pillars underpinned the programme: community engagement; teamwork; patient-centred approach. Integrated MCH/HIV services were successfully implemented leading to improvements in uptake of HIV services. Different cadres of health workers worked together in one consulting room to provide a full range of care, improving teamwork in the clinic and facilitating peer-to-peer learning. Checklists were used to ensure mother-baby pairs received all essential services. CHWs successfully created demand for integrated services among mothers in the community.
**Conclusions/Next steps:** We present a framework for implementation of integrated MCH and HIV services to increase accessibility, uptake of services and retention in care for HIV infected mothers and their infants. This approach is currently being tested in preparation for large scale roll out.

## WEPEE524

### SCALING UP ART UPTAKE IN CO-INFECTED PATIENTS CAN IMPROVE TB OUTCOMES

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**Background:** In Uthungulu district, KwaZulu-Natal, South Africa TB/HIV co-infection ranges from 70% up to 80%. The incidence of TB was 893/100,000 in 2014 and according to the 2012 ANC Survey the HIV prevalence was 38.4% among pregnant women. The high burden of TB and HIV is coupled with poor TB/HIV programme integration and poor socio-economic conditions that the majority of clients live under. Public health policies have recently stressed the need for integrated TB/HIV services to mitigate the effect HIV has on the already heavy TB burden in the country.
**Description:** The target for ART initiation/uptake for co-infected patients is 90% and the ART uptake was at 56% in Q1/2014 which was well below the target. We sought to improve TB/HIV integration in the district to address this gap. The TB control program devised a sticker system to be used on the patient files of TB/HIV co-infected patients. For all TB patients who have a positive HIV status a red sticker is put on the TB patient folders. The file will remain with a red sticker until the patient is initiated on ART. Once the patient is initiated then a white sticker is put on the folder to indicate that the patient has received the full integrated service. Clinical staff was then in-serviced on the new system and the roll out took place across the district.
**Lessons learned:** fter a 12-month period (Q1/2014 to Q1/2015) the ART uptake increased from 56% up to 91% among TB/HIV co-infected patients. Improved treatment completion, cure rates and TB death rates indicate that this project did not just improve TB/HIV integration but TB outcomes as well.
**Conclusions/Next steps:** TB/HIV integration coupled with the use of a sticker system is an effective management approach to improve TB outcomes among co-infected patients. This strategy was simple to implement and very practical and can therefore be adapted to any situation irrespective of resource constraints.

## WEPEE525

### LESSON FOR HIV MANAGEMENT FROM AN INTEGRATED TREATMENT FOR OPIOID ADDICTION IN VIETNAM

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**Background:** Since November 2013, we have implemented an integrated treatment program consisted in opiate maintenance medication (methadone and buprenorphine/naloxone), structured counseling sessions focused on substance use and risk-taking behavior, systematic screening for HIV and HCV, and HIV treatment if needed, within an HIV treatment setting in Ho Chi Minh City, Vietnam.
**Methods:** The aim of this study was to evaluate the impact of the integrated treatment program on HIV treatment adherence, HIV incidence and risk-taking behavior. At baseline and every 6 months, HIV and HCV screening were performed; HIV risk-taking behavior was assessed with Risk Assessment Battery.
**Results:** Since December-01-2013, 396 daily opioids (heroin) users were enrolled. They were mainly males (96.4%), 32.4 y.o. (SD= 5.2), leaving with family (81%). The retention rate was very high (92.7% at 6 months). At 6-month follow-up, there was a significant decrease of injection (100% vs. 63.4%), and a significant decrease of sharing needle/paraphernalia (47.2% vs. 31.7%). Among those who still injected at 6-month follow-up, there was a significant decrease of injection-related risk taking behavior ($F(1,15)=7.567$, $p= .015$). There was no difference in change of sex-related risk-taking behavior, which still concerned 61% of the subjects. One hundred twenty-nine were HIV-positive (32.6%), with six not previously known to be positive. All HIV-positive participants were linked to HIV care, and 96.1% received ARV. Although HIV-positive patients stated they were taking their ARV medication daily, only 69% had a suppressed viral load at 6 months. The viral load suppression was not linked to opiate maintenance treatment adherence neither persistency of drug use.
**Conclusions:** Treatment settings that integrate HIV, substance-use and harm reduction care are more effective. However, there is a need to improve ARV treatment response to suppress viral load and thus reduce the reservoir by a better monitoring of treatment efficiency, drug regimen modification and a better treatment adherence.

## WEPEE526

### IMPROVING MANAGEMENT OF TUBERCULOSIS IN PEOPLE LIVING WITH HIV IN SOUTH AFRICA THROUGH INTEGRATION OF HIV AND TUBERCULOSIS SERVICES: A PROOF OF CONCEPT STUDY

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**Background:** South Africa's tuberculosis (TB) burden is the third highest in the world. The country has made enormous progress in testing TB patients for HIV. WHO reports that as of 2012, 84% of TB patients had been tested for HIV. However, as TB and HIV services in the public sector in South Africa are usually provided by different sets of health providers, effective screening and testing of persons living with HIV for TB lags behind testing TB patients for HIV. This operational proof of concept study tests an approach to improve the management of TB in persons living with HIV in South Africa by integrating TB management into HIV services.
**Methods:** The intervention was implemented in July 2015 in three primary health care facilities in Gert Sibande district, Mpumalanga Province. All health personnel who provide services to persons living with HIV were trained to test their patients who exhibit one or more TB symptoms for the disease, and initiate and monitor treatment as indicated. This is in contrast with the usual practice of referring patients to the TB providers for testing and treatment. The records of persons living with HIV who tested positive for TB between July and December 2015 are reviewed through the six-month treatment period to assess treatment outcome.
**Results:** Between July and December 2015, 1658 patients were tested for TB at the three facilities; 394 (23.8%) by HIV providers and 1,264 (76.2%) by TB providers. The percentage of patients who tested positive for TB was similar for both providers (HIV: 8.9%, n=35; TB: 9.6%, n=156), as was the proportion who completed the two-months intensive phase of treatment (6.3% and 6.9% for HIV and TB providers, respectively). Preliminary results indicate that HIV providers are willing and able to provide TB treatment to their patients.

**Conclusions:** This simple shift in workplace responsibilities seams feasible and acceptable to health personnel and patients in health facilities in South Africa. Larger scale research is required to evaluate the impact of the intervention on health outcomes.

## COMMUNITY CARE WITH HEALTH FACILITY SERVICES

### WEPEE527

### CHRONIC CARE IN AFRICA: HOW THE EXPERIENCE WITH EXPANDING ANTIRETROVIRAL TREATMENT PROGRAMMES FOR HIV CAN SERVE PATIENTS WITH OTHER CHRONIC CONDITIONS

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**Background:** Countries in sub-Saharan Africa face the daunting task of providing anti-retroviral treatment (ART) to millions of HIV-infected patients and responding to the increase of chronic, non-communicable diseases (NCDs). The aim of this research was to examine how HIV care had transformed, since ART was introduced, and to what extent these experiences could be used to serve patients with other chronic conditions.
**Methods:** A mixed methods study was conducted in Ethiopia, Malawi, South-Africa and Zambia between 2011-2014, focusing on adaptations in primary care. Per country, three community home based care programmes (CHBC) served as study sites, incorporating primary health clinics. Methods consisted of semi-structured/structured interviews, focus groups, service observations, and a questionnaire survey. Interviews were held with 49 informants from national level, 71 informants from CHBC sites, 98 clients and 99 family caregivers. 17 programme staff and 65 community caregivers participated in focus groups. Further in-depth exploration in Zambia on health policy and service changes entailed interviews with 18 national and 17 district level informants, and group discussions with 36 caregivers. Questionnaires were disseminated to 46 CHBC programmes. SPSS and Atlas.ti software were used in the data analysis.
**Results:** The study found many innovations which facilitated the expansion of ART and provision of chronic care at primary levels. Examples include treatment simplification, task delegation, diversification of CHBC services and mentoring by caregivers and peers to support patient 'self-management', a key principle of chronic care. CHBC programmes started serving patients with NCDs and, in three of the four countries, the governments were seeking to formally integrate CHBC into primary health services. Our findings revealed the emergence of an 'African chronic care model', in which community involvement and linkages between health and social welfare services featured prominently.
**Conclusions:** The large scale introduction of ART in sub-Saharan Africa spurred the development of chronic care, implicating a wide range of actors. This provides a strong base for addressing the region's epidemiological changes as well as maintain millions of HIV patients on treatment. CHBC programmes are critical as they not only expand the reach of clinical services but also promote patient and family participation in managing chronic conditions.

### WEPEE528

### INTEGRATING COMMUNITY HEALTH SERVICES AND HEALTH FACILITY PMTCT PROGRAM: LESSONS FROM THE FEEDING BUDDIES WINDOW OF OPPORTUNITY PROJECT, KWAZULU-NATAL

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**Background:** PMTCT services have been routinely available for more than 10 years in South Africa. Despite the availability of effective treatment protocols and infant feeding guidelines, adherence remains a challenge.
**Description:** The Feeding Buddies intervention provides peer-based support for pregnant and post-partum women. Pregnant women and 'buddies' of their choice were trained on essential PMTCT and health behaviors and skills, including of antenatal care, birth preparedness, adherence PMTCT behaviors, exclusive breastfeeding, and postnatal care. The project was implemented and evaluated in 8 sites in two sub-districts, KwaZulu-Natal through the Window of Opportunity (WinOp) project, 2014-2015. Data obtained from 135 participants showed the following:
**Lessons learned:**

| | |
|---|---|
| Women's selection of known buddy (friend, family member, and partner) showed more consistent and greater levels of support than community health workers. | Despite a growing trend to utilize CHWs for community mobilization, leveraging intimate connections resulted in greater follow up, adherence, and reduced potential stigma. |
| More mothers were trained at community level than facilities and extended kin members often attended training. | Community-based and socially networked intervention created broader platform to address societal issues, beliefs, and stigma within the community, potentially reducing pressure women might feel at home. |
| Messaging on exclusive breastfeeding overshadowed messaging around continued breastfeeding. | Balanced and consistent messaging on both exclusive and continued breastfeeding need to be stressed in materials and campaigns |
| Enrolment of women and buddies was time and labor intensive though greater integration of nursing staff reduced added time and improved harmonization of services | Integration of the intervention recruitment and encouragement into facility services increased enrolment and high retention of women and buddies was high and resulted in gains within the PMTCT programme. |

*[Feeding Buddies Findings & lessons learned]*

**Conclusions/Next steps:** Expanding and integrating existing intimate social networks in the community into health services highlighted the importance of moving beyond the basic reliance on community-level volunteers, and provided additional coverage that traditional health care cannot provide.

## INTEGRATION OF HIV AND NON-COMMUNICABLE DISEASES (NCD) SERVICES

### WEPEE529

### INTEGRATING HIV AND NCD PATIENTS IN ADHERENCE CLUBS IN KIBERA, KENYA: A QUALITATIVE STUDY

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**Background:** The number of people on antiretroviral therapy (ART) for the long-term management of HIV in low- and middle-income countries (LMICs) is continuing to increase, along with those suffering from Non-Communicable Disease (NCDs). The need to provide large volumes of HIV patients with ART has led to significant adaptations in medication delivery (including facility clubs and community adherence groups), but access to NCD care remains limited, particularly in resource-poor settings. In 2013, Medication Adherence Clubs (MACs) were introduced as an alternative to standard care for stable NCD and HIV patients in the urban slum of Kibera, Nairobi, Kenya. MACs enable combined groups of up to 30 HIV/NCD patients to collect medication refills every three months, rather than through individual appointments.
**Methods:** In 2015, we conducted qualitative research to assess patient and health-care worker perceptions and experiences of MACs. A total of 106 MAC and non-MAC patients and health-care workers participated, and 19 in-depth interviews, 10 focus group discussions and participant observation were conducted. Data were translated and transcribed and a coding framework developed before analysis using NVivo (version 10, 2012). Routine data were also analysed to determine the characteristics of MAC patients and the number of MAC meetings held.
**Results:** During the first year of implementation, 109 MAC meetings took place, representing 2208 individual refills. Most (64%) MAC members were female; 71% were HIV-positive. MACs were perceived as acceptable, time-saving, and a valuable source of information about chronic diseases and peer-support by HIV-positive and NCD patients. Implementation challenges included recruitment, patients' understanding of MACs, and the timing of clubs. A small number of HIV-positive patients felt integrated groups affected disclosure.
**Conclusions:** Applying lessons learned from large-scale HIV drug rollout can aid the provision of medication and peer-support to large numbers of stable patients with chronic illness. Through MACs, we have demonstrated that an innovative, integrated approach to repeat prescribing for chronic diseases including HIV can be implemented in resource-poor settings. Extending models of care previously only offered to HIV-positive cohorts to NCD patients allows for the efficient management of co-morbidities and enables patients to benefit from faster refills, health education and peer support.

## WEPEE530

### INTEGRATION OF CARDIOVASCULAR DISEASE RISK FACTOR (CVDRF) SCREENING INTO HIV SERVICES: A TIME-MOTION STUDY OF CVDRF SCREENING AMONGST PATIENTS ON HIV TREATMENT AT AN URBAN HEALTH FACILITY IN SWAZILAND

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**Background:** In sub-Saharan Africa, the burden of cardiovascular disease (CVD) amongst persons living with HIV (PLWH) is high and rising rapidly. Screening and management of modifiable CVD risk factors (CVDRF) including diabetes, dyslipidemia, hypertension and tobacco smoking are recommended for PLWH but are not routinely provided in low-resource settings, where concerns about feasibility are often cited. We conducted a time-motion study of CVDRF screening in a large urban antiretroviral treatment (ART) clinic in Swaziland to assess the feasibility of integrating CVDRF screening into HIV care by assessing its impact on patient flow and HIV service delivery.
**Methods:** A convenience sample of PLWH ≥40 years attending routine ART clinic visits at Raleigh Fitkin Memorial Hospital was screened for CVDRF, including: hypertension using two blood pressure (BP) measurements; cigarette smoking using patient interview; and diabetes and dyslipidemia using point-of-care (POC) blood tests. We used validated time-motion study methodology to measure visit time spent receiving HIV care and CVDRF screening. Using Wilcoxon rank-sum tests, we compared screened and unscreened patients to assess total visit time and time spent receiving HIV-specific services.
**Results:** To date, we have observed 143 patient visits (93 including CVDRF screening and 50 without). Visits including CVDRF screening took significantly more time than visits without screening (median [range]: 15 [10-30] minutes *vs.* 4 [2-11] minutes, $p< 0.001$). No difference was detected in the amount of time spent providing HIV-specific services (median [range]: 5 [3-12] *vs.* 5 [3-11] minutes, $p=0.389$). The median (range) number of minutes spent on the most time-consuming components of CVDRF screening were: 12 (6-22) minutes obtaining finger-stick samples and performing POC analyses, 3 (1-4) minutes measuring BP, and 2 (2-4) minutes providing behavioral counseling. Nurses were able to "multitask" during POC analysis, providing ART refills and behavioral counseling and documenting screening results in patient medical records while waiting for POC test results.
**Conclusions:** Provision of CVDRF screening more than tripled the length of routine ART appointments but did not reduce the time spent on HIV services. Program managers need to take into account longer visit duration in order to integrate periodic CVDRF screening and counseling into HIV programs.

## WEPEE531

### CAN HIV/AIDS INFRASTRUCTURE BE LEVERAGED TO IMPROVE RHEUMATIC HEART DISEASE CARE IN UGANDA?

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**Background:** Substantial investment over the past 15 years has successfully scaled-up HIV/AIDS healthcare infrastructure in sub-Saharan Africa; however, spending on HIV/AIDS has overshadowed spending on endemic non-communicable diseases such as rheumatic heart disease (RHD). Translating infrastructure gains in HIV/AIDS to other chronic diseases is a priority for health systems in the region.
**Description:** As a founding country partner of the RHD Action Alliance (rhdaction.org), we aim to leverage existing HIV/AIDS infrastructure and longstanding USA-Uganda collaborations to create a RHD surveillance and treatment program in Uganda. Case Western Reserve University has collaborated with the Joint Clinical Research Centre (JCRC, a national network of HIV clinics), the Uganda Heart Institute (UHI), Makerere University and other Ugandan and global partners to:
1) create a national RHD registry to monitor disease progression and adherence to treatment,
2) decentralize cardiovascular care from Kampala to regional centers,
3) train a cardiovascular workforce in Kampala to provide interventions such as percutaneous valvuloplasty,
4) conduct epidemiologic surveillance with echocardiographic screening for RHD,
5) utilize lessons learned from HIV/AIDS to raise RHD awareness and improve adherence to RHD therapies,
6) assure program sustainability through close partnership with the Ugandan Ministry of Health.
**Lessons learned:** Since February 2013, over 1300 patients with RHD have been enrolled in a secure online registry. Regional RHD/cardiac clinics have been established at Lubowa, Gulu, Mbarara, and Lira, where JCRC staff work with local cardiovascular experts to provide care. Two interventional cardiologists and two heart failure specialists have received advanced training in Cleveland, USA. Over 13,000 children have been screened for subclinical disease, and we have learned that HIV-infected children may have lower rates of RHD due to improved engagement in care. We have adapted "Treatment Cascade" metrics from HIV/AIDS to evaluate retention and quality of care. We are working with the Ministry of Health to improve the penicillin supply chain and develop a policy roadmap for RHD.
**Conclusions/Next steps:** We present a model for the management of other chronic non-communicable diseases in resource limited settings where infrastructure for HIV/AIDS is robust, but other health infrastructure is lacking.

## WEPEE532

### ENHANCING THE HIV CHRONIC CARE PLATFORM TO ADDRESS NON-COMMUNICABLE DISEASES IN LOW- AND MIDDLE-INCOME COUNTRIES

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**Background:** Persons living with HIV (PLWH) in low- and middle-income countries (LMICs) are living longer and developing noncommunicable diseases (NCDs) due to the successful treatment of HIV, now a chronic communicable disease. Establishing an evidence-base for affordable, effective interventions to address NCDs among PLWH in LMICs should be a priority.
**Methods:** Participants of the NIH PEPFAR-NCD project examined over 500 peer-reviewed and grey literature to assess currently available evidence regarding HIV and four selected, high burden NCDs in sub-Saharan Africa (SSA): cardiovascular disease, cervical cancer, depression, and diabetes. Subject matter experts engaged in the project reviewed these findings and developed a consensus on the gaps in knowledge and priority research questions.
**Results:** Based on the findings from the literature review, NIH PEPFAR-NCD project participants identified substantial gaps in knowledge and significant opportunities for future research which could form the evidence-base for integrating NCD care into existing HIV platforms. Specifically, the review identified three key findings: 1) there is a paucity of data on the burden of NCDs amongst PLWH in SSA; 2) there is a need for screening and management approaches that are contextually appropriate for resource-limited settings and will enhance HIV programs; and 3) there are several, evidence-based pilot programs that integrate NCD prevention and care into HIV programs which could provide lessons learned for possible scale-up. To address these findings, the project identified a number of research areas around data, health promotion, and NCD care in PLWH. Specifically, the priority research areas are:
*Data*
1) Document NCD burden for PLWH
2) Develop NCD electronic medical records
*Health Promotion*
1) Develop methods to reach marginalized populations
2) Train health workforce in NCDs
3) Establish community of practice platforms
4) Evaluate integrated care campaigns
*NCD care for PLWH*
1) Develop,assess,scale-up integration models
2) Strengthen supply chain
3) Develop innovative NCD diagnostics
4) Investigate NCD treatment for PLWH
5) Investigate integration effect on care
**Conclusions:** As countries and funding agencies strive to offer quality care to PLWH, addressing these priority research questions will provide an evidence-base and generate practical approaches that can successfully enhance HIV platforms to deliver more comprehensive care to PLWH.

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## WEPEE533

### FROM PILOT TO NATIONAL SCALE UP: THE LEGACY OF PATHFINDER INTERNATIONAL-ETHIOPIA'S SINGLE VISIT APPROACH FOR CERVICAL CANCER PREVENTION AMONG HIV-POSITIVE WOMEN

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**Background:** Although highly preventable, cervical cancer (CC) remains a leading cause of cancer-related deaths for women in low- and middle-income countries. This is the case in Ethiopia, where access to effective preventive services is often absent or inadequate. Furthermore, CC disproportionately affects women living with HIV.
In 2009, Pathfinder International, in collaboration with the Federal Ministry of Health (FMOH) of Ethiopia, launched Ethiopia's first pilot single visit approach (SVA) project for cervical cancer prevention (CCP) among HIV positive (HIV+) women.
**Methods:** The pilot project included competency-based training for health care workers on the SVA for CCP. Training included the visual inspection of the cervix with acetic acid wash (VIA) screening method and immediate cryotherapy or Loop Electrosurgical Excision Procedure (LEEP) treatment of cervical precancerous lesions. From October 2010 to September 2014, educational materials were distributed, training curricula adapted, and services made available to HIV+ women in 14 selected public hospitals, including 5 centers of excellence hospitals. Project facilities' aggregated client data is used for the description of services offered.
**Results:** While the project's original target was to screen 5,000 HIV+ women for CC, ultimately 18,193 HIV+ women were screened. Of those, 1,879 (10.3%) were found to be VIA positive. Ninety-four percent of VIA positive women received cryotherapy or LEEP treatment. Among those treated, 805 (56.2%) returned for a follow-up visit the next year. During that follow-up visit, 92% of patients were found to be VIA negative. One hundred and ten women (0.6%) suspected of having CC were referred for further treatment.
With the pilot project's guidance and technical support, the FMOH of Ethiopia developed its national CCP and control program guidelines. The FMOH also adopted the project's educational materials. Using the project-established facilities as training and referral centers, the FMOH is currently scaling-up the program to 118 facilities with plans to expand to all national facilities.
**Conclusions:** The CCP pilot project has provided a comprehensive foundation for CC screening and has made a significant contribution to the scale-up of Ethiopia's national CCP program, as well as to the global body of evidence supporting this strategy.

## WEPEE534

### THE NEED FOR INTEGRATED CARE IN SOUTH AFRICA: PRELIMINARY LESSONS FROM THE HEALTHRISE PROGRAMME

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**Background:** Deaths due to non-communicable diseases (NCDs) are expected to increase by 17% over the next 10 years with the largest increase of 24% expected to be in Africa. In South Africa (SA) this rise in NCDs is exacerbated by the existing burden of HIV and TB. In 2013, cerebrovascular disease was the second leading cause of death after HIV.
Given the epidemiological pattern of NCDs and HIV/TB in SA, it is evident that the country is facing a multiple burden of disease requiring integrated health care solutions.
**Methods:** Needs assessments of NCD knowledge, risk factors, prevalence, and service delivery were conducted in two districts of South Africa: PixleykaSeme (Northern Cape) and uMgungundlovu (KwaZulu-Natal). Data collection included household surveys, clinical examinations, health facility assessments, interviews and focus groups with community members, NCD patients, health professionals, and policy makers.
**Results:** Data on prevalence of hypertension, diabetes, high cholesterol, and HIV are presented in Table 1 and the proportion of patients with disease that have been diagnosed, received treatment, and are measured to be controlling their condition within recommended clinical levels in Table 2.

| | Umgungundlovu (% of population) | Pixley ka Seme (% of population) |
|---|---|---|
| Hypertension | 46 | 49 |
| Diabetes | 9 | 8 |
| High Cholesterol | 9 | 14 |
| HIV | 41 | 18 |

*[Table 1. Disease prevalence as a percent of total population]*

| | Hypertension (% of patients) | | Diabetes (% of patients) | | High Cholesterol (% of patients) | |
|---|---|---|---|---|---|---|
| | Umgungundlovu | Pixley ka Seme | Umgungundlovu | Pixley ka Seme | Umgungundlovu | Pixley ka Seme |
| Diagnosed | 48 | 46 | 85 | 79 | 25 | 36 |
| Treated | 33 | 35 | 82 | 77 | 9 | 15 |
| Controlled | 10 | 11 | 42 | 38 | 7 | 14 |

*[Table 2. Diagnosis, treatment, control as a percent of total population with disease]*

Prevalence of disease was comparable in men and women, though risk factors for disease differed: men were more likely to use alcohol or tobacco and women more likely to be overweight or obese. In qualitative interviews, providers and patients reported prioritization of HIV/AIDS services and lack of coordination between NCD and HIV/AIDS programming. Health facilities lacked essential medicines and diagnostic capacity for common NCDs.
**Conclusions:** Patients and providers called for the integration of NCD services into community-based HIV services, particularly regarding community health workers, screening, and proximal access to pharmaceuticals. As chronic diseases, NCDs are similar to HIV, requiring lifelong monitoring and management. This creates an opportunity for the health system to leverage existing infrastructure and processes to address emerging health issues.

## WEPEE535

### HIGH HIV PREVALENCE AMONG PATIENTS WITH NON-AIDS-DEFINING CANCERS AT A NATIONAL REFERRAL HOSPITAL, KENYA

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**Background:** HIV has been associated with an increased risk of cancer. Despite adoption of provider-initiated counselling and testing guidelines, HIV testing is not routinely offered to patients diagnosed with cancer; missing an opportunity to identify those who are infected and provision of integrated HIV and cancer care.
**Methods:** Cancer patients whose diagnosis was confirmed by histology/cytology and enrolled for cancer care at Kenyatta National Hospital between April 2014 and July 2015 were included. Patient demographics, HIV testing history, diagnosis and treatment records were collected from medical files, laboratory and autopsy records. Cancer diagnoses were classified using ICD-10 codes. Categorical variables were summarized using proportions and an F-test to compare testing rates across age groups. Only primary tumors were included.
**Results:** Of 6603 cancer patients reviewed, only 1653 (25.03%) had a HIV status indicated. The median age was 46years (IQR 36, 56) and 1094 (66%) were female. Children and older adults were less likely to be tested. [below 15 years (5%), 15-34 years (19%), 35-54 years (50%), 55-75 years (24%) and above 75 years (2%) ($p<0.001$)].
The cancer types with the highest proportion of people tested were Kaposi's sarcoma (73%), non-Hodgkin's lymphoma (48%) and cervical cancer (41%), all AIDS-defining cancers (ADCs). Among non-AIDS defining cancers (non-ADCs), the highest proportion of testing was observed in vulvar cancer (ICD -10 code C51) at 57%, C56-ovarian cancer (27%) and C69-cancer of the eye and adnexa (26%). Only 17% of breast cancer patients were tested.
Among those who were tested for HIV, 556 (33.6%) tested HIV positive. Of these, the proportion who tested positive among non-ADCs was 75% in vulvar cancer, 72% in cancer of the eye and adnexa, 29% in oesophageal cancer, 28% in breast cancer and 25% in ovarian cancer.
**Conclusions:** Overall HIV testing rate was low with slightly higher testing rates among ADCs. HIV prevalence was high even among people with non-ADCs. HIV testing should be offered to all cancer patients to identify those who are infected and facilitate integrated care for both HIV and cancer for improved outcomes in both conditions.

## WEPEE536

### TOWARDS INTEGRATING HIV AND NCDS: FEASIBILITY OF COMBINED HIV AND HYPERTENSION SCREENING AMONG PREGNANT WOMEN IN RURAL INDIA

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**Background:** There is a double burden of HIV and hypertensive diseases among pregnant women in low and middle income countries. In India, hypertension in pregnancy is a leading cause of maternal deaths. In addition, only a third of pregnant women get tested for HIV in India. This study assessed the feasibility of integrating HIV and hypertension screening among pregnant women by community health workers (CHW) known as frontline functionaries in rural India.

**Methods:** Between Jan and April 2015, 144 consenting pregnant women (aged 19-35 years) in rural Maharashtra and Telangana were offered combined HIV screening using OraQuick® kits and hypertension screening using portable digital Microlife AS1-2, a semi-automated oscillometric blood pressure by CHWs. This machine fulfils the WHO requirements for use in low-resource settings. Semi-structured interviews were used to obtain information from pregnant women and CHWs on feasibility of these integrated screening services. All analyses were performed using IBM SPSS Statistics V.22.

**Results:** Overall, 94% pregnant women received integrated HIV and hypertension screening at their village sub-center. Both the screening tests were completed under 40 minutes in 96% of the women. A total of 72 CHWs were trained on these techniques. Few women reported apprehension related to the accuracy of HIV oral test and positive HIV test result. Nearly 97% of pregnant women believed that integrated screening could encourage more women to test for HIV, reduce travel time and cost. 66% of CHWs indicated that their workload has reduced because of these new screening tools and 93.3% believed that their skills had increased. Overall 90% reported that it is feasible to conduct integrated services near their home or sub-centers

**Conclusions:** Community-based and CHW-led integration of HIV and hypertension screening using OraQuick® kits and portable digital Microlife AS1-2® respectively for pregnant women is feasible within the public health system of rural India.

## WEPEE537

### EFFECTIVENESS OF AN INTEGRATED CHRONIC DISEASE MANAGEMENT MODEL IN IMPROVING PATIENTS' CD4 COUNT AND BLOOD PRESSURE IN A RURAL SOUTH AFRICAN SETTING: CONTROLLED INTERRUPTED TIME SERIES ANALYSIS

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**Background:** South Africa faces a dual burden of HIV/AIDS and chronic non-communicable diseases (NCDs). In 2011, a pilot Integrated Chronic Disease Management (ICDM) model was introduced by the national health department into selected Primary Health Care (PHC) facilities, one of the first of such efforts by an African ministry of health. The aim of the ICDM model is to leverage an established HIV treatment programme for NCDs for better health outcomes. This study assessed the effectiveness of the ICDM model in controlling key health indicators, blood pressure (BP) and CD4 counts, of patients treated in PHC facilities in the rural Bushbuckridge municipality of Mpumalanga province.

**Methods:** A controlled interrupted time series study was conducted for 30 months beginning from January 2011 to June 2013. Patients ≥ 18 years were recruited by proportionate sampling from the ICDM pilot (n=435) and comparison (n=443) facilities. Health outcome data for each patient were retrieved from health facility records six months before the initiation of the ICDM model and 24 months during implementation of the model. Control of BP and CD4 counts were defined as BP <140/90 mmHg and CD4 counts >350 cells/mm$^3$, respectively. Two-level segmented analytical approaches were used to determine the effect of the ICDM model over the two specified time periods: first, the autoregressive moving average time series model, and secondly, controlled segmented linear regression analysis.

**Results:** The pilot facilities had a 5.7% (coef=0.057; 95% CI: 0.056,0.058; *P*< 0.001) and 1.0% (coef=0.010; 95% CI: 0.003,0.016; *P*=0.002) greater likelihood than the comparison facilities to control patients' CD4 counts and BP, respectively. The decreasing probabilities of controlling CD4 counts and BP observed before the implementation of the ICDM model in the pilot facilities were respectively reduced by 0.23% (coef = -0.0023; 95% CI: -0.0026,-0.0021; *P*< 0.001) and 1.5% (Coef= -0.015; 95% CI: -0.016,-0.014; *P*< 0.001).

**Conclusions:** Application of the ICDM model appeared effective in reducing the decreasing trend in controlling patients' CD4 counts and blood pressure; hence, the HIV programme should be more extensively leveraged for hypertension treatment in health facilities in South Africa and other low- and middle-income countries.

## WEPEE538

### EARLY EXPERIENCES OF INTEGRATING NON-COMMUNICABLE DISEASE SCREENING AND TREATMENT IN A LARGE ART CLINIC IN ZOMBA, MALAWI

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**Background:** ART programs represent the first large scale chronic disease systems in Africa and can be leveraged to manage the growing burden of non-communicable disease (NCD). This offers the opportunity for integrated HIV-NCD care, which may reduce HIV stigma, increase access to NCD care and improve adherence through reduced travel to clinics.

**Description:** Tisungane HIV clinic at Zomba Central Hospital has 6550 patients receiving treatment. In October 2015 a model of integrated HIV-NCD care was developed. Clinical protocols for hypertension and diabetes screening and treatment were developed combining international literature and National Treatment Guidelines. All HIV clinic staff (n=27) were trained during 2 two-day sessions. Blood pressure was measured on adults at every visit and random blood glucose every two years. If initial blood pressure was raised, it was repeated at that visit and confirmed on a subsequent visit before hypertension was diagnosed. Only patients with stage 2 hypertension (systolic>160 and/or diastolic>100) or those with stage I hypertension and cardiovascular risk factors were given antihypertensive drug treatment. If random glucose was high, it was confirmed with a fasting glucose, using WHO thresholds. All measurements were done by lay health workers and expert clients who received stipends. Combined ART-NCD treatment was provided by clinical officers, uncomplicated ART-only care by nurses.

**Lessons learned:** In the first three months >9,000 adults and children attended HIV care, of whom >4,300 had ≥ 1 blood pressure recorded and >3,100 had ≥1 glucose reading measured. Five expert clients/lay health workers were employed for the additional care burden. This was manageable as the prevalence rates of stage 2 hypertension and diabetes were low (7.2% and 0.8 % respectively). The less-flexible vertical nature of the ART system made the design of integrated tools including electronic data capture challenging. Process mapping and patient flow were utilized to decrease missed screening opportunities. Integration of NCD care increased workload and consultation time.

**Conclusions/Next steps:** Screening and treatment of hypertension and diabetes in single "one-stop" HIV-NCD clinic appears feasible. Prioritizing pharmacological hypertension treatment to those with the largest benefit contributed to feasibility of integrated treatment.

## WEPEE539

### HIV AND STROKE IN ZIMBABWE: A CROSS SECTIONAL STUDY

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**Background:** Stroke occurence now epidemic due to non-communicable diseases and HIV. HIV now thought to be a direct cause of stroke. Incidence of HIV in Zimbabwe has decreased but there are still many people living with HIV who are prone to suffer stroke. Being HIV positive and suffering a stroke may increase disability in those affected and result in double caregiver strain in those who look after the stroke survivors. Study aimed to determine the proportion of stroke survivors tested for HIV and found positive and willing to disclose status to caregivers. The study also aimed to determine the severity of disability and postulate on the burden of care.

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**Methods:** This was a cross sectional study. Patients with stroke admitted at three hospitals in Harare participated. Recruitment was done in the wards 48 hours after admission between April 2015 and January 2016. A researcher administered questionnaire was used to collect information. Disability severity was assessed using the Functional Independence Measure (FIM). Informed consent or assent was obtained from the patients or their relatives. Ethical approval was sought and obtained from relevant ethical review boards. Data was entered into Excel and exported to Stata 13.0 for analysis to generate means and standard deviations, medians and Inter quartile ranges (IQR), frequencies and percentages.

**Results:** A total 149 patients participated. Most patients were female (62%). Group mean age was 58.9±16.7 years with no significant difference in mean age between males 59.8±16.0 years and females 58.3±17.1 years, p=0.586. Proportion of survivors ever tested for HIV (n=142) was 55.6% . Those who reported a positive HIV result among the tested (n=79) was 19%. Willingness to disclose the HIV status among patients (n= 18) was 77.8%. Median FIM score was 41.5 (IQR; 20-68). Median Motor score was 59(IQR; 33-104) and median cognitive score: 21(IQR; 7-32).

**Conclusions:** Stroke affects more middle aged women who are traditionally caregivers. A high HIV prevalence topped with severe disability increases burden of care. There seems to be a reduction in the fear of stigma. Routine HIV testing in stroke and inclusion of HIV care in available programs is recommended.

## WEPEE540

### QUALITY OF CHRONIC DISEASE CARE IN RURAL SOUTH AFRICA: USER AND PROVIDER PERSPECTIVES

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**Background:** The integrated chronic disease management (ICDM) model was introduced as a response to the dual burden of HIV/AIDS and non-communicable diseases (NCDs) in South Africa, one of the first of such efforts by an African ministry of health. The aim of the ICDM model is to leverage HIV programme innovations to improve the quality of chronic disease care. There is a dearth of literature on the perspectives of healthcare providers and users on the quality of care in the novel ICDM model. This paper describes the viewpoints of operational managers and patients regarding quality of care in the ICDM model.

**Methods:** We conducted a case study of the seven PHC facilities in the rural Agincourt sub-district in northeast South Africa from September to November 2013. Focus group discussions (n=8) were used to obtain data from 56 purposively selected patients ≥18 years. In-depth interviews were conducted with operational managers of each facility and the sub-district health manager. Donabedian's *structure*, *process* and *outcome* theory for service evaluation underpinned the conceptual framework in this study. Qualitative data were analysed, with MAXQDA 2 software, to identify 17 a priori dimensions of care and emerging themes.

**Results:** Manager and patient narratives showed inadequacies in *structure* (malfunctioning blood pressure machines and staff shortage); *process* (irregular prepacking of drugs); and *outcome* (long waiting times). Patients reported anti-hypertension drug stock-outs; sub-optimal defaulter-tracing; and rigid clinic appointments. Managers thought there was reduced HIV stigma because HIV and NCD patients attended the same clinic.

**Conclusions:** Leveraging elements of HIV programmes for NCDs, specifically hypertension management, is yet to be achieved in the study setting in part because of malfunctioning blood pressure machines and anti-hypertension drug stock-outs. This has implications for the nationwide scale up of the ICDM model in South Africa and planning of an integrated chronic disease care in other low- and middle-income countries.

## WEPEE541

### HIV RISK REDUCTION PROGRAMS FOR PEOPLE IN PUBLIC PSYCHIATRIC CARE IN BRAZIL: TREATMENT AS USUAL?

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**Background:** The reasons that people with severe mental illness (SMI) have higher rates of HIV infection than the general population in most countries where rates have been ascertained are complex and not fully elucidated. A critical lack of data leaves policy-makers and practitioners with scant basis for planning programs to reduce the dramatic health effects of these co-occurring conditions. Most people with SMI do not receive HIV-related services in their mental health treatment settings due to significant barriers including lack of funds and inadequately trained staff. This is the first report of effects of treatment-as-usual risk-reduction program participation on sexual protective behaviors by people in care in the public mental health treatment system in Brazil.

**Methods:** Participants were 641 consenting adults attending public outpatient psychiatric clinics or day-hospitals in one of nine settings in Rio de Janeiro. As part of standard clinical care, informal sexual health drop-in group education sessions are offered throughout the system but are not a routine component of care. Participants were assessed for program participation, HIV testing history and knowledge, psychiatric diagnoses (Mini International Neuropsychiatric Interview-PLUS), and sexual protective behaviors (Sexual Risk Behavior Assessment Schedule) in the last three months.

**Results:** Participants were female (58.0%), with a mean age of 42.5 years; multiracial (47.7%), white (32.8%), or black (19.5%); and 46.8% were married/in a long-term relationship. Most participants (72.8%) had diagnoses consistent with SMI; 1.4% had comorbid substance use disorder. Prior risk-reduction program participation was reported by 58 (9.0%) study participants. Those with this experience were more likely to have higher HIV knowledge (p=.04) and to have been HIV tested in the last three months (p=.02) than those who had not received risk-reduction programming.

Participants who did not receive this programming were more likely to have described themselves as black or multiracial than white (p=.001). No associations were found between risk-reduction program participation and gender, education, marital status, psychiatric diagnosis, or any sexual risk-reduction behaviors.

**Conclusions:** Benefits accrued to the few mental health service users who received clinical HIV risk-reduction programming; however, more inclusive intervention is needed to enhance sexual protective behaviors among those in public psychiatric treatment.

## WEPEE542

### CANCER CARE IN HIV PATIENTS: FOR HOW LONG WILL WE NEGLECT?

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**Background:** Access to combined antiretroviral therapy (cART) reduced HIV-related morbidity and mortality in low-resources countries. New morbidities are expected to increase, notably cancers, which could hinder recent advances in patient care. We report our experience on structural, cultural and economic barriers that hinder optimal care.

**Description:** In Cameroon since 2010, 304 patients are enrolled in two second line cART clinical trials (ANRS12169 and ANRS 12286) and have been followed over 5 years. We registered 10 cancer cases (1 anal, 2 vulvar, 1 cervical, 2 ovarian, 2 gastric, 1 hepatic and 1 ORL). The research team was involved in the follow up of these patients from the diagnosis to recovery (4) or death (6).

Barriers were encountered at different stages: lack of diagnostic tools and high costs limit access to rapid diagnosis and staging (anatomopathology, neoplastic markers, CT scan). Therapeutic interventions are scanty: drugs for chemotherapy are unavailable and expensive; radiotherapy is restricted to big urban areas. Knowledge about cancer by patients and their families is limited to its possible fatal outcome con-

sequently denial, withdrawal and faith in miracle solutions replace adherence to medical interventions. The patient-carer relations can be blocked by unspoken fears delaying practical organization of nursing.
In case of untreatable conditions, access to palliative care is difficult for lack of services. Pain management is nearly inexistent because of limited knowledge and skills by care providers. Opioid use is hindered by unnecessary country restrictions.
**Lessons learned:** Information and education about cancer prevention, screening and care should be integrated in communication with HIV patients. Preventive validated interventions and active screening have their role in patients' management. *Ad hoc* contacts with specialized services, if existing, should be established in advance to provide rapid response in case of suspect and diagnosis. Palliative care and in particular access to opioid have to be implemented rapidly.
**Conclusions/Next steps:** Training of health care providers on cancer management from prevention to follow up of untreatable cases is important in HIV care and the essential package for cancer care should be introduced in HIV services. If we continue to neglect, we will be failing comprehensive care.

## WEPEE543

### ACCEPTABILITY OF INTEGRATED HOME-BASED SCREENING FOR HIV, TB AND NON-COMMUNICABLE DISEASES IN RURAL SOUTH AFRICA

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**Background:** The formal health system in South Africa is inadequate to meet primary care needs in rural areas, where rates of HIV/AIDS and tuberculosis are among the highest in the world and rates of non-communicable diseases (NCDs) are rising. One promising strategy to address this dual burden is decentralization of healthcare roles to community health workers (CHWs). However, the health system in South Africa has incorporated CHWs in a fragmented manner, with the majority of CHWs trained in just one disease or program.
**Description:** We seek to evaluate acceptability of CHW-led, home-based, integrated screening in traditional Zulu households in rural KwaZulu-Natal. Eleven CHWs were trained to provide integrated counseling and household screening for hypertension, diabetes, TB, and HIV. CHWs screened 2898 individuals between February and December, 2015. Forty-eight community members then participated in a detailed questionnaire in Zulu.
**Lessons learned:** Screening participants were 82% women and had a median age of 42 (IQR 27-60). Fifty-one percent of participants accepted HIV counseling and testing (HCT), while 62% screened for TB symptoms, 91% tested random glucose, and 96% screened for hypertension.
Among questionnaire respondents (n=48), 32 (69%) had not previously interacted with a CHW. Though most participants did not know the CHW prior to her visit (n=29, 60%), they nonetheless believed that CHWs can be trusted with private issues (n=35, 73%) and reported confidence in CHWs' knowledge of the tests (n=35, 73%).
Thirty-six (75%) stated that they seek care first at a clinic when they become ill; however, 31 (64%) stated a preference for home-based screening. Factors influencing their preference included transport expenses (79%), transport time (74%), clinic queues (47%), privacy concerns (37%), and concerns about being treated with respect (13%), while cost of care, quality concerns, advice from others, and childcare were infrequently cited.
**Conclusions/Next steps:** Community members—especially women—welcomed CHWs into their homes to perform integrated screening. Trust and confidence in CHWs was high overall. Packaging HCT with NCD screening in homes may enhance acceptability of HCT. In an area where the health system maintains a tenuous alliance with marginalized citizens, an integrated, CHW-driven model has potential to overcome geographic and psychosocial barriers to primary health care.

## WEPEE544

### DOES ENROLLMENT IN HIV TREATMENT PROGRAMS LEAD TO A COMPARATIVE ADVANTAGE IN ACCESS TO CARE FOR CARDIOVASCULAR DISEASES? DATA FROM KWAZULU NATAL, SOUTH AFRICA

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**Background:** Access to services for Non-Communicable Diseases (NCDs) is limited in most of Sub-Saharan Africa. Being enrolled in an HIV treatment program may offer some advantages in accessing these services due to regular exposure to healthcare.
**Methods:** We linked population survey data on measured blood pressures in KwaZulu Natal to records from HIV treatment programs in the same region for the years 2003 and 2010. We used logistic models to estimate the determinants of being on treatment for hypertension in 4464 individuals.
**Results:** Holding other factors constant, women, married individuals and those living in urban or peri-urban areas had a higher likelihood of being on treatment for hypertension [adjusted odds ratios (aOR): 3.22, 95% Confidence Interval (CI): 2.70-3.84, aOR: 1.26, 95% CI: 1.07-1.48, and aOR: 1.26, 95% CI: 1.06-1.51respectively]. Household wealth was not associated with likelihood being on treatment (*P* for trend = 0.3). HIV positive individuals on antiretroviral therapy and those in HIV general care were not more likely to be on treatment for hypertension when compared to hypertensive individuals in the general population (aOR: 0.96, 95% CI: 0.72-1.28, and aOR: 1.06, 95% CI: 0.76-1.48).
**Conclusions:** Access to treatment for hypertension is influenced by individual characteristics and by health system-related factors. Whereas priority should first be given to broader health system factors that affect access to health services for all NCDs, emphasis should also be put on harnessing the existing opportunities of integrating NCD services into regular HIV treatment and care.

# INTEGRATING HIV SERVICES WITH THOSE ADDRESSING SOCIAL DETERMINANTS OF HEALTH (E.G., POVERTY, EDUCATION, SANITATION, HOUSING, CLEAN WATER), INCLUDING ECONOMIC STRENGTHENING AND SOCIAL PROTECTION PROGRAMMES.

## WEPEE545

### INTEGRATING WATER, SANITATION AND HYGIENE INTERVENTIONS INTO HIV PROGRAMME FOR PREVENTION OF WATER-BORNE ILLNESSES IN KIAMBU AND MURANGA COUNTIES OF KENYA

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**Background:** People living with HIV (PLHIV) and children born to HIV positive mothers are more susceptible to Water Sanitation and Hygiene (WASH) related illnesses than those not infected. Preventing these illnesses still remain a challenge. An estimated 78,137people were living with HIV in Kiambu and Murang'a counties of Kenya in 2014 , 9% being children < 14 years. Amref Health Africa in Kenya with funding from USAID PEPFAR through APHIAplus KAMILI project (2011-15), targets 10,979 PLHIV (8,555 adults, 2424 children) to enhance their access to quality HIV care and address social determinants of health including WASH services.
**Description:** In 2013, the Ministry of Health in Kenya (MoH) partnered with USAID WASHPlus to roll out WASH-HIV integration model to partners and MoH to prevent WASH related illness. Amref Health Africa targeted 9,654 households with Small Doable Actions (SDAs) in WASH-HIV services. Households with PLHIV were 75% (7,215) and had 10,979 PLHIV (m=38%, f= 62%). By mid-2014, through community units and Community Quality Improvement teams, 9,505 households were using pit latrines, 8,276 were practising hand-washing while 8,682 were practising safe water storage and purification.
**Lessons learned:** A retrospective review of WASH related illnesses was conducted in November 2015 covering the period 2012-2015. Main focus was on diarrhoea, typhoid, dysentery and intestinal worms cases. Routine data from 9,654 households recorded in Community Health Volunteers and Home Based Care diaries in 8 Local Implementing Partners databases and District Health Information System databases for Kiambu and Muranga Counties were utilized and compared. Between 2012 and 2015, among the targeted households, diarrhoea reduced by 41.9% (*n*=1560) vs 51.1 % (n=96,673) increase in counties cases. Dysentery cases among targeted households increased by 38.8 %( n=67) compared to 74 %(n=1160) increase for

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counties. Intestinal worms cases reduced by 1.2 %(n=163) for households but increased by 17.3% (n=32,626) for counties, while typhoid case remained constant for households but increased by 15.3%(n=1024 for the counties.

**Conclusions/Next steps:** A reduction in the cases of WASH related illness at household levels was documented. Integrating WASH and HIV services can contribute to prevention of WASH-related illness among PLHIV.PLHIV households should be targeted and prioritized for promotion of WASH practices.

## WEPEE546

### CLINICAL CARE ALONE IS NOT ENOUGH. ADDRESSING ECONOMIC AND SOCIAL VULNERABILITY IMPROVES CLINICAL HIV OUTCOMES: LESSONS FROM THE BHAVISHYA PROJECT IN PUNE, INDIA

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**Background:** Stigma, poverty, gender inequities, and poor healthcare access fuel the HIV epidemic in India. The Bhavishya (Sanskrit for 'future') Project improves the health and wellbeing of women, children, and families affected by HIV, TB, and poverty in Pune, Maharashtra. The objectives include increased access to government testing and treatment, support lifelong retention and adherence, and promote economic empowerment - ultimately moving clients from poor health, isolation, and vulnerability to improved health, social integration, and inclusion. The project is implemented by Keep a Child Alive, with local partners Sahara Aalhad, Saahasee, and Prayas. Over 5,000 people have accessed services through a residential care home, outreach clinics, and skill training centres.

**Description:** The Bhavishya Vulnerability Index (BVI) was developed to quantify clients' physical, economic, and social vulnerability. Data were collected in two rounds using client records and interviews. Baseline included 501 adult PLHIV (69% female), of which 463 completed follow-up assessment. Differences in baseline (pre-Bhavishya) and follow up (2+ years into the project) were analyzed using Kruskal Wallis and other non-parametric statistical measures.

Findings indicate clients' reduced levels of vulnerability in the follow-up comparison (baseline 48.9, follow-up 28.6; a 42% reduction in overall vulnerability). Statistically significant declines in specific vulnerability categories were found. Clients with low CD4 and HIV/TB comorbidity were more likely to have poor ART adherence. Clients with anemia, low CD4, and HIV/TB comorbidity were more likely to have strained family relationships and less support group participation. Anemia, low CD4, and HIV/TB comorbidity were associated with being in financial debt.

**Lessons learned:** Physical, economical, and social vulnerability are strongly related. Statistically significant differences in baseline and follow-up measures of vulnerability underscore the need to integrate economic and social interventions as critical to client-centered HIV care.

**Conclusions/Next steps:** The BVI is useful to measure the impact of the Bhavishya (or similar) models of care, and to advocate for comprehensive approaches that address key HIV drivers, including poverty. Further work is required to validate the BVI and adapt it for use in other settings. The BVI is currently being adapted by the project as a case management tool.

## WEPEE547

### COMMUNITY REFERRAL SYSTEM LINKING AND SUPPORTING HIV-POSITIVE CHILDREN TO SERVICES

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**Background:** Despite the decline in adult HIV and AIDS prevalence, Zimbabwe continues to experience some of the worst effects of HIV and AIDS in the world, and its children are often underserved casualties of the disease.. With an estimated 1 million children orphaned to AIDS, the Bantwana Initiative of World Education (WEI/B) has supported the Department of Social Welfare to develop and implement an HIV-sensitive, National Case Management System (NCMS) that reaches the most vulnerable with HTC, referrals, support and adherence to treatment.

**Description:** Since, 2010, WEI/B and its partners have worked with over a thousand Community Childcare Workers (CCWs) -the frontline cadres in the care and protection of vulnerable children - to bring community-based social welfare and child protection to the most vulnerable households . In 2015, the program expanded the case management system to include an HIV sensitive training component for CCWS, with the goal of identifying vulnerable children impacted by HIV/AIDS and linking them to care and treatment.. Using welfare and protection issues as an entry point, CCWs were trained to carry-out community based profiling to identify and encourage OVC to be tested and put on care, with CCW's providing follow up support for adherence to treatment.

**Lessons learned:** Incorporating HIV into the NCMS was a huge shift, as CCWs previously focused solely on child protection issues. Combining child protection with exposure to HIV/AIDS was both cost effective, and has led to a 20% increase in the uptake of HIV related services for children. Additionally, children have been increasingly supported to adhere to their medication. There is evidence that integrating HIV-sensitive approaches into child protection systems can enhance early detection and testing of HIV-positive children, and improve their access to care.

**Conclusions/Next steps:** The HIV-sensitive NCMS is currently being scaled up to all 65 districts across Zimbabwe, increasing the opportunity of reaching many more children with integrated child protection resources and HIV care and treatment.

## WEPEE548

### EVALUATION OF THE IMPACT OF MULTI-SECTOR INTEGRATED PROGRAMS ON UPTAKE OF HIV PROGRAMS FOR RURAL COMMUNITIES IN ZAMBEZIA PROVINCE OF MOZAMBIQUE: EXPERIENCE FROM SCIP OGUMANIHA PROJECT

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**Background:** Strengthening Communities through Integrated Programming (SCIP) project funded by USAID and implemented by a consortium of partners led by World Vision, aimed to improve the health and livelihoods of women, children and families in Zambézia Province through integrated, innovative, and sustainable community-based program across multi-sector including HIV, maternal and child health (MCH), nutrition and water, sanitation and hygiene (WASH) activities.

**Description:** HIV intervention outcomes were compared at baseline and at endline along with MCH, nutrition, and WASH activities. HIV and AIDS intervention focused on 1) HIV prevention through community education, messages and dialogue; 2) linkages to HIV care and treatment through referral to the health facility; and 3) follow up care through home visits through Home Based Care volunteers in the health committees.

**Lessons learned:** Approximately 134,000 persons were counseled, tested and received their HIV results during the first five years of the project. Only 43% of respondents had ever heard of HIV counseling and testing (CT) services at baseline compared to 50% at endline. Of those who had knowledge of CT, 96.2% could correctly identify where to receive services at endline compared to 84% at baseline; and 48.8% had been tested at endline, an increase from 34% at Baseline. Of those tested, 92.7% received their HIV test results, up from 76.2% at baseline. There were significant improvements in child immunization, hospital delivery, sleeping under a bednet, stigma reduction, and access to safe water and decreases in food insecurity and severe underweight children in intervention districts.

| Indicator | Unit | OR (95% CI) | P-value |
|---|---|---|---|
| Severe Underweight (-3 SD) | Child 6-23 months | 0.18 (0.08, 0.41) | < 0.001 |
| Full immunization (by card) | Child 12-59 months | 1.73 (1.12, 2.68) | 0.013 |
| Health facility delivery | Household with < 5 years old | 1.50 (1.24, 1.81) | < 0.001 |
| Ever received HIV testing | Household | 1.48 (1.14, 1.93) | 0.003 |
| Antenatal HIV Testing | Household | 2.40 (1.94, 2.98) | < 0.001 |
| Bed net use | Child < 5 years | 3.48 (2.80, 4.33) | < 0.001 |
| Bed net use | Household | 7.67 (6.43, 9.16) | < 0.001 |
| HIV Stigma -Social exclusion | Household | -4.50 pts (-6.58, -2.41) | < 0.001 |
| Access to safe water | Household | 0.50 (0.41, 0.62) | < 0.001 |

*[Endline and Baseline Comparison of Household enumerated in three districts in SCIP Project in Mozambique]*

**Conclusions/Next steps:** A well-coordinated, comprehensive and integrated multisector health and HIV services can improve access to quality services not just to HIV services only but to other MCH, nutrition, malaria and WASH services and improve quality of life of beneficiaries.

## INTEGRATION OF HIV SERVICES WITH OTHER HEALTH AND DEVELOPMENT PROGRAMMES

### WEPEE549

### METHADONE PROGRAM INTEGRATED WITH HIV CARE: WHAT IS ITS UTILITY WITH CHANGING HIV EPIDEMIC IN POLAND

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**Background:** Methadone program integrated into HIV clinic was started in 1995 as an interventions to increase uptake and retention in HIV care in Central Poland. Here we evaluate the utilization of program and its suitability with changing HIV epidemic.

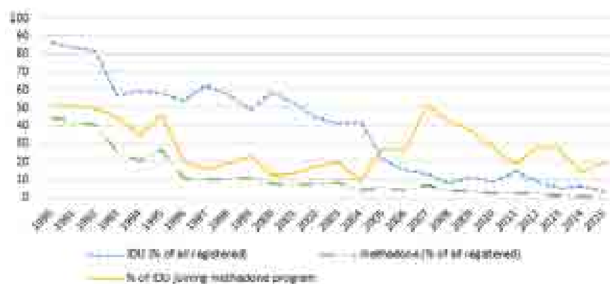
**Methods:** This is retrospective analysis of observational database cohort of cART naïve, HIV-infected adults established 1994 in HIV Out-Patient Clinic, Hospital for Infectious Diseases in Warsaw. Data collected include demographic characteristics, history of clinical visits, cART and all laboratory results. In statistical analyses Chi-squared and Kruskal-Wallis tests were used for group comparisons, tests of significance were two-sided, CI of 95% was accepted.

**Results:** In total 267 (6.6%) of 4062 HIV-positive patients registered in HIV Out-Patient Clinic started methadone program (MET). In MET 77.6% were infected through injecting drug use (IDU), 31.1% were women and 76.4% anti-HCV (+). 30% of MET patients died as compared to non-MET patients. The comparison of baseline characteristics between MET and non-MET patients is presented in Table1

| Characteristic | Methadone program N=267 | Other patients N=3795 | P value |
|---|---|---|---|
| | Number (%) | | |
| IDU mode | 218 (81.6) | 772 (20.4) | <.0001 |
| Heterosexual | 24 (9.0) | 694 (18.3) | |
| Homosexual | 6 (2.2) | 1807 (47.6) | |
| Other / unknown | 19 (7.1) | 519 (13.7) | |
| Women | 83 (31.1) | 641 (16.9) | <.0001 |
| Anti-HCV Ab positive | 204 (76.4) | 762 (20.1) | <.0001 |
| Anti-HBc total Ab positive | 123 (46.1) | 827 (21.8) | <.0001 |
| On ARV | 251 (94.0) | 3179 (83.8) | <.0001 |
| Died | 83 (31.1) | 275 (7.2) | <.0001 |
| | Median (IQR) | | |
| Age at registration | 30.24 (25.9 - 35.5) | 31.23 (26.5 - 37.7) | 0.015 |
| Age at starting ARV | 35.24 (30.3 - 41.2) | 33.27 (28.5 - 40.0) | 0.004 |
| Age at last clinical visit | 43.55 (36.6 - 49.6) | 37.87 (32.0 - 45.4) | <.0001 |
| Baseline CD4 count cells/uL | 440 (255 - 619) | 370 (211 - 531) | <.0001 |
| Baseline HIV RNA log copies/ml | 4.16 (3.22 - 4.80) | 4.31 (3.39 - 4.93) | 0.012 |

*[Table 1]*

The proportion of patients infected through IDU decreased from 86.2% to 3.6%, proportion of MET patients decreased from 44.8% to 0.7% (p for trend < .0001 for both). The proportion of MET among IDU dropped from 52% to 20% in 2015 (Figure1)



*[Figure1. Proportion of IDU, methadone program participants among newly registered HIV patients (stratified by year of registration)]*

**Conclusions:** The proportion of patients infected through IDU dropped twenty times during observed period, reflecting the changing face of HIV epidemic in Poland. However the utilization of integrated methadone program remained substantial with one in five IDU patients choosing the program. Integrated methadone program remains frequent choice of HIV-positive IDU patients.

### WEPEE550

### THE USAID SCORE PROJECT APPROACH RESULTS IN INCREASED HIV TESTING AND DECREASED VULNERABILITY AMONG ENROLLED HOUSEHOLDS IN UGANDA

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**Background:** The five-year USAID Sustainable Comprehensive Responses for Vulnerable Children and their Households (SCORE) project aims to decrease the vulnerability of critically vulnerable children and their households (VCHH) in 35 districts of Uganda. Vulnerability is measured using the SCORE-developed Vulnerability Assessment Tool (VAT), which consists of 32 questions about child protection, food security, economic strengthening, and critical services and is scored from zero to 132.

**Description:** SCORE involves household-tailored development plans, a graduation system, and 27 activities under four objectives. Using an extensive database of 37,125 VCCH members, SCORE undertook a quantitative assessment of how the project addresses HIV/AIDS, a common driver of vulnerability.

**Lessons learned:** The family-centered, household-specific approach of SCORE increased the likelihood that VCCH members would go for HIV testing. The percentage of SCORE VCCH members that did not know their HIV status decreased from 65% to 27% over four years. All HIV negative VCCH members remained negative under SCORE. In year four, 6.9% of VCCH members were HIV positive and 66.1% were negative.

Logistic regression analysis revealed that VCCH members that participated in the following activities were more likely to go for HIV testing:

· community dialogue on psychosocial wellbeing
· nutrition dialogue
· parenting skills training

This finding suggests that community-based education interventions were the most significant* in encouraging VCCH members to go for HIV testing. *at 95% confidence interval, against 22 activities.

Altogether, VCCH members saw an average decreased vulnerability of 24.4 (measured by the VAT) over four years. 47.2% of VCCH members are male and 52.8% are female. There was no significant difference between the vulnerability gains of males and females. 11.3% of VCCH members are 0-5 years, 43.8% are 6-17 years, and 44.9% are over 18 years. There was no significant difference in vulnerability gains by age category. These findings suggest that the benefit of decreased vulnerability from the SCORE project is consistent.

**Conclusions/Next steps:** SCORE decreased the vulnerability of VCCH members and three specific interventions encouraged HIV testing. To guide HIV programming in its two-year extension, SCORE will target sub-counties and activities that are "hotspots" for HIV positive and HIV status unknown VCCH members.

### WEPEE551

### LEVERAGING HIV AND AIDS FUNDING TO STRENGTHEN HEALTH SYSTEMS BEYOND HIV PROGRAMS IN HARD-TO-REACH COMMUNITIES: THE CASE OF BIWIHI A LOCAL CSO, NAMAYINGO DISTRICT, UGANDA

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**Background:** Money is the life blood of any organization; however, being scarce in nature, it has increasingly become difficult for community service organizations (CSOs) to raise funds to support HIV and AIDS and other health programs.

Dolwe Islands are habitable islands for fisher folks and female sex workers on Lake Victoria in Uganda in Namayingo District. In 2009, its community was found to lack functioning government health facility yet the HIV&AIDS rate in the area was at 28% compared to the national prevalence of 6.8%. The only functional health facility on the island was BIWIHI; a local CSO that had only one roomed structure managed by a nursing assistant and an enrolled nurse to provide HIV and AIDS and other health services to a population of over 500 people. Services were provided at a cost. Community members would travel 5 to 6 hours on the lake to government health facilities on the main land to receive free HIV and AIDS and other health services.

**Description:** In 2009, the Strengthening TB and HIV and AIDS responses in East Central Uganda (STAR-EC) with funding from USAID identified and partnered with BIWIHI, a CSO based in Dolwe Islands to improve and increase community access to HIV and AIDS services. STAR-EC provided funding, technical capacity building, maternity coaches, medical equipment like microscopes, motorcycles, and other logistical support for medical supplies.

In addition, STAR-EC facilitated a district health team comprising clinicians, counselors, nurses, and laboratory staff to conduct regular integrated clinical outreach

to the islands. Clinical services provided during the outreaches included HIV testing and counseling, voluntary medical male circumcision, HIV and AIDS risk reduction counseling, condom promotion, antiretroviral therapy provision, and financial performance reviews.
**Lessons learned:**
- HIV and AIDS prevalence in Dolwe Islands dropped from 28% in 2009 to 4.8% in 2015.
- 100 village health teams and peer educators were trained
- The CSO financial capacity was strengthened; local revenue is raised to fund its activities.
- Increased patient load of the facility from 1,401 in 2011 to 4,168 in 2015
- Infrastructure improvement from one to ten rooms.

**Conclusions/Next steps:**
- Capacity building is key in resource mobilization.

## WEPEE552

### Regaining lost ground in preventing mother to child transmission of HIV: immunization clinic as an entry point in a semi-rural setting

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**Background:** Low antenatal care (ANC) attendance, postnatal care attendance and facility delivery rates; coupled with high drop-out rates from programs for prevention of mother to child transmission of HIV (PMTCT) have impacted negatively on HIV services scale-up for women and children in Nigeria, especially in rural and semirural areas.
**Description:** UNICEF supported the implementation of a 12-month project in FCT aimed at identifying HIV positive mothers and their children during routine immunization and linking them to HIV services. FCT has an estimated HIV prevalence of 5.8% and total fertility rate of 4 births/woman. Routine service data indicates that first ANC attendance is much lower than utilization of routine immunization services (first ANC: 40,711; OPV3:91,264). The project which was implemented at Dutsen Alhaji Primary Health Centre, a semirural facility in FCT with a catchment population of 28,700, supported the integration of HIV Testing and Counselling (HTC) and routine immunization services from December 2014 to November 2015. Immunization clinic staff were trained to routinely offer HTC to mothers accompanying infants and young children to the immunization clinic, while applying defined exclusion criteria. Dried blood spot samples for virological testing were collected from HIV-exposed children, and HIV positive mothers and children linked to treatment and care on-site.
**Lessons learned:** 1382 pregnant women attended the facility ANC clinic during the December 2014 - November 2015 period. Of these 1287 received HTC and 52 tested positive. 7198 mothers attended the immunization clinic during the same period. After excluding those with known HIV-positive status or who had previously tested negative within the preceding 3-month period, HTC was received by 3125 women and 27 additional HIV positive mothers and HIV-exposed children (all aged less than 18 months) were identified
In the context of low ANC attendance and high fertility rate, the immunization clinic presents a second chance to identify additional HIV positive women and intervene to prevent HIV transmission during breastfeeding and subsequent pregnancies using minimal additional resources.
**Conclusions/Next steps:** As Nigeria considers adopting lifelong antiretroviral therapy for all pregnant and breastfeeding women, this entry point should be considered for women missed during pregnancy and delivery.

## WEPEE553

### Adjusting the lens: integrating HIV testing services (HTS) into support programmes for orphans and vulnerable children (OVC) in South Africa

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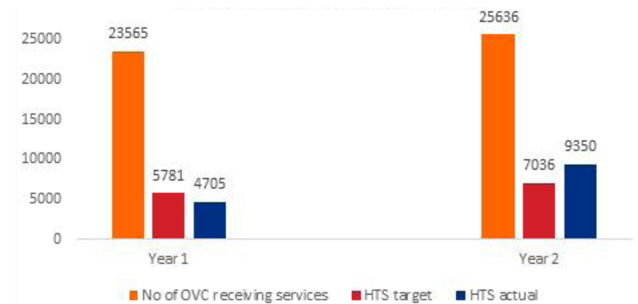
**Background:** South Africa have adopted the Global 90-90-90 strategy and the National Department of Health has recommended *"testing all children accessing services for orphans and vulnerable children"* (2015). In response to global and national shifts in policy, the Global Fund supported NACOSA and NRASD to implement a 2.5-year programme integrating HIV Testing Services (HTS) into existing OVC services.
**Description:** The programme supported 73 community-based organisations in nine South African provinces to integrate HIV programmes into their existing OVC services from October 2013-March 2016. HTS was one of a range of services offered. The organisations were provided with: intensive training on HTS and Procurement and Supply Management (PSM); on-site mentoring; Rapid Diagnostic Tests where needed; and limited financial resources.
**Lessons learned:** Between October 2013-September 2015 (to be updated to March 2016), the programme cumulatively enrolled 25636 children, of which 14055 were provided with an HIV test.




*[Figure 1: Number of OVC reached by programme services and OVC who received HIV test]*

Organisations encountered and overcame diverse challenges including: procurement and supply management; organisations' internal concerns about offering HIV testing to children; stigma; internal stigma and discrimination; and forging close working relationships with local health facilities - with which they had limited links prior to the programme. Once organisations had overcome their challenges in offering HTS, they were able to recognise the enormous value of HIV testing for their beneficiaries, especially as a gateway to the continuum of care for children living with HIV.
**Conclusions/Next steps:** Organisations have been able to extend their HTS beyond the children enrolled in the programme to the rest of the community which provides community members with an alternative space in which to access HIV testing and organisations are promoting a culture of regular annual HIV testing. It is likely that the organisations will be able to offer HTS beyond the end of the grant because the health facility provides HIV Rapid Diagnostic Tests free of charge.

## WEPEE554

### Family planning needs among women at the Baylor Clinical Centre of Excellence (COE) in Constanta, Romania

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**Background:** With an aging HIV-infected young adult population of about 850, the COE noticed a rising trend of repeated abortions and multiparity among the HIV+ women (estimated to be at least 40% in the past 4 years). A baseline needs assessment was set up in order to guide the format of the family planning (FP) services.
**Description:** More than 80% of the patients are young adults, sexually active, engaged in both HIV sero-concordant and discordant relationships. An assessment tool was used to collect data (obstetrical history, fertility intentions, partner's HIV status, contraceptive methods used) from 175 women (94% HIV+ and 6% HIV).
**Lessons learned:** Analyzing data revealed unmet needs among the target group: specialized FP counseling and access to modern high efficient contraceptive methods. Avoiding pregnancies is important for our patients (87% of women intend to avoid pregnancy) and half of them report using condoms. Abortion is common: 26% of women that use condoms had at least one such event, and from the women that wanted to limit pregnancies, 51% reported at least one abortion (average 2.3). Using condoms helps prevent HIV transmission (likely corroborated with ARV adherence and other possible factors) but it is less efficient in pregnancy prevention among our cohort; e.g. among 76 HIV positive women in sero-discordant couples who want to space pregnancies, almost 80% were using condoms and almost 60% had already had an abortion. For HIV infected persons who want to delay, space or limit births, using condoms simultaneously with an efficient contraceptive method will ensure dual protection for HIV transmission and pregnancy prevention.
**Conclusions/Next steps:** The family planning program needs to be built on three pillars:
a) the procurement and distribution of a diversified range of free of charge contraceptive methods (IUDs, oral and injectable contraceptives, emergency contraception, and condoms);

b) on the job training of nurses on contraceptive technology and client family planning counselling;
c) behavior change communication activities for promoting available FP services and increasing demand for efficient contraceptives use among our beneficiaries.

## WEPEE555

### TB GUARD PROGRAM: A CASCADE OF CARE FOR TB PROPHYLAXIS AT BAYLOR CLINICAL CENTRE OF EXCELLENCE IN CONSTANTA (COE), ROMANIA

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**Background:** TB Guard's goal is to ensure timely access to TB prophylactic treatment (CSS) for people affected by HIV that are at high risk of contracting TB (TB-HIV-P). In the first year of implementation, the project aimed to ensure that at least 50% of the eligible high risk patients receive CSS.
**Description:** The program is implemented by two health professionals at a HIV clinic caring for about 750 patients/quarter. The cascade of care includes a 4 item self-reported symptom screening, evaluating patients' TB knowledge level , informing patients about their risks to develop TB, initiating CSS for those at high risk (with CD4< 200, pregnant women, patients with exposure to TB, etc.). Finally, the program connects those with TB symptoms for diagnosis and curative treatment at the local referral centre.
**Lessons learned:** The TB-Guard program in the HIV clinic translates into practice the HIV-TB guideline recommendations. Every quarter, around 47% (362 patients) of those that access the COE accepted to complete the self-report. Another 35% (268 patients) were selected for TB evaluation through direct assignment (based on CD4 values and exposure risk). 13,25% (48 patients) responded with "yes" at a least one screening question and were further referred for medical evaluation. 92% (239 patients) were referred for consultation through direct selection by healthcare team. Finally, 197 unduplicated patients presented themselves for consultation, and 18 were initiated on CSS. During the year 2015 the COE was the only center in the region that enrolled patients on CSS (126 persons, i.e. 49% of the eligible TB-HIV-P with CD4< 200, 69% of eligible pregnant HIV infected women and 54% of children exposed to HIV aged 0-2 years old).
**Conclusions/Next steps:** The program managed to successfully initiate on CSS about 15% of the total active population during the year 2015, but had a broader educational impact since 53% of all patients were informed about TB. In the future, the program will focus on increasing self-referral rates and overcoming barriers related with accepting the self-report screening.

## WEPEE556

### INTEGRATION OF FAMILY PLANNING IN HIV SERVICES FOR SEX WORKERS LEADS TO REDUCTION OF ABORTIONS AMONG SEX WORKERS IN UGANDA

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**Background:** Integration of Reproductive Health services in HIV programs for sex workers contributes to increased condom use and reduction in unwanted pregnancies among female sex workers. Despite this mutual dependence, HIV and reproductive Health programs programmes are largely implemented in a vertical fashion. As part of a three years project implemented among the sex workers in the slum areas of Kampala capital city, (Uganda) and funded by GIZ through IPPF, Reproductive Health Uganda implemented a three year project aimed at integrating SRH and SRH services among Sex works.
**Description:** The project supported the training of peers among sex workers; Cells based integrated community outreaches, male and female condoms distribution and provision of family planning services among others. This was done in 10 sites in the Bwaise slum areas of Kampala city from November 2012 to October 2015. The program raised awareness and ownership through sensitization activities at community level; facilitated bi-directional linkages and referral systems, peer to peer support, supervised and mentored the quality of integrated service provision using specifically defined integration indicators.
**Lessons learned:** For the time period November 2012 to October 2015, the program cumulatively enrolled 23,162 key populations including 22,279 sex workers (22,012 females and the rest males) of which 37.5% HIV positive. The provision of integrated services progressively reduced the number of female sex workers who came with post abortion complications and complaints.
**Conclusions/Next steps:** The concept of SRH/HIV integration can be adopted by health care workers with minimal additional resources. Indicators monitoring the integration of service provision, although more complex by virtue of measuring the association of two services, can be an important tool to sensitize and motivate HCWs to provide the desired services in a linked manner. Female sex workers benefit more from integration to get better quality services. More attention will need to be given to national routine monitoring and evaluation tools to include measures of integration.

## WEPEE557

### INTEGRATION OF HIV CARE WITH WELL-CHILD SERVICES: IS THIS THE SOLUTION TO IMPROVING FOLLOW-UP CARE FOR HIV INFECTED MOTHERS AND THEIR INFANTS IN RESOURCE-LIMITED, HIGH HIV PREVALENCE SETTINGS?

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**Background:** Integration of prevention of mother-to-child transmission (PMTCT) interventions with routine antenatal care has resulted in substantial reductions in perinatal HIV transmission in South Africa (SA). PMTCT guidelines now recommend lifelong antiretroviral therapy (ART) for all HIV positive pregnant women, creating a need for strategies to improve retention in care for these mothers and their babies post-delivery. We evaluated a multi-pronged, systems strengthening intervention to provide a comprehensive integrated package of maternal, child and HIV/PMTCT services in the well-child/immunisation setting in five clinics in KwaZulu-Natal.
**Methods:** Exit interviews and reviews of the Road-to-Health-Book (RTHB) were conducted with mothers of babies aged under one year attending for well child services to determine the services received at baseline (T1) and after completion of the one-year intervention period (T2).
**Results:** Interviews were conducted with 123 mothers at T1 (September-October 2013) and 290 mothers at T2 (September-November 2014). Participants' demographic characteristics were similar at both time points.
Most mothers reported having had a previous HIV test: 114/123 (92.7%) at T1; 289/290 (99.7%) at T2. Among mothers with a RTHB 96/113 (85.0%) had their most recent HIV status recorded in the RTHB at T1, this was significantly higher at T2 (281/289; 97.2%: P< 0.001).
Of 76 mothers reporting themselves HIV negative at T1, seven (9.2%) were offered a HIV test at this visit versus 40/177 mothers at T2 (22.6%: p=0.047). However, mothers who actually had an HIV test on the day of the visit was not significantly different: 1/76 (1.3%) at T1 vs 20/177 (11.3%) at T2 (p=0.092).
Among HIV positive breastfeeding mothers at T1, 6/35 (17.1%) were not currently taking ART versus 6/107 (5.6%) at T2 (p=0.051). Significantly more HIV positive mothers received their ART on the day of the well child visit at T2 compared to T1 (3.7% vs 35.5%: p=0.01). Coverage of infant HIV PCR testing was similar at T1 and T2 (97.2% vs 95.8%).
**Conclusions:** Although coverage of infant PCR testing was similar at both time points, provision of an integrated maternal and child health service in the well-child clinic resulted in significant improvements in coverage and uptake of maternal HIV interventions.

## WEPEE558

### INTEGRATION OF ART PROGRAM INTO HEALTH SYSTEM: A CASE STUDY IN JAKARTA AND MAKASSAR, INDONESIA

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**Background:** Integration of AIDS reponse into health system is one of strategies to strengthen effectiveness and sustainability of AIDS response which have recommended by previous research and programs. Current study aims to asses level of integration for ART services into Indonesia' decentralized health system in city of Jakarta and Makassar.
**Methods:** A case study design using a standard policy analysis method was applied to have a deeper understanding on the integration of ART program into health system. seventy-one informants consisting of local government officials, NGOs and KAPs were interviewed using semi-structured interview guide which focused on

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the health system functions either at system or program level. Data were analyzed based on thematic codes to map out variations of the themes from different informants.

**Results:** ART program implemented in the two cities showed significant coverage where the program covered 80.9% of 35,903 people who meet requirements for ART (CD4< 350). PLHIV who accessed the program reported that they satisfied with ART services provided by health facilities in the cities. In terms of governance, however, implementation of the program was not integrated into health care system in the cities. The program was still planned, funded, monitored and evaluated by the national government. The vertical nature of the program may have implication on its sustainablity given the limited capacity of national government to provide budget due to the increasing number of PLHIV in the future. Additionally, limited role of the local government in the program is not consistent with the decentralized health system and it will be a significant barrier to govern the program in the future.

**Conclusions:** ART program in Indonesia has not been integrated into provincial and district health care system. As integration is one of strategies for sustainability and effectiveness of the program, Ministry of Health should share responsibilities in governing ART program to provincial and district health office under the new decentralization law which assign the local government as the principal in providing health care for the people.

## WEPEE559

### HOW SATISFIED ARE CLIENTS WITH INTEGRATED SRH AND HIV SERVICES? A CROSS-SECTIONAL STUDY IN BOTSWANA, 2015

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**Background:** There is a global consensus on integration of sexual and reproductive health (SRH) and HIV services. However, integration of SRH/HIV has not been widely implemented, and there is limited knowledge of client's satisfaction with integrated SRH and HIV services. In Southern Africa, 7 countries piloted integration of SRHR and HIV between 2011 and 2015. We present data of client satisfaction collected through a survey in health facilities in Botswana.

**Methods:** A cross-sectional study was conducted with women and men who accessed SRH and HIV services in Botswana between April and September 2015. A sample of 225 clients and 22 service providers across 9 nine health facilities participated in the study. The questionnaire was comprised of SRH/HIV integrated services available, benefits and disadvantages of provision of SRH and HIV integrated services, and client satisfaction - confidentiality, privacy and trust. Data was captured in Microsoft excel, and imported into Epi Info™ version 7 for analysis. Results of descriptive analysis are presented.

**Results:** Over 80% were female and mean age 36 years (19-77 years). Over one-third (73%) preferred integrated SRH and HIV services; citing benefits on reduction on number of trips to health facility (57%), and an opportunity to access other services which were not primary reason for consultation (41%). Clients mentioned long waiting times (27%) and poor quality of service (10%) as disadvantages of SRH/HIV integration. Whereas; 89% of health service providers mentioned shortage of drugs and supplies and 83% an increase in workload. Over 80% of clients were completely satisfied with integrated SRH and HIV services.

**Conclusions:** Clients were satisfied with integrated SRH and HIV services. Integration provides multiple entry points for services, and reduces return visits to health facilities. However, integration needs well resources facilities - human, and drugs and supplies. This study has implications for health systems strengthening, for scale-up of SRH and HIV programmes through integrated approach, in developing countries.

## WEPEE560

### ENGAGING TRANSGENDER COMMUNITIES TO ADDRESS GENDER REASSIGNMENT HEALTH SERVICES RESULTS IN UPTAKE OF HIV PREVENTION SERVICES

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**Background:** In April 2014, India's Supreme Court recognized transgender people as **the "third gender"** in a judgment that also observed that this community faces "large and pronounced discrimination" in healthcare. National AIDS Control Annual Report 2015 shows reduction of HIV infections among general adult population. However, the infection rate among Transgender is increasing considerably (8.82%). Discrimination in healthcare system against TG remains rife despite new laws and the community continues face double stigma if they are living with HIV.

**Description:** FPA India initiated a three year project from 2013-2015 to work with Transgender to scale up targeted interventions for transgender women supported by German Initiatives Backup (GIZ) at Chennai, Bangalore, Mumbai and Hyderabad. FPAI service providers were trained to address special needs of the community and to provide stigma free SRH-HIV services. Due to stigma and discrimination in the health care settings, the community member do not access services making them vulnerable to HIV and other STIs.

**Lessons learned:** Strengthen service providers to address the gender feminization health services of TG. Recruit staff from community who will be well received and placed to identify the needs and demands of their community. Develop partnership with other healthcare providers to help in addressing feminization procedures, increase awareness of the services available for referrals from partner organizations. Total 3,455 TG were registered and provided 13,832 counseling services on gender reassignment. 1,335 TG consulted trained provider and 284 initiated hormone therapy. Referral service for SRS was provided to 499 and laser treatment for 923 TG. 38% accessed HIV testing, 25% treated for STI and 27% were screened & vaccinated for Hepatitis B. The community appreciated the efforts made by the project to address the special needs of the community which was not addressed even by its own organization.

**Conclusions/Next steps:** Transgender are more interested in gender reassignment health services than HIV prevention hence increase access to these services. Train service providers to be sensitive to their needs and to provide stigma free service. Effective counseling to empower members to decide about their gender identity indirectly result in uptake of HIV services.

## WEPEE561

### WHERE ARE WE WITH ELIMINATION OF NEW HIV INFECTIONS AMONG CHILDREN?

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**Background:** Despite significant progress made, coverage of PMTCT interventions in some priority countries was still below that needed to reach the goal for elimination of new HIV infections among children. In some of the countries, many women are still not reached and, when reached, retention in care is poor. Overall, low performing countries are characterized by persistent regional disparities in geographic coverage of PMTCT services due to system constraints.

**Methods:** Country data from UNAIDS 2014 estimates and 2015 Global AIDS Response Progress Reporting were analysed over time to determine trends, unmet need and future forecasts intervention performance. . In-country assessments and bottleneck analyses were conducted to supplement and corroborate national findings and determine geographic disparities within countries.

**Results:** In 2014, 73% of 1.5 million pregnant women living with HIV in low- and middle-income countries (LMICs) received the effective PMTCT ARVs compared to 77% in the 21 priority countries in SSA. At this rate of scale-up, however, the 90% PMTCT HIV treatment target by 2015 may be achieved in 2017. There were 220,000 new HIV infections among children in 2014 globally; nearly a 60% reduction since 2000, 24% reduction between2000-2009 and 45% between 2009-2014. At this rate of decline, the 90% decline 2015 target may not be achieved until 2029. Between 2000 and 2014, an estimated 1.3 million new HIV infections were averted by PMTCT LMICs. Of the 220,000 new child HIV infectionsglobally in 2014, 50% were in 6 countries (Nigeria, Kenya, India, Malawi, Uganda and South Africa). Since 2000 there has been a shift in the countries contributing to 50% of new infections, except for Nigeria. Bottleneck analyses conducted show that slow progress is associated with policy and systemic factors weak human resource capacity and policies that do not support task shifting, inadequate supervision of staff, poor quality of services, including laboratory capacity; weak referral and follow-up care systems, inadequate community engagement and supply chain constraints.

**Conclusions:** Despite the progress in PMTCT, many children continue to be infected. Addressing the remaining policy and systemic factors is needed to meet the new Fast Track global 90 90 90 2020 treatment to end AIDS among children.

## CAPACITY BUILDING INITIATIVES

### WEPEE562

### CHANGES, OPPORTUNITIES AND STANDARDS, A RETROSPECTIVE REVIEW OF NOVEL PRACTICES IN HEALTH SYSTEMS INVESTMENTS. TASO UGANDA EXPERIENCE

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**Background:** Globally, there is a call for efficient investments in health care systems if the benefits of high yield impacts are to be achieved. Uganda, which is among the high HIV prevalent countries affected by the scourge of the HIV epidemic, has had PEPFAR support for HIV programs rationalized. TASO received a grant to strengthen government health systems to implement the six pillars of health system strengthening in 54 public health facilities but changes had to be made to realize opportunities for success.
**Description:** Key milestones had to be achieved in the areas of health financing, logistic chain supply and health workforce. TASO activated each health facility bank account with the in charge and the district health officer (DHO) as separate signatories. Funds disbursements required that requests are reviewed by the district sub accountant, TASO center accountant and finally by TASO headquarter financial team. TASO supported the recruitment of Human resources for health in three districts to fill vacant positions. A multi skilled TASO team seconded to this HSS project together with the district supervision teams conducted routine support supervision to each facility to assess performance on all program indicators to identify gaps and opportunities for improvement. TASO also facilitated Tororo Hub to support the lower health unit laboratories.
**Lessons learned:** In a year, over 114 staff were recruited. Over 36 Joint support supervisions conducted. TB screening increased from 50 % to 80%. Retention on ART also increased from 67% to 70%. Retention in care of HIV exposed infants improved from 32% to 72% and PITC at outpatients increased by 50%. Facility reporting improved from 60% to 95%. Drug stock outs and the need for buffers reduced significantly. The supported Hub achieved 3* status from 0*and was ranked among the best performing Hubs in the country.
**Conclusions/Next steps:** To improve the health system in any country, health financing mechanisms with accountability, and sufficient logistical, mentorship and timely supervision are key to achieving the objectives of HSS.
Any project improving health systems should utilize multidisciplinary teams in providing support supervision, and introduce financial mechanisms for easy funds access but with efficient accountability.

### WEPEE563

### INSTITUTIONALIZING HIV/AIDS, TB AND MALARIA IN-SERVICE TRAININGS: MSH NIGERIA EXPERIENCE

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**Background:** In-service training of health care workers plays an important role in improving the quality of HIV/AIDS services. In Nigeria, HIV/AIDS, TB and Malaria trainings have been largely donor-funded and directed at health care workers in supported facilities, covering a small fraction of the overall state health workforce.
The planning, coordination, and implementation of these trainings happen with minimal state involvement and without a framework at the state ministry to ensure that these donor-funded trainings cut across all the state facilities. Hence, creating a need to institutionalize and sustain these in-service trainings through appropriate government agencies.
**Description:** USAID through the MSH-ProACT project developed a model to strengthen, standardize, and institutionalize in-service trainings across five supported states. Using a participatory approach that brought together professional health associations and State Ministry of Health; the Centers for Health Professionals Continuing Education (CHPCE) were established. The CHPCE is endorsed by 3 professional health councils to award Continuing Professional Development (CPD) credits. The CHPCE comprises a multi-disciplinary faculty of health personnel, who serve as state-based master trainers that provide integrated trainings on HIV/AIDS, TB and Malaria based on national guidelines.
Training needs assessments were conducted and findings used to develop and implement a series of calendared trainings for the state health work force.
**Lessons learned:** Within one year of implementation, the CHPCE has provided trainings and awarded CPD points to health professionals across supported and non-supported facilities in the states which ensured that a larger percentage of the health workforce was reached. The multi-disciplinary approach employed encouraged ownership and participation by all the state professional associations.
Awarding of nationally recognized CPD points served as motivation for health workers to attend the trainings especially for non-donor supported sites.
**Conclusions/Next steps:** The CHPCE approach provides a sustainable Government owned structure for institutionalizing robust in-service training of Health Workers. However, continued success of the approach will depend on funding provisions for the Centers and evaluation component should be built into all in-service training programs and budgets to evaluate their relevance, effectiveness, efficiency, sustainability.

### WEPEE564

### IMPROVING AVAILABILITY OF ANTIRETROVIRALS THROUGH SUPPORTIVE SUPERVISION IN HEALTH FACILITIES IN SWAZILAND

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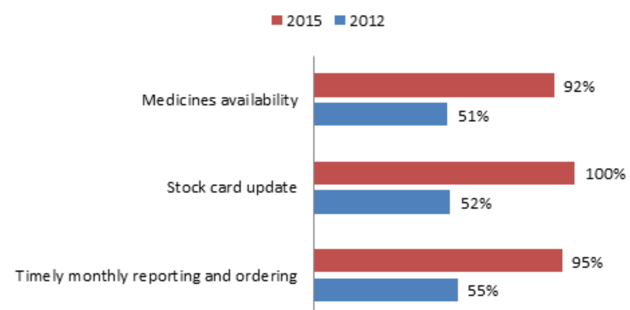
**Background:** Universal access to antiretroviral (ARV) therapy is one of the goals of the response to HIV and AIDS epidemic in Swaziland. By the end of September 2010, 64.1% of people with HIV or AIDS were actively on treatment in the country. To improve availability and support of HIV services decentralization activities, the USAID-funded SIAPS Program has supported the Swaziland Ministry of Health (MOH) in building capacity of health care workers (HCWs) in ARV inventory and pharmaceutical services management.
**Description:** In 2012, SIAPS conducted a baseline assessment of 131 health facilities to assess pharmaceutical services. Based on the results, SIAPS assigned a technical advisor in each of the four regions to mentor HCWs on inventory and pharmaceutical management. Twelve annual supportive supervision reports from four regions were analyzed from September 2012 to September 2015 to review medicines availability.
**Lessons learned:** The average ARV availability in health facilities improved from 51% in 2012 to 92% in 2015. The percentage of facilities using appropriate tools for inventory management (stock cards) improved from 52% in 2012 to 100% in 2015. Timely and accurate monthly reporting and ordering improved from 55% in 2012 to 95% in 2015.




*[Medicines Availability Performance Cascade]*

**Conclusions/Next steps:** The results demonstrate the effectiveness of capacity building and supportive supervision, making ARVs more accessible to patients for improved health outcomes through the following:
· Increased patient confidence in the health system.
· Fewer stock outs.
· Reduced frequent hospital visits meaning patients don't miss as much time from work.
· Fewer opportunistic infections because patients are stable on their ART.

### WEPEE565

### ORGANIZATIONAL DEVELOPMENT AS AN ENTRY POINT FOR EFFECTIVE COMMUNITY HIV PROGRAMMING: LESSONS FROM ZIMBABWE

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**Background:** SAfAIDS implemented a 9-month (January-September 2015) institutional capacity building project for 2 Irish Aid Zimbabwe local partner organizations: FACT Chiredzi and Diocese of Mutare Community Care Programme (DOMCCP). The

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main objective of the project was to: Provide institutional strengthening and technical capacity building for 2 local partners to deliver effectively on their mandates and report efficiently to Irish Aid Zimbabwe.

**Description:** Delivery of the project actions was guided by an organizational development framework that had five key components:

i) field based partner capacity needs assessment;

ii) conducting a project inception meeting to get buy in from the project partners and create a shared understanding of the organizational development process;

iii) participatory development of a capacity building framework unique to each partner's capacity needs;

iv) delivery of multi-action capacity building actions; and

v) evaluation of the interventions.

Capacity building was done through a combination of skills building workshops and hands on mentoring. Mentorship was provided face to face and through distance support.

**Lessons learned:** There were contributory and limiting factors that influenced achievement of project objectives. At DOMCCP a success factor was receptiveness of staff in embracing new changes introduced from the capacity building plan. FACT Chiredzi was experiencing low staff morale and policies that hadn't been reviewed in a long time. Capacity building interventions helped address organizational challenges. Strength of the approach was the emphasis on competency building using both instructive training and follow-up mentorship; and participation of the Board, management and staff in the capacity building process. Success of capacity building is premised on the posture of learning in any organisation. If only management is motivated to learn and the staff are not, then it will be difficult to translate capacity building into tangible results. At DOMCCP the positive posture of learning was evident in successful adoption of change interventions.

**Conclusions/Next steps:** Institutional capacity building is an effective entry point in removing operational and structural bottlenecks that hinder quality project implementation. The intervention has improved the quality of programmes for the 2 partners. SAfAIDS is internalizing the lessons learnt to scale up organizational development work in Zimbabwe.

## WEPEE566

### EECA REGIONAL PLATFORM: BUILDING REGIONAL CIVIL SOCIETY PARTNERSHIP FOR BETTER DECISION MAKING IN HIV/TB RESPONSE

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**Background:** Strong communities, rights protection, and gender equality (CRG) are important components of response to HIV/TB epidemics. Establishment of *Regional Civil Society and Community Support, Coordination and Communication Platforms* is an initiative of Global Fund to fight ATM to support and strengthen civil society and community engagement at all levels of Global Fund processes. Regional Platforms were established in 6 regions all over the world.

**Description:** In Eastern Europe and Central Asia (EECA) Regional Platform was created through consortium of key partners: Alliance for Public Health, Eurasian Harm Reduction Network, and Eastern-European and Central-Asian Union of PLHA organizations. The main Technical Partners supporting and collaborating with Consortium include community networks Eurasian Network of People who Use Drugs, Sex Workers' Rights Advocacy Network, Eurasian Coalition on Male Health, as well as TB Europe Coalition. This is a unique initiative when key Technical Assistance providers are not competing with each other, but unite resources for better synergy of HIV response in the EECA region, involve community networks into scaled up regional coordination, and integrate HIV and TB issues in decision making processes.

**Lessons learned:** On the regional level Civil society cooperation covers important needs in resource savings through coordination on planning stage of regional projects related to CRG. This is also applicable for mid-term and final evaluations of such projects. What is more, every regional project has budgets for coordination, which also can be saved and reallocated with the help of such partnership.

**Conclusions/Next steps:** Success of EECA Regional Platform Consortium demonstrates its further potential for the Region in strategic planning and efforts coordination for better synergy in HIV/TB response in the Region. On the basis of EECA Platform Regional Coordination Mechanism is being created to make the voice of civil society legitimate to form regional agenda, to enhance coordination through oversight of regional projects, and to allocate resources of donors in most effective way covering gaps and avoiding duplication of activities. Regional Coordination Mechanism is to be an advisory entity for regional GF ATM projects and initiatives, as well as for other interested donors.

## WEPEE567

### HIV/AIDS NATIONAL DISTANCE-LEARNING SEMINAR SERIES: A USEFUL AND EFFECTIVE STRATEGY TO COMPLEMENT CONVENTIONAL TRAINING PROGRAMMES IN INDIA'S NATIONAL AIDS CONTROL PROGRAMME

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**Background:** HIV/AIDS epidemic has, over the past decade, evolved into a more complex one necessitating high quality of care, treatment and support to People Living with HIV (PLHIV). Complex treatment schedules and patient management require constant training and upgrading of skills among providers. Distance Learning is an innovative strategy to train and bridge the skills and knowledge gap of health care professionals (HCP).

**Description:** The Centres for Disease Control and Prevention (CDC) and the International Training and Education Center for Health (I-TECH), initiated the HIV/AIDS National Distance Learning Seminar Series (NDLS) in September 2010 to support to National AIDS Control Organisation (NACO). The series is aimed at HCP treating HIV/AIDS in Anti-Retroviral Treatment (ART) centers and other government and private institutions. Experts from across the country deal with a variety of topics on advanced care, comprehensive management, and treatment via synchronous live sessions across several states and districts in India using Adobe Connect software. These bi-monthly 60-minute sessions are conducted in English. Participant feedback is collected after each session through e-poll. Access to archived sessions via streaming video link is also made available. I-TECH India along with NACO manages the entire process including identifying current and relevant topics, speakers, development of slides, and technical support to deliver the sessions.

**Lessons learned:** From September 2010 to December 2015, 112 NDLS sessions were attended by 17,423 HCP from across the country. On average, 830 HCP, most from 395 ART centres, participate in each session. Over 90% of the participants continue to find the sessions and its content 'useful', when asked over e-poll. The sessions were also watched through 2000 logins in offline mode, reflecting that the distance seminars were perceived as useful by the end users.

**Conclusions/Next steps:** NDLS allows health care professionals to continue to work at their health facilities while they enhance their competencies, though it cannot be a replacement for conventional trainings. Distance learning offers an attractive mechanism for ongoing program and clinical mentoring while alleviating expenditures on travel, accommodation and per diem, thereby reducing the burden of growing expenses on health programmes.

## WEPEE568

### FAST-TRACKING A COMPREHENSIVE, INTEGRATED AND SUSTAINABLE RESPONSE TO HIV AMONG PEOPLE WHO INJECT DRUGS IN UKRAINE

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**Background:** Ukraine is facing second severe HIV epidemics in Europe, with an estimated 218,000 people living with HIV. People who inject drugs remain most affected by the epidemic. There are 331,000 people who inject drugs estimated in Ukraine, 85,000 of them are women, with HIV prevalence is 19.7%. The country acknowledges the challenges they face. With support of the UNODC project, the country established three pilot networks of drug dependence treatment clinics (DDT) in Poltava, Kiev, and Kharkiv. The integrated drug and HIV services were exactly tailored for the needs of people who use drugs (PWUD). The project was implemented one year during the period of June 2014 -July 2015.

**Description:** The project provided opportunity to integrate the evidence informed and gender and human rights based HIV services based on the "one-window approach". That was achieved through developed standard of treatment procedures (SOP) for HIV testing and counselling, antiretroviral treatment, TB and STI screening, opioid substitution treatment in three DDT. The project helped to build a strong mutisectoral partnership between local administration, health and NGO service providers. Based on the capacity and needs assessment of medical staff and NGO to provide high quality and human rights based HIV services, UNODC built capacity for medical staffs and selected local CSOs. The coordination mechanism of AIDS, TB, STI services and NGO service providers was developed in closed collaboration with the municipal authorities. The schemes of integrated services are sustained and require no additional funds in future.

**Lessons learned:** The pilot schemes have showed improved diagnostic of HIV, TB and STI, guaranteed referral to AIDS clinic for engagement in treatment, and increased confidence of PWID to DDT. Over 2300 clients were reached with comprehensive and gender responsive HIV prevention and treatment services, which is 3 times higher than before in all three pilot localities. Thus, male clients reached by services were: Kiev-388, Poltava-888, and Kharkiv - 479 people. The number of women who use drugs and reached by services were 563.
**Conclusions/Next steps:** Sharing this experience over the country will allow to fast-track the comprehensive, integrated and sustainable response to HIV among people who inject drugs in Ukraine.

## WEPEE569

### EMPOWERING LAY COUNSELORS WITH TECHNOLOGY: MASIVUKENI, A STANDARDIZED MULTIMEDIA COUNSELING SUPPORT TOOL TO DELIVER ART COUNSELING

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**Background:** South Africa (SA) has 6.3 million people living with HIV, and 4.68 million eligible for antiretroviral treatment (ART). Under current SA ART guidelines all patients with a CD4 count ≤500 are initiated on ART, with the expectation that it will soon be extended to all HIV-positive people. There is a gap between HIV-related treatment needs and health staff resources. Task shifting, delegating tasks to less specialized health care workers, has been used successfully to bridge this gap in many low-to-middle-income countries, with lay counselors successfully administering ART counselling. There are however challenges, including varying education levels and skills of counselors, non-standard implementation of counseling, and variabilty in clinic support and capacity for counselor supervision.
**Description:** Masivukeni is an easy-to-use, multimedia laptop-based platform to engage counselors with patients in the delivery of ART adherence counseling. Masivukeni provides counselors with scaffolding to deliver standardized ART counseling. Tool use training is brief and previous computer experience is not a prerequisite. The platform ensures consistent administration of counseling curriculum and that all critical health information and messaging is delivered. Masivukeni engages counselors and patients through interactive tasks and videos that address complex biological processes (e.g., how CD4 count and viral load affect health). Masivukeni's back-end design captures the length of time counselors spent on each activity, and which sessions and activities were completed - allowing for continuous quality assurance supervision.
**Lessons learned:** Through Masivukeni counselor interviews and a focus group, we learned that counselors found the platform's scaffolding helpful (i.e., keeping them on track with the curriculum), and increased their confidence in delivering complex health information. The counselors also reported that using the videos and interactive tasks enhanced their relationships with patients. Because the tool can easily retrieve data on previous counseling sessions when a patient returns to the clinic for further treatment, counselors reported that this fostered improved patient-counselor relationships. Importantly, counselors felt Masivukeni empowered them to provide high quality counseling to patients. Counselors reported that session length could be shortened.
**Conclusions/Next steps:** The next anticipated step is implementation and dissemination in partnership with clinics across health districts measuring counselor performances, patient engagement, and patient health outcomes.

## WEPEE570

### BUILDING DISTRICT-LEVEL CAPACITY FOR HIV SURVEILLANCE AND LOCALIZATION OF HIV PREVENTION PROGRAMS: A CASE OF PLACE UGANDA

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**Background:** To improve prevention interventions, a better understanding of the determinants of HIV infection is required. Despite this, local governments often lack local evidence to tailor their HIV prevention efforts to the local drivers and key populations. The purpose of Priority for Local AIDS Control Efforts (PLACE) Uganda was to build district-level capacity for HIV surveillance and use of local evidence for HIV prevention planning.
**Description:** Using the Priority for Local AIDS Control Efforts (PLACE) research methodology http://www.cpc.unc.edu/measure/resources/publications/ms-05-13 , district-based teams were trained in conducting PLACE rapid assessments as a means of building their capacity to generate local data to inform HIV prevention programming. The training and district surveys were conducted in 30 districts of Uganda between 2013 and 2014 and the data generated was used to develop district HIV prevention plans. The process also involved a systematic engagement of national and district level HIV/AIDS stakeholders. The engagement processes were hypothesized to democratize participation in learning about HIV prevention gaps and strengthen collaborative learning, generate a common vision for district HIV prevention and to strengthen distributed actions for district HIV program implementation.
**Lessons learned:** Capacity building and PLACE assessments generate information on priority groups and social venues for prevention interventions within districts. On the other hand, stakeholder engagement meetings were useful avenues for broadening the discussions about the prevailing HIV prevention gaps and utilization of findings for HIV prevention planning. Although there was vast participation and collaboration among district actors, the challenge remains for districts to put in use the capacity (trained teams) to routinely HIV prevention planning. The decision space for district-level actors is relatively small due to less flexible financial resources.
**Conclusions/Next steps:** PLACE is a rapid, cost-effective methodology well suited to empower lower level governments with capacity to generate contextually relevant HIV prevention indicators - often not available to support programming and monitoring of district-level programs.

## WEPEE571

### THE INCREMENTAL EFFECT OF CLINICAL ATTACHMENT AND CLINICAL MENTORSHIP ON NURSES' CONFIDENCE IN ART INITIATION: AN ELIZABETH GLASER PEDIATRIC AIDS FOUNDATION-SUPPORTED CAPACITY BUILDING PROGRAM FOR NURSES IN ZIMBABWE, 2015

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**Background:** EGPAF provides technical support to the Ministry of Health and Child Care (MOHCC) for the implementation of HIV programs in Zimbabwe. From January 2013 to March 2014, EGPAF conducted a capacity building program (CCP) including clinical-attachment and clinical-mentorship involving 414 nurses in 207 health facilities across seven provinces to address lack of confidence, a barrier to ART initiation among nurses.
**Methods:** An analytical cross-sectional study was conducted in 56 multistage-randomly-sampled sites of the mentorship program. Semi-structured interviews were conducted with nurse-mentees to determine changes in confidence and ability to manage HIV-infected pregnant women including ART initiations at pre, during and post-CCP. The CCP included a 2 week clinical-attachment at an ART initiating site and at least 6 on site clinical-mentorship sessions, including ART initiation, with an accredited clinical mentor. Confidence in performing 15 aspects of HIV management was measured through three-point-Likert scales (1=not confident; 2=not sure 3=confident). The proportion of HIV-infected pregnant women initiated on ART by the mentees in the pre, during and post-CCP periods was obtained from facility registers. Data were analyzed using Epi-Info-7.0. This study has ethical approval.
**Results:** Overall, 98 nurse-mentees were interviewed, all of whom had received at least one didactic HIV management training prior to the CCP. Overall HIV management competencies and confidence of nurse mentees significantly increased between the pre, during and the post-CCP[p value=< 0.01 in all cases]. The mean-score for confidence in performing the 15 aspects for HIV management increased with each additional capacity building component of ART training. Didactic training alone was 1.97; didactic training and clinical-attachment was 2.61; and didactic training, clinical-attachment, and clinical-mentorship was 3.00. ART initiation at the participating sites increased from 193(6.2%) before to 758(30.3%)[p=< 0.01] during the CCP. The change of guidelines to initiate all HIV-infected pregnant women on ART occurred in the interim and the nurses were able to initiate 2091(99.6 %) post CCP-[p value=< 0.01].
**Conclusions:** Nurse confidence to initiate ART increased significantly during the implementation of a clinical-mentorship and attachment program. Implementation of a nurse mentorship program can be an effective strategy to increase ART initiation in HIV-infected pregnant women towards ending AIDS by 2030.

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## WEPEE572

### INTEGRATION OF HIV PREVENTION AND SEXUAL REPRODUCTIVE HEALTH SERVICES USING A QUALITY IMPROVEMENT INTERVENTION: EXPERIENCES FROM RURAL KWAZULU-NATAL, SOUTH AFRICA

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**Background:** As HIV prevention methods are being developed, there is an urgent need to strengthen sexual and reproductive health (SRH) services at primary healthcare (PHC) clinics to facilitate integration of pre-exposure prophylaxis (PrEP).
**Description:** Between September 2012 and February 2014 CAPRISA collaborated with the Mafakatini PHC clinic in rural KwaZulu-Natal, South Africa to strengthen SRH services and integrate tenofovir gel as PrEP for CAPRISA 008 participants, using a quality improvement model. Process mapping was undertaken with clinic staff. Visit flow systems and documentation were reviewed allowing gaps and system weaknesses to be identified. Client demographic profiles, services accessed, adequacy of provider skills and data collation/analysis were also reviewed. Clinic cards were used to document client arrival and departure times. The following priority goals were identified: 1) reduce waiting times; 2) increase number of clients accessing SRH services, and 3) every nurse to perform at least one Pap smear daily. Nurses were trained to provide a comprehensive package of services including: vital sign assessment, pregnancy testing, Pap smears, SRH method-mix discussion and HIV counselling and testing. Targets were set in accordance with Department of Health guidelines and progress was monitored monthly.
**Lessons learned:** Outcomes of the programme include:
· Reduction in SRH client waiting time from >3 hours to < 1 hour.
· Increase in average number of clients (222 in November 2012 to 345 in January 2015) utilizing SRH services per month
· Increase in Pap smears completed from a median of 5 to 35 per month.
· Increase in HIV test uptake from an average of 50% to 98% of eligible women, and maintenance above 88% per month.
· Provision of PrEP as part of SRH services was feasible and acceptable, with no negative impact on the provision of SRH services.
**Conclusions/Next steps:** Through the quality improvement model, the Mafakatini PHC clinic was able to improve documentation, reduce waiting times, expand SRH services and increase uptake of HIV counseling and testing. Scaling up SRH services for women at PHC clinics in South Africa allows for integrated service delivery and creates an environment for introducing a variety of multi-purpose HIV-prevention options for women.

## WEPEE573

### IMPLEMENTATION OF HIV AND AIDS PROGRAMMES IN THE HIGHER EDUCATION AND TRAINING SECTOR IN SOUTH AFRICA: BEST PRACTICES REFLECTED IN USING THE GLOBAL FUND GRANT SYSTEM

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**Background:** The Higher Education and Training HIV and AIDS (HEAIDS) is the flagship HIV prevention programme of South Africa's National Department of Higher Education and Training (DHET). In 2013, HEAIDS was awarded a Global Fund Grant to strengthen the public universities'' responses to HIV, STIs/TB and general health and wellness services.
**Description:** This two-year grant was awarded to 23 Higher Education Institutions (HEIs) across South Africa. There were 6 priority areas which were key to granting the awards. These included universities ability to implement these programmes: HIV Counselling and Testing (HCT), Women Health Empowerment, Men Health Empowerment, Alcohol and Drug Abuse Prevention, Stigma and Discrimination & capacity building for TVETs.
**Lessons learned:** Of the 23 HEIs awarded the grant, 15 had successfully managed the grant in compliance with the Global Fund performance based requirements and the HEAIDS grant management systems. Successful management resulted in a 27% increase in the uptake of HIV testing. HEIs were able to provide testing for HIV and screening for STIs and TB, which saw an increase (63%) in the number of HIV campaigns. The sector had an opportunity to provide comprehensive package of health and wellness services for combination prevention, management, care and support. Increased partnerships with key stakeholders bringing services to the door steps of students and. A strengthened collaboration between the different, implementing partners and health stakeholders. Further to the successes, challenges were experienced such as late donor reporting processes and lack of synergy between programmatic and financial management systems.
**Conclusions/Next steps:** Stakeholder buy-in and support for grant and health care programmes by university leadership & stakeholders is vital to ensure that the grant holders perform well with their given mandate. The grants played a vital role in complementing existing HIV prevention, management, care and support programmes. Further resource mobilisation and allocation to the sector is supported.

## WEPEE574

### COLLABORATIVE PROCEDURE BETWEEN JANSSEN, WHO, EMA AND NATIONAL MEDICINES REGULATORY AUTHORITIES (NMRAS) FOR ACCELERATED REGISTRATION: EXPERIENCE FROM PILOT OF HIV DRUG IN AFRICA

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**Background:** Currently in Africa, it can take from six months to more than five years to register new medicines. To improve access to needed medicines, WHO together with the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) and interested NMRAs in Africa has put in place a pilot procedure by which national registration is targeted within 3 months of application. INTELENCE®, an HIV medicine from Janssen, was the first drug selected to be registered by this pilot procedure. This new procedure is an important development in the effort to accelerate access to medicines in Africa.
**Methods:** The piloted procedure is applicable to medicines approved by a Stringent Regulatory Authority (SRA), such as the European Medicines Agency (EMA). Full EMA assessment and site inspection reports are shared with the NMRAs. NMRAs benefit from EMA regulatory expertise and perform an accelerated review based on an adapted dossier and strive to provide approval within 3 months. WHO's role is to facilitate the process between all parties.
**Results:** 11 African countries participated in the first pilot with the pediatric INTELENCE® 25 mg tablet. Within a total time of 3-11 months, 8 countries received regulatory approval, which included time to respond to NMRAs questions. This result for the pilot is highly encouraging; with further refinement of the procedure, shorter timelines are targeted.
Factors that facilitated swifter reviews and approvals include: adopting a common dossier for all countries, one aligned set of health authorities questions; reliance on EMA assessment and site inspection reports, managing dossier reviews parallel with other processes. All these helped reducing the workload and resources needed from both NMRAs involved and Janssen. The generated experience was useful to streamline the next rounds of the pilot.
**Conclusions:** The success of this pilot demonstrates that accelerated registration procedures in Africa are possible. Thanks to this collaborative approach and effective information sharing between all involved parties, this procedure may become a useful tool to expedite access to SRA approved medicines for patients in need.

## WEPEE575

### ENHANCING MANAGEMENT AND GOVERNANCE AT REGIONAL AND LOCAL LEVEL TO REDUCE HEALTH FACILITY ARV STOCK-OUTS IN CAMEROON

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**Background:** In 2012, due to chronic antiretroviral medicines (ARV) shortages, health facilities (HF) in Cameroon issued on average only 10 days of ARVs to patients instead of a month's supply, necessitating more frequent visits and regimen changes to avoid treatment interruptions. After two years of technical assistance provided by the USAID-funded Systems for Improved Access to Pharmaceuticals and Services (SIAPS) program to improve forecasting, stock-outs at central level were eradicated for the six most used ARVs. Yet, the stock-outs persisted at HFs.
**Description:** Trainings provided by SIAPS on ARV management to dispensers and storekeepers at HFs and regional medical stores (RMS), along with centrally-organized quarterly supervisions in 104 priority HFs, yielded some improvements in stock availability., In December 2014, however, 41% of HFs still experienced stock-outs of six commonly used ARVs. In 2015, SIAPS seconded technical advisors to four RMS to build local capacity to manage the medicines. Through a continuous quality

improvement methodology, HIV program HF coordinators and regional managers were empowered to fulfill their leadership role and capacitated to interpret key logistics indicators, and use adapted supervision tools to help identify root causes of problems, agree on improvement interventions, and monitor results.
**Lessons learned:** Six most-prescribed ARVs were used to monitor the percentage of HF Experiencing Stock-Outs (HFESO). The decrease from 100% HFESO in January to 53% in July 2014 could be attributed to central stock availability improvements. By December 2014, although the overall percentage HFESO fell to 41%, facility stock-outs actually increased for four tracer ARVs. After the intervention in 2015, health facility stock-outs of all tracer ARVs decreased and HFESO dropped substantially to 18% by September 2015. This achievement was in part attributed to adapting the technical assistance provided by SIAPS seconded staff, to the different backgrounds and perceived competence gaps of HF coordinators and regional managers.
**Conclusions/Next steps:** In Cameroon, in addition to training and supervision, fostering management capacities of HIV local authorities is associated with reductions of HF ARVs stock-outs. These results can inform government strategy to plan sufficient allocation of human and financial resources to expand similar interventions in the rest of the country.

## WEPEE576

### IMPROVING ODDS OF SUCCESS: USING A COMMUNITY CAPACITY CHECKLIST TO IDENTIFY COMMUNITY GROUPS MOST LIKELY TO BENEFIT FROM CAPACITY BUILDING SUPPORT

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**Background:** 'Building capacity' is overused jargon in development, yet its purpose is essential to ensure resources are optimised. However, not all groups benefit equally from capacity building support; through the PACF capacity building programme we have identified six characteristics which contribute to strong likelihood of capacity building programme success: deep understanding of local context, willingness to learn (including accepting external criticism and direction), focused programming objectives, accountable and communicative, sufficient organisational capacity to receive technical assistance and local credibility (either intrinsic or earned) to build relationships at a local level with health staff and district officials.
**Description:** The PACF review proposals based on the merit of each proposal. Following three rounds of internal and board review, CBOs are selected for funding. Small grantees with grants under £25,000 per year are automatically considered for capacity building support. A review of the partners within the technical assistance programme over 5 years, has identified over 120 community groups that were eligible for capacity building support in that time with 80 receiving technical assistance. Of those receiving technical assistance 70% (56) have performed well above expectations, 20 have seen little change in performance and eight groups have been unwilling or unable to take advantage of the capacity building support.
**Lessons learned:** PACF feedback from TA providers, in addition to the knowledge developed from management of grantee relationships have identified six needs in community capacity building: 1. Deep understanding of local context which gives each group a comparative advantage. 2. Willingness to learn and particularly the ability to take outside direction based on external best practice. 3. The ability and willingness to focus programming objectives and not try to address every issue in the community 4. Accountable and communicative in meeting requirements of funding/capacity building. 5. Sufficient organisational capacity to apply technical assistance in operations and (6.) local credibility (either intrinsic or earned) to build relationships at a local level with health staff and district officials.
**Conclusions/Next steps:** On the basis of the 6 characteristics for capacity building success, the PACF has developed a checklist for funders and capacity builders to identify organisations that will benefit from capacity building support.

## WEPEE577

### BRIDGING THE GAP IN IMPLEMENTATION SCIENCE: EVALUATING A CAPACITY BUILDING PROGRAM IN DATA MANAGEMENT, DISSEMINATION AND UTILIZATION AMONG HEALTH CARE PROVIDERS IN EAST AFRICA

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**Background:** Building capacity in implementation science within health programs depends on several variables, including training in the theory and practice of basic research methods, epidemiology and statistical skills, continuing education experiences such as self-study and workshops, and high self-efficacy toward applying lessons learned to completing an abstract or a manuscript. Using these concepts, the purpose of our study was to determine the impact of training on building program capacity and self-efficacy on data management, analysis and dissemination among Health Care Professionals providing technical assistance to over 200 health facilities in Kenya and Tanzania.
**Description:** The specific questions were to determine if
1) the training changed participants' self-efficacy in regard to data analysis and understanding concepts and
2) if participants applied skills taught during the workshop for scientific dissemination .The training was conducted in three staggered sessions
1) concept development and manuscript outline
2) data analysis - basic concepts in research
3) manuscript writing and finalization.
Two months prior to the training (*N*=86) were emailed a pre-test for planning the content of the workshop. Twenty-four questions were asked using a Likert-type response. Questions included knowledge on data concepts eg "how confident are you in ___". Two months after the training a post-test survey was emailed to all participants (*N*=84). Qualitative data was also collected as part of the post-test survey.
**Lessons learned:** Post-test survey revealed that the participants had confidence in their ability to understand data analysis (collect, analyze, and report data);the survey results were significantly different from the pre-test results (0.05 alpha). The qualitative findings complemented the findings of the impact of the workshop. The participants reported that the workshop reinforced their abilities in different skills including logic modeling, writing effective questions, collecting quantitative and qualitative data, reading journals, reporting results, using scientific writing in reporting outcomes.
**Conclusions/Next steps:** While increasing self-efficacy is a necessary first step in developing skills educators should engage in continuing education for sustainable dissemination practices. There is an urgent need to determine the current infrastructure to promote scientific dissemination. This will assist countries to produce better evidence to support their programs, policies and overall health programs.

## WEPEE578

### INCREASING HCV ACCESS THROUGH CLINICAL EDUCATION: MEDICAL PROVIDER KNOWLEDGE AND PRACTICE CHANGE INTENTIONS

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**Background:** Approximately 3.2 million people are living with Hepatitis C (HCV) in the US. However, nearly three-quarters of these people don't know they are infected. Recent advances in treatment have made HCV curable in most patients. While there is no reason to delay HCV treatment, a significant shortage of clinicians trained to diagnose and treat HCV has impacted patient access.
**Methods:** From July 2014 - December 2015, the Mt. Sinai Institute for Advanced Medicine provided HCV clinical trainings throughout New York State. Content included epidemiology, health policies, testing, and treatment updates. Trainees completed an anonymous survey eliciting (i) intentions to use knowledge/skills in clinical practice following the training (primary outcome) and (ii) level of knowledge of the training content before and after the training (5 levels from Novice to Expert). Analyses were restricted to physicians, nurse practitioners, advanced nurse practitioners, nurses, and pharmacists. Changes in knowledge levels after training were examined by paired t test. Associations with primary outcome were examined using Chi-squared tests for participant knowledge/skills and practice change intentions.

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**Results:** In total, 548 clinicians were trained. Nearly half (49.4%) were "novice" or "not very knowledgeable" before attending the training. After attending, the majority of attendees indicated being "knowledgeable" (58.9%) or "very knowledgeable" (33.1%). Over 40% planned to use the knowledge/ skills learned in their practice setting. Key changes included create/revise protocols, procedures, and patient management. Less than one-third (29.3%) wouldn't implement practice change due to training content validating their current practices. Knowledge change was significantly associated with practice change intentions (chi-square=40.48, df=4, p=0.000).
**Conclusions:** There is great interest among clinicians, especially those who treat HIV, to stay abreast of HCV treatment. While training increased knowledge, ongoing evaluation of actual clinical practice change and patient outcomes is recommended. Implementing HCV treatment protocols may require other stakeholders, such as clinic leadership, to be aware of new advances. Educational resources on HCV testing and treatment implementation barriers (e.g. treatment costs, infrastructure) may be the next step to increase HCV treatment access.

## WEPEE579

### GOOD PARTICIPATORY PRACTICE APPLICATION: EXPERIENCE OF STAKEHOLDER ENGAGEMENT IN PROTOCOL DEVELOPMENT AT KAVI INSTITUTE OF CLINICAL RESEARCH

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**Background:** Good Participatory Practice (GPP) implementation and Stakeholder engagement is considered key in HIV vaccine research. In preparation for future Phase 3 HIV Vaccine clinical trials, our project conducted a Simulated Vaccine Efficacy Trial to assess the ability to recruit and retain Key Populations in an actual Vaccine study
**Methods:** Study participants were selected from the key population's Community Advisory Board (CAB), National LGBT Research Advisory Committee (G10) peer leaders/educators and staffs to review the protocol for the aforementioned study on 1st and 2nd September 2015. Issues discussed varied from the recruitment and retention strategies, referrals, volunteer protection to end of study.
**Results:** The stakeholders raised issues about health care providers' attitudes which they had experienced in government-run clinics e.g. discrimination and homophobia and feared this would also occur at the study site. There were also study staffs who had never worked with key populations before and they expressed the need for sensitization on how to handle them. Recommendations made included; sensitization for team members and assurance for volunteers' safety and unconditional positive regard. Team members were sensitized and had an exchange program to familiarize themselves with key populations and security training was conducted with more recommendations arising which are in the process of implementation.
**Conclusions:** Having implemented the stakeholders' recommendations, the study commenced smoothly. This was an eye opener to the study team that stakeholders can give insight to potential issues which need to be nabbed in the bud before a trial commences.

## WEPEE580

### PARTNERING TO FILL BIOMEDICAL ENGINEER AND TECHNICIAN HUMAN RESOURCE GAPS IN ETHIOPIA: PEPFAR'S FIRST BIOMEDICAL TECHNOLOGY TRAINING PROGRAM IN SUB-SAHARAN AFRICA

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**Background:** Current estimates indicate 37-48% of hematology, CD4, and microbiology lab machines in Ethiopia are not working at any given time. A large proportion of other integral biomedical equipment lies idle in healthcare facilities due to the absence of trained biomedical equipment technicians and engineers. In May 2015, Tegbare-id Polytechnic College conducted an assessment of medical equipment and equipment workshops at five Ethiopian hospitals. It revealed that 14-28% of equipment at these hospitals was not functioning at the time of the survey; workshops conducted limited preventative maintenance; and staff did not fully understand quality improvement practices.
**Description:** To address the critical shortage of trained biomedical engineers and technicians, the American International Health Alliance launched a partnership between Texas Children's Hospital and Rice University in the United States and Jimma University and Tegbare-Id Polytechnic College in 2012. Partners aimed to rapidly train and deploy highly-skilled biomedical engineers and technicians and provide ongoing in-service training for practicing biomedical technology professionals. Ultimately, the partnership's goal is to enhance HIV care and treatment services by decreasing the number of non-working lab machines and other critical HIV-related biomedical equipment. This partnership was the first PEPFAR-supported project to address biomedical technology in sub-Saharan Africa.
**Lessons learned:** Jimma University has graduated 181 biomedical engineers with 91% of them employed at Ethiopian health facilities. Tegbare-Id has graduated 132 biomedical technicians, with 95% similarly employed across the country. Partners conduct an annual survey to determine graduate skill gaps and have thus far provided training to fill said gaps for 181 BME graduates and 35 faculty members. Partners adapted the curricula over time, shifting from a more theoretical approach to problem-based learning, which better prepares graduates to perform required tasks. Faculty in-service training and providing skills laboratories have helped partners better integrate graduates into the healthcare system.
**Conclusions/Next steps:** Partners plan to enhance their advocacy to ensure graduates are fully integrated into the healthcare system. As focus shifts toward defining roles of biomedical engineers and technicians in preventative maintenance and repair, their integration will be essential to the long-term sustainability of the training program and provision of quality HIV-related services.

## WEPEE581

### A COOPERATIVE PROJECT BETWEEN THE SPANISH MINISTRY OF HEALTH AND THE SPANISH SOCIETY FOR PEDIATRIC INFECTIOUS DISEASES: THE ESTHER-SPAIN PROJECT FOR TRAINING IN PEDIATRIC HIV INFECTION IN RESOURCE LIMITED SETTINGS

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**Background:** The ESTHER- Spain project was launched in 2007 as a collaborative initiative between the Spanish Ministry of Health and the Spanish Society for Pediatric Infectious Diseases (SEIP), integrated into the European ESTHER initiative. The main objective was to offer training in management of pediatric HIV infection to pediatricians in resource-limited-settings.
**Description:** The ESTHER- Spain project allowed to launch seven training teams, all of them including a Specialist in Pediatric Infectious Diseases, who travelled to different countries in Latin America in order to offer theoretical and practical training in secondary and tertiary care hospitals. Trainees would then complete their formation during a stay at the participating Spanish Hospitals. Simultaneously, an online Master degree was started and offered for free for all professionals, in collaboration with Rey Juan Carlos I University.
**Lessons learned:** To date, three editions of onsite training courses have taken place in each of the seven participating countries between 2007-2011. In 2011, 461 professionals attended the onsite courses, and 18 completed the trainer of trainers course. From 2009, the Master degree for distance learning is ongoing, with 1800 teaching hours including theory lessons, case rounds and a Research Project and Masters dissertation, with a mean of 180 students per year. On top of improving clinical management, the ESTHER initiative has generated a network of local trainers, has launched the creation of National Cohorts of HIV-infected children in many countries, and has pushed forward the implementation of PMTCT and National Guidelines.
**Conclusions/Next steps:** The ESTHER- Spain collaborative project has significantly improved the training of pediatricians in Latin America, decreasing MTCT and improving the management of ART and opportunistic infections. Training strategies in resource-limited-settings should be a priority for Medical Societies and European Institutions.

## WEPEE582

### LEVERAGING ONLINE CONTINUING EDUCATION TRAININGS TO IMPROVE NURSING AND MIDWIFERY HIV CARE DELIVERY IN AFRICA

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**Background:** The East, Central and Southern Africa College of Nursing (ECSACON) has been collaborating with the Afya Bora Consortium and the African Health Profession Regulatory Collaborative for Nurses and Midwives (ARC) to address the identified need for increased access to continuing and professional development (CPD) trainings for nurses and midwives in sub-Saharan Africa. With the support of ARC, 8 countries have developed national frameworks and requirements for CPD trainings by nurses and midwives in the last five years alone. To address this training gap an online CPD library was developed and launched to support national re-licensure requirements and to increase access to timely trainings for the over 300,000 nurses and midwives in the region.
**Description:** In a previous study we analyze a survey of nursing and midwifery leaders from 17 countries, and HIV topics were identified for inclusion into the CPD library. Modules were reviewed by experts in the region, approved and then added to the website. These modules provide a certificate of completion that can be presented for re-licensure purposes to nursing councils with the support of 15 nursing registrars of east, central and southern African nations. A monitoring and evaluation framework was incorporated into this library to track barriers and usage patterns of each training module that includes Google Analytics and online surveys of user satisfaction.
This presentation will provide a snapshot of the CPD library utilization by nurses and midwives since the website launch.
**Lessons learned:** There is a continued interest by nurses and midwives in the region for CPD trainings, but challenges exist in accessing in-person trainings. Online, mobile-friendly training is a stated need. However, sustainable funding has been a challenge, creating some delays in implementation and data collection on the effectiveness of this library as a capacity building intervention.
**Conclusions/Next steps:** Additional HIV modules will need to be added to the CPD library in order to support the over 300,000 nurses in the ECSA region. Sustainable funding will go a long way in ensuring continued use of this library and uptake of the most current information on HIV care.

# TRANSLATION, INCORPORATION AND USE OF KEY IMPLEMENTATION RESEARCH FINDINGS INTO PROGRAMMES AND PRACTICE

## WEPEE583

### REMOVAL OF USER FEES IMPROVED ACCESS TO QUALITY MATERNITY CARE AND DECREASED MATERNAL AND NEONATAL MORTALITY IN A DISTRICT HOSPITAL, LESOTHO

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**Background:** Lesotho has one of the highest maternal mortality rates in the world due to HIV and poor access to skilled maternal health services. Hospital fees for delivery cost represent a major barrier to maternal health service utilization. This study aims to examine the uptakes of obstetric services following introduction of Free Maternal Care (FMC) in a district hospital in Lesotho, a setting where up to 60% of maternal deaths are associated with HIV.
**Description:** A before and after study of the utilization of delivery services from July 2012 to December 2013 (pre FMC) compared with utilization during the period January 2014 to June 2015 (post FMC introduction). Information on baseline characteristics, deliveries, obstetric outcomes and referrals was collected from maternity registers. Proportions and stillbirth, maternal and neonatal mortality rates are compared before and after introduction of FMC.
**Lessons learned:** A total of 3782 women delivered during the study period, of whom 684 (18%) were less than 19 years old. HIV prevalence was 23.7%. After the introduction of FMC, the number of hospital deliveries increased by 55% (from 1484 to 2298). Referrals from primary care clinics doubled (from 38 to 79) and referrals from secondary to tertiary hospital increased 5-fold (from 5 to 27). Maternal mortality ratios, neonatal death rates and stillbirth rates dropped respectively from 146 to 89/100,000, 5.1 to 1.3/100,000 and 26 to 19/100,000 live births.
**Conclusions/Next steps:** Introduction of Free Maternity Care resulted in a 55% increase in hospital based deliveries, as well as increases in referral rates and a drop in maternal, neonatal and stillbirth rates. Hospital fees for maternal care in Lesotho are a barrier to accessing skilled birth attendants and should be urgently removed.

## WEPEE584

### HOW DOES PATIENT MOBILITY, INCLUDING MIGRATION AND MEDICAL TRAVEL INFLUENCE HIV TREATMENT AND CARE?

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**Background:** While levels of patient mobility, including medical travel and migration are increasing, little is known about how mobility affects access to services and health outcomes of mobile patients. Findings presented are from a wider study which focused on health and health systems effects of medical travel in South Africa.
**Methods:** Data collection took place in 2015 from six clinic facilities based in peri-urban and rural areas. A facility questionnaire (staff workload, essential services, pathways of care, referral and integration, adherence management and challenges) was administered to a clinic designee. Health outcomes for 2014 were accessed from the department of health's Electronic Tuberculosis Register (ETR) and District Health Integration Services (DHIS) systems. In-depth interviews were conducted with 77 staff. Descriptive statistics and thematic analysis were undertaken.
**Results:** While data varied between settings, trends in access to care and overall indicators of health systems performance were similar between facilities that had high volume of nationals versus non-nationals. However, clinic managers reported varied pathways of care for HIV treatment in nationals and non-nationals. From their perspective, lower adherence in nationals was due to work responsibilities, late arrival for clinic appointments, delayed start or completion of treatment and increased time spent at the clinic caused by staff shortages. In contrast they reported that while non-nationals appeared lost to follow-up, this was often due to them moving between facilities in search for 'better' or more easily accessible treatment, or other external factors. Concerns relating to HIV treatment in this context were not about defaulting or non-adherence rather discontinuation of medical records with lack of documentation on medication taken, raising the prospect of resistance. Other concerns included lack of continuous monitoring and related inability to detect treatment failure.
**Conclusions:** Adherence to treatment is a challenge for facilities with low and high volumes of migrants. Mobility of patients, as medical travellers and internal or cross-border migrants affects HIV treatment adherence and monitoring of patients on antiretroviral treatment. Given high levels of mobility in many HIV endemic settings, such as South Africa, this should be considered in strategies and policies aiming to ensure treatment access for patients.

## WEPEE585

### IDENTIFYING PRIORITIES FOR HIV/AIDS RESEARCH UNDER NATIONAL AIDS CONTROL PROGRAMME IN INDIA

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**Background:** Research is a vital component of Strategic Information Management under the National AIDS Control Programme (NACP), India. NACP strongly endorses the need for extensive exchange of knowledge among researchers, programme managers and policy makers to more effectively identify, plan, design and implement appropriate strategies for effective prevention and control of HIV epidemic in India. In order to identify key evidence gaps and research needs of the programme, and to systematically address them through scientific research, NACP has articulated the 'National HIV/AIDS Research Plan' (NHRP).
**Description:** During setting priorities for HIV/AIDS Research under NACP-IV, a detailed exercise to assess existing information gaps in the programme was conducted involving programme managers at NACO, state level and development partners. Research priorities identified by Working Groups during NACP-IV Planning Process for all programme divisions were also included and reviewed. After screening and

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reviewing the compiled list to separate the topics which could be studied through analysis of available secondary data and those requiring fresh research, key research questions & concept notes were developed for the identified topics. The priority areas were then segregated into three phases based on the area of priority. Costing & mapping of studies to identify funding support was also undertaken.
**Lessons learned:** There were 90 research priorities identified overall, categorised under epidemiological, socio-behavioural, bio-medical and clinical research, and operational research. Research protocols for 36 priorities under Phase I were invited from over 150 public health institutions, research organisations and medical colleges. A multi-stage screening process was put in place to ensure quality, programmatic relevance and geographic representation. The proposals were selected through various meetings under review and monitoring mechanism i.e., Screening Committee, Technical Group and Ethics Committee. At present, there are 13 research studies underway. The process streamlined research priorities from national to regional level. This initiative produced meaningful evidence through multi-centric and representative research.
**Conclusions/Next steps:** A structured plan for identifying research priorities and commissioning research studies has been helpful in formulating areas for generating fresh evidence customised to Indian settings. The process adopted ensures institutional collaboration and cross-learning as well as ownership of research outcomes and their translation into evidence based policy decisions.

## WEPEE586

### IMPROVING ACCOUNTABILITY IN ORDER TO MEET THE TARGETS IN THE HIV PROGRAM: LESSONS FOR SUSTAINED RESULTS FROM DISTRICT LEVEL SCALE UP OF QUALITY IMPROVEMENT METHODS

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**Background:** South Africa is committed to achieving the SDG goal for health and to improving outcomes for women, children of all ages. This requires that evidence-based recommendations be translated into practice at the facility and community levels. The 3 feet approach applies a bottom-up methodology based on the view that the totality of individuals that are accountable for their actions serves to create accountability at a sub-district, district, and provincial level.
**Description:** Since August 2014, the Three Feet approach has applied the principles of quality improvement (QI) in the Nelson Mandela Bay Health District. The use of tools such as facility level data dashboards, action dashboards, and the 3x4 matrix bottleneck analysis tool have assisted healthcare workers to know their targets, track their performance, and study the effectivity of actions. This has promoted accountability for continuous quality improvement in poorly performing indicators. Examples of district level results between Aug 2014 and Oct 2015: Male Condom distribution has increased from 13.6 to 39.7 condoms per male. ANC client retested for HIV has increased from 54.6% to 99.5
**Lessons learned:** QI processes may have a limited long-term impact unless supportive mechanisms that create the capacity for accountability are also in place. Such mechanisms include:
· Providing an understanding how small activities contribute to the bigger goal of saving lives
· Establishing clear internal feedback mechanisms whereby HCW's can gauge their own performance. This is critical for the intrinsic motivation of an employee. A lack of feedback to those with the greatest influence on results does not foster accountability and results in data reporting for compliance sake.
· Clarifying the linkages and responsibilities between accountable parties i.e. "who is accountable to whom?" and "Who holds who accountable, and by what mechanism?"
· Involving all relevant facility staff in QI decision-making processes
· Acknowledging success as opposed to highlighting poor performance to establish a shared value of continuous learning and improvement.
**Conclusions/Next steps:** Sustained improvements in performance will not be achieved without supportive mechanisms that promote accountability. The HIV program is an effective entry point to influence results across the continuum of care for women and children.

# EVIDENCE OF EFFECT OF HEALTH SYSTEM STRENGTHENING THROUGH HIV PROGRAMMING ON OTHER HEALTH UTILIZATION OR HEALTH OUTCOMES

## WEPEE587

### IMPACT OF ROVING TEAM TECHNICAL ASSISTANCE ON HIV PROGRAMME OUTCOMES AT PRIMARY HEALTHCARE FACILITIES IN RURAL SOUTH AFRICA

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**Background:** International donor support of the South African HIV programme moved from an initial emergency response to rapidly scale up access to antiretroviral treatment (ART) through direct service delivery (DSD) to healthcare systems strengthening (HSS) through technical assistance. Different approaches to HSS have been adopted dependent on the geographic characteristics of a specific region. In rural areas, where most HIV care is provided at primary healthcare (PHC) facilities, a roving team technical assistance (TA) model is usually implemented. This study aimed to measure the impact of such roving team TA on specific HIV programme indicators.
**Methods:** We conducted a randomised, stepped-wedged evaluation of USAID-funded TA provided at 17 PHC facilities over a 6-months period in rural Mopani District, South Africa. Implementation of a standardized TA package was randomised to a point in time. This package comprised training material, clinical audit tools and meeting templates to be used by nurse mentors. To improve retention in care defaulter tracing was supported by TA with partial service delivery including provision of tracing tools, generation of defaulter lists and linkage of ward-based outreach teams with PHC facility staff. Routinely available data sources were used to measure impact of the TA package on HIV programme indicators.
**Results:** There was an 8.8% increase in the ART initiation rate over the study period, but this could not specifically be attributed to roving team TA. Roving team TA and partial DSD did improve retention in care at 3 and 6 months, from 78% to 89% and from 72% to 80% respectively. Timeous viral load completion was generally low and only a short-term effect of TA through a quality improvement project was observed.
**Conclusions:** This study is one of the first to comprehensively measure the impact of donor funded support activities on the HIV programme. HSS through TA alone had limited impact on HIV programme indicators, but TA combined with partial direct service delivery did improve retention in care. Our data support the targeted combination approach as specified in PEPFAR's 3.0 strategy of Focus for Impact.

## WEPEE588

### PROGRESS IN IMPLEMENTING AN AMBITIOUS STATE-WIDE HIV STRATEGY TO END THE HIV EPIDEMIC IN NEW SOUTH WALES, AUSTRALIA, BY 2020

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**Background:** Australia's most populous state, NSW, has an estimated 11,560 people living with HIV and an epidemic largely concentrated among gay men. Rates of new HIV diagnoses are relatively stable at around 350 new infections annually. The NSW Government released a new HIV Strategy in 2012 in response to evidence that early ART confers significant individual and public health benefits. The Strategy set an ambitious goal of virtually ending HIV transmission in NSW by 2020.
**Description:** Core elements of the Strategy include mobilization of affected communities and the health sector and targeted funding to high impact programs. A highly visible "Ending HIV" theme has been utilized to generate awareness of the Strategy's HIV prevention, testing and treatment targets. Rapid HIV testing is available in 15 public clinics, 4 community sites and 7 "pop-up" sites, with clients offered concurrent STI screening. An HIV Support Program assists clinicians with newly diagnosed patients ensuring linkage to care and encouraging early ART uptake. Enhanced data collection systems monitor progress in real time. Strategy evaluation is through a joint project of the NSW Ministry of Health and Kirby Institute.

**Lessons learned:** Newly diagnosed HIV infections were 20% lower in Jan-Sep 2015 compared to the same period in 2012. HIV testing rates increased by 30% over this period. 90% people diagnosed with HIV and attending public sexual health clinics were on ART(estimated at 5500 in 2013 and increasing to over 9200 in 2015). A 300 person PrEP demonstration project is fully enrolled with a PrEP program for 3,700 people now also underway. Community mobilisation has been effective, with community awareness of the health and prevention benefits of early ART increasing from 74% in 2013 to 93% in 2015. The virtual elimination of HIV transmission among people who inject drugs and sex workers and from mother-to-child is being sustained.
**Conclusions/Next steps:** NSW has made significant progress towards ending the HIV epidemic in NSW by 2020. This is being achieved through a partnership approach to maximise HIV testing, promote condoms, encourage immediate ART uptake, scale up PrEP access, enhance safe injecting and harm reduction, and maintain linkage to care.

## WEPEE589

### AN EVALUATION OF THE EARLY IMPLEMENTATION OF OPTION B+ IN HEALTH FACILITIES OF ZIMBABWE IN 2014

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**Background:** Following the 2013 consolidated ART guidelines by World Health Organization (WHO) which included initiation of triple lifelong ARVs for HIV positive pregnant and lactating women regardless of CD4 count or clinical status, Zimbabwe adopted these guidelines amid concern to adherence to treatment. Implementation of Option B+ had been in progress for 12 months, and it was important to evaluate the early phase of implementation as articulated in the Option B+ transition plan.
**Methods:** A rapid assessment using a cross sectional design was used. Method mix approach (quantitative and qualitative) was used. Participants included key informants healthcare providers, Option B+ users and their partners as well as ordinary members of communities surrounding health facilities. Purposive and random was used to select provinces, districts and health facilities to participate in the assessment. Mutare and Masvingo Provinces were purposively selected as they had operational research/learning sites. The urban provinces of Harare and Bulawayo were also purposively selected in order to include central hospitals, local authority clinics as well as some private facilities. A total of 41 health facilities representing all levels of the healthcare system were selected.
**Results:** Number of sites implementing option B+ increased from 296 sites in 2013 to 1457 by September 2014 while there were 913 ART sites accredited for ART initiation for the general public by the same time. There was a significant increase in the number of infants and children initiated on ART in the first half of 2014 compared to the same period in 2013. Stock outs of ARVS occurred due to high demand. Shorter waiting time before ART initiation as was experienced. There was a decline in women who wanted to first consult their husbands before initiation. Tracking of defaulters was strengthened. Village health workers were an important resource for tracking defaulting patients in the rural facilities.
**Conclusions:** A key recommendation is the operationalization of the joint ART MNCH - Child survival working group and decentralization of viral load testing as well as well as ensuring that facilities participate effectively in quality assurance and improvement in rapid HIV testing as well as laboratory testing.

## WEPEE590

### USING DATA QUALITY ASSESSMENT AS A STRATEGY TO STRENGTHEN M&E SYSTEM AND FACILITATE DATA USE: LESSONS FROM TANZANIA

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**Background:** In 2015, WHO released a consolidated strategic information guidelines for HIV in the health sector. From the guideline, it is advocated to do Data Quality Assessments (DQA) as a routine activity. The guidance guides countries to conduct Data Quality Reviews for evidence decision processes. In TUNAJALI, a comprehensive HIV Care project with support from the US Government through USAID providing services in 5 regions conducted Data Quality Assessment as a means to receive information on strengths and weaknesses of recording and reporting systems in use. We assessed quality of data from Morogoro region for HIV Care services including PMTCT. The assessment was conducted in collaboration with regional and council health management teams.
**Description:** TUNAJALI conducted DQA in Morogoro regions for 11 facilities using national data quality management tools. The exercise assessed reporting performance, data verification and management capacities. Indicators reported at headquarters office were counterchecked at regional office and health facilities. At the facility primary sources were used to conduct manual counting (spot and cross checking across tools) of variables that produce indicators for reporting in cards, registers and archived reports.
**Lessons learned:** The assessment showed spectrum of findings, with document review completeness, timely reporting and missing data fields were fairly good. Completeness
(67% -100%), Timely reporting (100%), missing data fields (18%-72%). Verification exercise for indicators assessed showed verification factors from 0% to 264% demonstrating that under-reporting and over-reporting are all occurring in facilities. The regional and council teams learnt of gaps and strength of facilities they supervise and realized the need to have DQAs budgeted for in the comprehensive health plans.
**Conclusions/Next steps:** Improvement in M&E systems through DQA is a promising approach as gaps and strengths are immediately realized. Corrective measures are key for patient and program monitoring of the health system. The regional and council teams inclusion to facilitate ownership and accountability is emphasized.

## WEPEE591

### ORGANIZATIONAL ASPECTS AND THE ADHERENCE TO PI-BASED 2ND LINE TREATMENT IN CAMBODIA: ADHERENCE IS NOT ONLY A QUESTION OF INDIVIDUAL BEHAVIOUR (NCHADS/ANRS12276 PILOT STUDY)

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**Background:** As a result of the international financial crisis of the last years, HIV care services of developing countries tend to reorganize their activities to costs. This may have an impact not only in the capacity of facilities to provide care, but also on the adherence and the living conditions of PLWH. We aimed to investigate whether adherence to antiretroviral treatment (ART) is explained not only by individual factors, but also by the hospitals' characteristics among a sample of PLWH under IP-based regimen in Cambodian care services.
**Methods:** NCHADS/ANRS 2PICAM study has been conducted between February 2013 and April 2014. Data was collected for 1316 PLWH attending 7 services in Phnom-Penh and Cambodian provinces. Adherence was assessed in the questionnaire and a variable indicating whether adherence to ART is low/interrupted (=1) or high (=0). Care services and individual characteristics were included in a Two-level logistic model to investigate their influence on adherence to ART.
**Results:** Among participants 17.1% were low adherent or had interrupted their ART, while 82.9% were highly adherent. Care services out of Phnom-Penh (OR/5.83 95%CI[1.98-17.17]), hospitals with large caseloads (>2393 patients) (OR: 3.68 95%CI[1.5-13.54]) are structural factors that increase the probability of patients to decrease or interrupt their ART uptake. However, patients in care services with important number of medical doctors (OR: 0.79 95%CI [0.70-0.90]), assistant pharmacies (OR:0.62 95%CI[0.39-0.99]), and psychologist counselors (OR:0.18 95%CI [0.05-0.65]) are more likely to be adherent to ART. Discrimination (OR: 1.13 95%CI[1.06-1.20]) and perceived symptoms (OR: 1.10 95%CI[1.12-1.25]) are the only individual factors impairing ART adherence.
**Conclusions:** Adherence is not only determined by individual behavior, but also depends on the organizational characteristics of care services. Health policy in Cambodia should include training for care workers listening patients about the undesirable effects of the treatment in order to reduce the risk of non-adherence. Policy makers should focus on the increase of the number of medical doctors and pharmacists especially in services with big caseloads in Cambodian provinces.

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# COMMUNITY-LED RESPONSES TO HIV, SCALE UP AND SUSTAINABILITY: EVIDENCE AND CHALLENGES

## WEPEE592

### REACHING THE MOST VULNERABLE: A DETAILED EVALUATION OF CBO REACH AMONG YOUNG CHILDREN IN AREAS OF HIGH HIV PREVALENCE

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**Background:** The response to HIV/AIDS in resource-limited settings has included a call for the support of community-based organizations (CBOs), which have the potential to provide high quality services for orphaned and vulnerable children. However, evidence is lacking as to whether CBOs are reaching those who are most vulnerable, whether attending these organizations is associated with greater psychosocial wellbeing, and how they might work.

**Methods:** Cross-sectional data were obtained from the Young Carers and Child Community Care studies, which both investigated child wellbeing in highly HIV prevalent areas in South Africa using standardized self-report measures. Children from the Child Community Care study were all CBO attenders, whereas children from Young Carers were not receiving any CBO services, thereby serving as a comparison group. The final sample included 1848 South African children aged 9-13. Multivariable regressions were used to test whether children attending CBOs were more deprived on socio-demographic variables (including housing, employment, school attendance, and community violence), and whether CBO attendance was in turn associated with better psychosocial outcomes (including depression, suicidal ideation, and trauma). Mediation analysis was conducted to test whether more positive home environments mediated the association between CBO attendance and significantly higher psychological wellbeing.

**Results:** Overall, children attending CBOs did show greater vulnerability on most socio-demographic variables. For example, compared to children not attending any CBO, CBO-attending children tended to live in more crowded households (OR=1.22) and have been exposed to more community violence (OR=2.06). Despite their heightened vulnerability, however, children attending CBOs tended to perform better on psychosocial measures: for instance, showing fewer depressive symptoms (B=-0.33) and lower odds of experiencing physical (OR=0.07) or emotional abuse (OR=0.22). Indirect effects of CBO attendance on significantly better child psychological wellbeing (lower depressive symptoms) was observed via lower rates of child abuse (B=-0.07) and domestic conflict/violence (B=-0.03) and higher rates of parental praise (B=-0.03). Null associations were observed between CBO attendance and severe psychopathology (e.g., suicidality).

**Conclusions:** These cross-sectional results provide promising evidence regarding the potential success of CBO reach and impact among children in HIV-affected areas but also highlight areas for improvement.

## WEPEE593

### WELL-DESIGNED GRADUATION OF VULNERABLE CHILDREN CRITICAL TO SUSTAINING OUTCOMES: AN EFFECTIVENESS ANALYSIS OF CHILD GRADUATION PROCEDURES AND OUTCOMES IN ETHIOPIA'S YEKOKEB BERHAN PROGRAM

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**Background:** USAID/Ethiopia's Yekokeb Berhan Program's goal is to reduce vulnerability and increase resiliency among highly vulnerable children. It is implemented through 32 local partners (IPs), over 700 community committees, 15,000 community volunteers and local government. The program currently supports over 325,000 vulnerable children and their caregivers in high HIV-prevalence urban areas. Local community actors have been trained and mentored in beneficiary selection, need assessments and care planning, service provision and program transition and/or beneficiary graduation.

The program employs the coordinated approach to deliver quality care and support, and uses a well-designed graduation strategy to graduated children and caregivers when desired improvements in their conditions have been achieved. A recent study of graduated children and their caregivers was conducted to understand their conditions 6 - 12 months after graduation.

The research question was, "Has the situation of graduated children changed (improved, same, or deteriorated) 6-12 months after their graduation?"

**Description:** The study conducted on 3,201 graduated children and their families, using the customized Child Status Index tool, revealed important improvements in well-being on all 20 indicators. The study showed that 78% of the children had a dramatic reduction in unmet needs and had continued to experience improvements in their conditions after their graduation from the program. A vulnerability analysis of their households revealed that nearly all (99.5%) were economically stable and able to meet basic needs of their children. The results indicate that the program's outcomes at child and household level are sustainable.

**Lessons learned:** A well designed graduation strategy is critical to improving the well-being of children and their families. In addition, helping households understand that graduation is the goal and connecting them to a network of support systems enhances their ability to actively participate in achieving desired changes in their lives and family conditions.

**Conclusions/Next steps:** The dramatic improvements in the conditions of graduated children and their families suggest a carefully planning and graduation strategy is needed to address the unique needs of vulnerable children and their families. Further, the utilization of highly localized tools and active participation of communities starting from program design significantly accelerate graduation of beneficiaries and sustainability of the program's outcomes.

## WEPEE594

### A MODEL REGIONAL STRATEGIC FRAMEWORK ON HIV FOR KEY POPULATIONS IN AFRICA: AN ACTION AGENDA FOR KEY POPULATIONS, DEVELOPED BY KEY POPULATIONS

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**Background:** The 2014 UNAIDS Gap Report indicated that, despite progress made in lowering HIV infection among the general population in Africa, people who use drugs, sex workers, transgender people and men who have sex with men continue to have considerably higher infection rates. While these key populations (KPs) are often engaged in the design and implementation of strategies to address this issue, their role is often limited to contributing to the process instead of owning and leading it. The Model Regional Strategic Framework on HIV for Key Populations, developed over several meetings in 2014 by 35 members of the Africa Key Population Experts Group from 16 countries, is the first Africa regional strategy jointly developed by experts from the four KP groups.

**Description:** The Framework is intended to be used by Regional Economic Communities (RECs) in Africa to promote the adoption of a standard package of services and programmes within their Member States. It is also intended for use by civil society and KP groups as an advocacy and capacity development tool. The Framework is a living document having three goals, six outputs and ten strategies with specific outcome and output indicators for each KP group.

**Lessons learned:** The Framework has been put to use by civil society organizations and KP networks in various ways, including to inform Global Fund concept note development, to review National Strategic Plans on AIDS, produce civil society shadow reports, to set the agenda for regional conferences such as ICASA and to provide inputs for research design. In addition, the Southern Africa Development Community (SADC) used the Framework to develop a regional KP strategy while the East African Community (EAC) used it to inform the development of a transport corridor strategy for KPs.

**Conclusions/Next steps:** Because of the high level of ownership by KPs, the Framework has been extensively used in 2014/15 and continues to be relevant. Having been developed by KPs themselves, it is a unique instrument for use by all four key population groups for advocacy on behalf of one another.

## WEPEE595

### "EENEY MEENEY MINEY MOE": THE EFFECT OF SELECTIVE ENGAGEMENTS OF NATIONAL NETWORKS WITH KEY AFFECTED POPULATION SUBGROUPS

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**Background:** JumpStart - MSM and transgender networks capacity strengthening initiative (JumpStart) is an activity implemented by Asia Pacific Coalition on Male Sexual Health (APCOM) and Australian Federation of AIDS Organisations (AFAO). The activity provided national MSM and transgender networks with tailored technical support by catalyzing on their transformational capacity. Ultimately, the networks will improve their advocacy engagements at a country level for a more impactful and effective HIV response.

**Description:** In 2014 and 2015, the national networks in Cambodia, Malaysia, Myanmar, Vietnam and Thailand accomplished the Rapid Assessment Apparatus (Rap App) which measures and identifies their programmatic and organisational capacities. The Rap App also assessed their engagements with the key affected population (KAP) subgroups, advocacy strategy and impact to society.

**Lessons learned:** The Rap App analysis across the networks found that KAP engagements determine their overall organisational advocacy strategy.

Selective engagements limiting to MSM and transgender subgroups has narrowed network strategy into a health-based advocacy. The strategy only focuses on increasing access to, and improvements of, HIV services. The impact expected is limited to the decrease of new HIV infection rates.

On the other hand, wide engagement cutting across KAP subgroups has shaped a holistic rights-based advocacy strategy. Such engagement resulted in defining network targets to include the improved quality of life and experiences of the KAP at a country level. Subsequently, the individual staff members are also inspired at changing peoples' lives contributing to overall social development.

**Conclusions/Next steps:** National networks employing health-based advocacy are donor driven and are operating to achieve particular targets among identified key affected population subgroups. The regional HIV advocacy and competitive funding streams has mainly influenced the country level advocacy. In order for a more impactful and effective HIV response, the country level advocacy needs to go beyond health perspective and encompass rights-based approach cutting across all key population sub groups.

## WEPEE596

### BUILDING CAPACITY TOWARDS COMMUNITY-LED HIV SERVICES: THE FIRST COMPREHENSIVE HIV TREATMENT AND PREVENTION SERVICE MODEL LED BY MSM AND TG COMMUNITIES IN THAILAND

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**Background:** To achieve the UNAIDS 90-90-90 target, countries are increasingly relying on community resources to expand HIV testing, antiretroviral therapy (ART) and retention support. The Thai Red Cross AIDS Research Centre and the USAID LINKAGES Project, through PEPFAR funds, worked to demonstrate the first community-led HIV treatment and prevention service model for MSM and TG in Thailand.

**Description:** A comprehensive community-led HIV service model for MSM and TG was established at four community-based organizations (CBOs); SWING worked with male sex workers in Bangkok/Pattaya, Rainbow Sky Association of Thailand worked with MSM/TG in Bangkok/Hat Yai, Sisters worked with TG/TG sex workers in Pattaya, and Caremat worked with MSM/TG in Chiang Mai. CBO staff were trained/coached to provide HIV/STI testing, point-of-care CD4 measurement, ART maintenance, tuberculosis screening/prophylaxis, pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP), and retention support to clients. Quality assessment and PEPFAR Site Improvement Measurement (SIM) tools were used to routinely monitor service quality. Local networks with health professionals were successfully established to provide local oversight to the CBOs and allow case referral when needed.

**Lessons learned:** Community-led HIV services were successfully implemented: From May 2015-January 2016, these CBOs provided HIV testing to 1429 clients (995 MSM, 434 TG), diagnosed 238 HIV-positive individuals (200 MSM, 38 TG), and 77% successfully initiated ART within a median time of 15 days. From October 2015, CBO staff already started PrEP on 130 HIV-negative individuals.

CBOs could be empowered to conduct HIV services: CBO staff were successfully trained as HIV counselors, HIV testers, HIV care providers, and PrEP/PEP providers. They were eager and proud to have their capacities built beyond their routine activities. Quality assessments demonstrated increased capacities in clinical and laboratory services over time. SIM scores increased from 80.5 to 93.4%.

**Conclusions/Next steps:** Model has been shared to obtain national support for endorsing, sustaining and expanding these community-led HIV services. Concerted efforts are needed to inform and reform policy and regulatory frameworks to i) permit CBO staff to perform health-related tasks, ii) formalizes their status and professionalization to enable the funding and training required, and iii) overcome resistance of other health professionals and institutions.

## WEPEE597

### MSM COMMUNITY MOBILIZATION FOR HIV PREVENTION IN UKRAINE: THE EFFECTIVENESS OF MPOWERMENT BEHAVIORAL INTERVENTION

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**Background:** Men who have sex with men (MSM) is one of the key groups most affected by HIV in Ukraine. HIV prevalence among Ukrainian MSM in 2013 reached 5.9%. There is a lack of behavioral interventions (BI) with proven effectiveness for HIV prevention among young MSM in Ukraine. Mpowerment is a community-level BI focused on HIV prevention among young gay/bisexual men. It was implemented in the USA, but never has been evaluated in Ukraine before.

**Methods:** In 2013-2015 Mpowerment was implemented in three Ukrainian cities among young (18-29 y.o.) MSM by local NGOs. A cohort of young MSM was recruited independently of the intervention in five cities (three cities - intervention communities, two - comparison communities). Social-demographic and behavioral characteristics were collected at baseline and at 12-month follow up. The significance of behavioral changes was assessed in both groups using paired t-test (numeric) and McNemara's test (categorical variables).

**Results:** 991 MSM (688 intervention communities, 303 comparison communities) were included in the study. 708 respondents (574 intervention, 134 comparison) completed 12-month follow up. 363 (51.3%) identified as gays, 267 (37.7%) - as bisexual; mean age=23.6 years. Diffusion of Mpowerment was observed in three intervention communities: 46.9% of the respondents heard about Mpowerment, 20.7% participated in BI events (dance parties, movie nights etc.), 16.5% invited their friends to participate in the BI events. The sexual behavior in intervention communities demonstrated positive changes (see table): the mean number of sexual partners decreased from 3.83 to 2.82 (p < 0.001), the proportion of men who had unprotected anal sex with non-steady partner within last three months decreased from 49.3% to 32.9% (p< 0.001) and proportion of MSM who had anal sex with men within last month and always used condoms increased from 30.4 to 37.3% (p=0.002). The corresponding indicators in the comparison group did not improve.

| | Intervention communities | | | | Comparison communities | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | Baseline: abs / mean (%/SD) | 12 month follow up: abs / mean (%/SD) | Pre- to Post-intervention difference (pp - percentage points) | p | Baseline: abs / mean (%/SD) | 12 month follow up: abs / mean (%/SD) | Pre- to Post-intervention difference (pp - percentage points) | p |
| Number of male sexual partners last six months | 3.83 (5.6) | 2.82 (2.4) | - 1.01 | **<0.001** | 3.70 (6.5) | 3.46 (3.0) | - 0.24 | 0.688 |
| The proportion of men who had unprotected anal sex with non-steady male partner within last three months (%) | 283/574 (49.3%) | 189/574 (32.9%) | -16.4 pp | **<0.001** | 37/134 (27.6%) | 56/134 (41.8) | + 14.2 pp | **0.013** |
| The proportion of men who had anal sex male partner in the last 30 days and always used condoms | 156/514 (30.4%) | 195/523 (37.3%) | + 6.9 pp | **0.002** | 54/101 (53.5%) | 55/103 (53.4) | - 0.1 pp | 0.880 |

*[Sexual behavior changes among young MSM]*

**Conclusions:** This study demonstrated that the Mpowerment project, a community-level HIV prevention intervention, resulted in reduction of unprotected anal sex among young MSM in Ukrainian settings.

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## WEPEE598

### IMPACT IN HIV CARE CONTINUUM OF A TAILORED COMMUNITY-BASED HIV VOLUNTARY COUNSELING TESTING CENTRE FOR MEN WHO HAVE SEX WITH MEN: CHECKPOINTLX, LISBON, PORTUGAL

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**Background:** Portugal estimates that 20 to 25000 people living with HIV are undiagnosed and in high prevalence settings, such as Lisbon, men lag behind with late or delayed linkage to prevention, care and support. WHO stressed that countries with HIV concentrated epidemics have to prioritize and focus on tailored community-based HIV testing sites (HTS) approaches for those who remain undiagnosed and at greatest ongoing risk for HIV infection. In 2011, Treatment Activist Group (GAT) opened the first community-based HTS in Portugal, tailored to men who have sex with men (MSM).
**Description:** CheckpointLX is a peer-led, community-based, voluntary counselling, testing and linkage to care centre tailored for MSM. Provides condoms and lube, tailored counselling, HIV, syphilis, HCV, gonorrhea, chlamydia and HPV screenings programs, escort those with HIV reactive test to hospital for care and gives access to web-based anonymous partner notification. This centre generates surveillance data through an open cohort, a joint GAT and ISPUP-EPIUnit collaboration.
**Lessons learned:** Between April 2011 and December 2015, 10002 HIV tests were performed in MSM, 4,1% reactive overall. According to official surveillance data, per civil year, on national level, CheckpointLX found 8.71%(2011), 15.27%(2012), 19.95%(2013) and 26.29%(2014) of MSM new HIV infections. Linkage to care was 79.49%(2011), 73.97%(2012), 78.05%(2013), 83.33%(2014) and 74.78%(2015). Overall referred, 2.3% had confirmed primary HIV infection. In 2014, almost 40% of the MSM new cases where late presenters at national level, whilst our data showed only 15%. Between April 2011 and February 2014, 804 MSM were followed for a total of 893 person-years. The overall seroincidence was 2.80/100 person-years (95%IC:1.89-4.14).
**Conclusions/Next steps:** CheckpointLX shows to have an increasing impact on MSM early diagnosis and linkage to care on both local and national levels. The replication of this centre in other Portuguese high prevalence settings, such as Oporto, is urgent. Due to persistent high incidence estimates, new HIV prevention tools roll-out are pressing, namely pre-exposure prophylaxis. This centre has been recognized by ECDC as a new and innovative service developed in Portugal reflecting the Communication's emphasis on key vulnerable populations and selected by WHO as an example of good practice reflecting the new HTS recommendations.

## WEPEE599

### USE OF COMMUNITY OVC PLATFORM FOR HIV CASE IDENTIFICATION (HOW TO DO BETTER TARGETING)

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**Background:** In Mozambique, there are approximately two million orphans and vulnerable children, 800,000 of which orphaned due to AIDS. In 2009, Mozambican youth aged 12-19 accounted for 6.8 percent of the overall cases of HIV/AIDS in Mozambique (INSIDA 2009). Despite the high percentage of youth cases, there are very low numbers of children on antiretroviral therapy (ART). In 2012, existing vast OVC platforms throughout the country let to the recommendation to utilize them for active case identification of children with HIV.
**Description:** The use of existing community OVC platforms for HIV case identification illustrate how OVC programs fit in the HIV continuum of response and how to target testing more effectively. Implementation of such strategies includes: case management, coordination, and facilitation. First, volunteers identify the needs of OVC at a household level. Then work with families to develop comprehensive care plans, including HIV testing and counseling for all OVC beneficiaries. Next, the program works to increase coordination and collaboration between both OVC and HTC providers. Lastly, the program helps to facilitate access to HTC for OVC families. The OVC volunteers mobilize families and work with HTC providers to test all members in the family who desire to know their status.
**Lessons learned:** In FY15, Gaza and Zambezia, two of Mozambique's high HIV prevalence Provinces (together these two provinces account for about 40% of PLHIV in Mozambique) and high OVC burden were studied. The results showed that out of 2,491 beneficiaries tested, 91 tested positive
(3.7 percente positivity rate). This result led to the numerous lessons including targeting all beneficiaries may not be the best approach, and that there are particular characteristics of those tested positive, which can be used to make targeting more effective. OVC Implementing Partners will target children with cases of school absenteeism, those who are malnourished, or have skin problems. Furthermore implementing partners discovered issues related to stigma and caregivers opting out of testing when targeting the entire household.
**Conclusions/Next steps:** Partners will continue to sensitize families to actively seek HTC at voluntary counseling and testing sites for those willing to go and those who do not know their status.

## WEPEE600

### INNOVATIVE AND STRUCTURED APPROACH OF CRISIS INTERVENTION AMONG FEMALE SEX WORKERS (FSWS), AN IMPORTANT FACET OF HIV INTERVENTION

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**Background:** Female Sex workers in India face harassment and violence from clients, pimps, regular sexual partners, family, and community people. In India, 70% of sex workers in a survey reported being beaten and harassed power structures. This has been a challenge for the HIV Targeted Intervention (TI) Program of National AIDS Control Organization (NACO); as it prevented many FSWs from accessing HIV services because of the unconducive environment.
**Description:** Knowledge Sharing (KS) Project a pilot initiative (from October' 2015 to December' 2015) supported by World Bank and NACO. Experiential knowledge of Delhi-based TI documented and shared structured crisis response system for effective management of crisis of FSWs with TI of Rajasthan. These innovative and tested approaches of crisis management were replicated in the state of Rajasthan after being tailored to the local context. The approach was made adaptable to the intervention set up based on regional/local, social and cultural milieu. Handholding and onsite support was provided by Delhi TI to Rajasthan TI for replication. The experiential knowledge includes ,but not limited to, restructuring the existing crisis response mechanism, 24/7 open system for reporting of crisis, involving the local influential leaders including religious leaders, sensitizing the law enforcement agencies/police and engaging legal experts. The new approach was implemented in Rajasthan for the period November- December 2015.
**Lessons learned:** Through the experiential knowledge gained from KS initiative, there has been an increase in reporting of crisis by 15% and success rate of resolving crisis has increased by 33%. Further, this has gained FSW community trust over the TI and led to uptake of services by increase in footfall at Drop-in-center.
**Conclusions/Next steps:** Having an active 24/7 structure for reporting and responding crisis and involving police and legal expert in the HIV intervention among FSWs, has benefited the program. This experiential learning will be shared with other FSW TIs in the country, based upon their needs.

## WEPEE601

### A COMMUNITY-BASED APPROACH TO ASSESS THE SITUATION OF HIV IN THE KOKOYO INFORMAL GOLD MINING SITE: WHAT IS BEHIND THE SHINE OF GOLD CONCERNING HIV EPIDEMICS IN MALI? (ANRS-12339/SANU GUNDO)

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**Background:** The particular poverty context of informal gold-bearing zones increases vulnerability vis-à-vis health problems, especially sexually transmitted infections (STIs) including HIV. In these sites, the presence of sex workers, and sex-related beliefs may impact HIV prevalence that could be higher than the national prevalence around 1.4%. However, little is known about the HIV epidemics among people attending Malian informal gold mining sites. This analysis aims to estimate HIV prevalence and its determinants among people living in the informal gold mining site of Kokoyo, one of the most important in Mali.
**Methods:** ANRS-Sanu Gundo is a cross-sectional survey conducted in 2015 at Kokoyo. Authorities, village representatives, and gold diggers contributed to the elaboration of the strategy and tools to conduct the survey. ARCAD-SIDA, a Malian NGO, organized prevention activities, medical check-up including STIs HIV testing

and treatment. Those attending the activities were invited to participate to the quantitative and/or qualitative survey (focus groups). The sample was described and logistic regression was implemented to estimate the characteristics associated to be tested HIV+.
**Results:** 236 persons attended the prevention activities: 28.8% gold diggers, 11.9% female sex workers, 33.5% female non-sex workers, 5.9% guards, and 19.9% men with another gold mine-related activity (principally street vendors). STIs treatment was prescribed to 150 (64% were female) and 228 participants accepted the HIV test. The overall prevalence was 8.5%; 3.6% for female sex workers, 7.9% for gold diggers, and 13.9% for female non-sex workers. Among those diagnosed HIV+, 40% had never been tested before the survey. Multivariate analyses show that female non-sex workers (OR=3.46/p=0.032), participants aged 22-30 years (22-26year/OR=11.10/p=0.034 and 27-30year/OR=12.59/p=0.028, vs. youngest and oldest), those earning less than 12000FCFA(19.8US$)/week (OR=1.58/p=0.01), and those perceiving poor health status before being tested (OR=4.98, P=0.006) were more likely to be HIV+.
**Conclusions:** Our results pointed out a high HIV prevalence among people living in informal gold mines and a small number of persons tested before the survey, especially non-sex worker females. Bringing information/prevention activities closer to people working in informal gold mines is an urgent public health action.

## WEPEE602

### TRANSGENDER VOICES, TRANSGENDER POWER. IMPROVING HEALTH AND PREVENTING HIV THROUGH COMMUNITY-LED INTERVENTIONS AND STRENGTHENED SYSTEMS: EXPERIENCE FROM THE PEHCHAN PROGRAM IN INDIA

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**Background:** With 8.82% HIV prevalence, transgender women and hijras have the highest HIV prevalence among key populations in India. Under National AIDS Control Programme - Phase III, transgender/hijra people were counted under MSM umbrella and did not receive specific services responsive to their needs. The government-funded Targeted Intervention programme had limited opportunity for community-led efforts, capacity building and advocacy around transgender issues.
**Description:** Implemented by India HIV/AIDS Alliance with support from the Global Fund, the Pehchan programme has served 32,871 transgender women and 16,263 hijras. Over the last five year, through a community-led approach, Pehchan provided a range of services, including intensive outreach, referral and provision of community-specific sexual health services, counseling, violence mitigation, support to access social entitlements, and fostering an enabling environment by organizing advocacy events at state and national level. Through December 2015, the programme registered 580 transgender/hijra individuals for ART. 1,137 cases of violence against the community were reported, and 1,032 individuals have received support for violence mitigation. A total of 2,315 transgender women and 2,015 hijras linked with social entitlement schemes.
**Lessons learned:** Pehchan helped transgender/hijra beneficiaries not only improved access to sexual health services, but it also strengthened their voice at state and national level as a collective effort to ensuring their health and rights. With Pehchan support and guidance, the National AIDS Control Organization supported efforts to develop a transgender-specific Targeted Intervention strategy.
**Conclusions/Next steps:** Transgender and hijra people in India are marginalized and have been largely unable to access health and other services. Even after the April 2014 Supreme Court of India judgement recognizing the rights of the Third Gender, life on the ground has been largely unchanged. The community-led and need-based approach of Pehchan has complemented the National AIDS Control Programme by facilitating access to sexual health services and by developing capacity of transgender/hijra individuals and organizations to partner with government to improve health access and rights protections.

## WEPEE603

### MICRO PLANNING AS AN INNOVATIVE TOOL TO REACH PEOPLE WHO USE DRUGS (PWUD)

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**Background:** Recent studies in Tanzania have shown high HIV prevalence rates among people who inject drugs (PWID) and other people who use drugs (PWUD). A rapid assessment and response survey undertaken in 2011 in Temeke, Dar es salaam by Médecins du Monde (MdM) revealed HIV prevalence rates of 26% among PWUD while 34.8% among PWID and 67%% among women who inject drugs (WWID). This calls for novel approaches and effective services delivery interventions.
**Methods:** MdM piloted a micro planning (MP) program in which trained peer educators (PEs) deliver tailored harm reduction (HR) services to their peers, in the hotspots where they are using. Each PE has his/her own clients with whom s/he reviews needs on a weekly basis and delivers services accordingly. Services consist of NSP & referral to opioid substitution treatment (OST) for PWID; referral to MdM for regular HIV, hepatitis, STI & TB screening for all PWUD as well as follow-up on general health; and treatment adherence for PWUD on ART, OST, TB or other treatment.
**Results:** With MP, access to HR services has significantly improved; the number of PWUD accessing services increased by four-fold, while the number of syringes distributed tripled. Most PWUD are now aware of their HIV status, thanks to increase in testing; the number of PWUD on ART increased by 37%. Reaching women who use drugs (WWUD) appears to be a challenge that has yet to be overcome.
**Conclusions:** MP proves a replicable means of enhancing HR services by PWUD in a resource limited setting where access to essential health services otherwise remains low.

## WEPEE604

### COMMUNITY-BASED HIV INTERVENTIONS COSTS AND COST-EFFECTIVENESS STUDIES: WHY SO FEW?

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**Background:** This study seeks to assess current gaps in published cost and cost-effectiveness studies on community-based HIV interventions and to critically review existing costing methods in the light of community-based interventions' specificities.
**Methods:** We reviewed 46 published primary studies and 4 costing tools from the period 2000-2015 about the costs and cost-effectiveness of community-based HIV interventions. Studies were assessed using a data extraction framework. We complemented this search with five formal interviews with costing experts.
**Results:** The results suggest the published literature on costs and cost-effectiveness of community-based HIV interventions remains sparse, with important gaps in terms of interventions, target populations and geographical locations. The scarcity of dedicated tools and guidelines easily available at global level may further slow down the uptake of community-based HIV costing. Finally, methodological challenges linked to defining the intervention's scope and outputs and measuring its inputs and costs, might hinder the productions of costs of community-based HIV interventions.
**Conclusions:** Getting a general understanding of the challenges and barriers hindering the development of costing studies of community-based HIV interventions can help design methodological and practical solutions to overcome them. Getting more accurate information on the costs of community-based HIV responses will ultimately help leverage them as an additional way to achieve global targets.

## WEPEE605

### BUILDING RESEARCH CAPACITY AND LEADERSHIP AMONG PEOPLE LIVING WITH HIV (PLHIV) THROUGH MEANINGFUL ENGAGEMENT AND STRUCTURED MENTORSHIP: INSIGHT FROM THE COMMITTEE FOR ACCESSIBLE AIDS TREATMENT, TORONTO, CANADA

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**Background:** People living with HIV (PLHIV) experience systemic barriers to meaningful engagement in research. Despite claims of valuing the lived experiences of PLHIV, there is a lack of political will and investment in research capacity building of PLHIV. Underpinned by the principles of greater involvement and meaningful engagement (GIPA/MEPA) of PLHIV, the Committee for Accessible AIDS Treatment (CAAT) established policies to hire and mentor PLHIV as peer researchers in all their community-based research (CBR) studies. In this paper, we draw on the process outcomes of the multi-year Community Champions HIV/AIDS Advocates Mobilization Project (CHAMP) to illustrate the impact of GIPA/MEPA integration and structured mentorship on PLHIV empowerment.
**Description:** Between 2011 and 2015, CHAMP hired seven PLHIV as peer research associations (PRA). GIPA/MEPA principles were integrated into CHAMP's terms of reference. CHAMP provided comprehensive and ongoing training to all PRA on CBR) design, research ethics, outreach and recruitment, focus group facilitation, survey

collection, data analysis and knowledge translation/exchange (KTE). Capacity building strategies included: establishing collaborative team culture, individual and group mentorship, and critical team dialogue. Project resources were reserved to support PRA presentations and attendances at conferences and KTE forums. Mentors also encouraged and supported PRA to take on leadership roles beyond CHAMP.
**Lessons learned:** CHAMP showed that proactive and meaningful engagement of PLHIV in CBR contributes to the success of community-based HIV research. It also contributes to PLHIV empowerment. After engaging in CHAMP, PRA had become influential HIV champions. They had also taken on leadership roles as board members in AIDS service organizations, HIV advocates in media, and founders of PLHIV driven initiatives. Some had gained employment with other organizations in research, project coordination, PLHIV support, and community education. Others had enrolled in academic studies to pursue career in social services and research.
**Conclusions/Next steps:** CHAMP demonstrated that integration of GIPA/MEPA in CBR promotes research success and PLHIV empowerment. Researcher institutes and funders should recognize the need to dedicate sufficient resources to support the meaningful engagement and capacity building of PLHIVs to maximize the real-life impact of HIV research. Further exploration on ways to support peer researchers to further their opportunities in research is needed.

## WEPEE606

### SUSTAINING HIV PREVENTION, CARE AND TREATMENT PROGRAMMES FOR THE YOUTHS IN CHIPATA DISTRICTS THROUGH YOUTH LEADERSHIP

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**Background:** Comprehensive HIV prevention information, access and utilization of sexual and reproductive health services, is low among the youths in Chipata district. While sexual activity is estimated to start at the age of 13, HIV prevalence among 15-24 year olds is reported to be increasing among females than in males. To increase access to such services SAT Zambia funded Chisomo to design and implement an intervention to increase youth access to SRH services with a primary focus on HIV testing and prevention.
**Description:** Implemented between January 2014 and March 2015, 5 school-based youth clubs and 5 communities based clubs were established in the district. Information and weekly activities developed with youth involvement. Previously non-functional, all 5 schools clubs are functional reaching 300 youths with information and referrals for SRHR. The Gender Transformative mapping exercise showed that youths involved in club activities demonstrated increased understanding of transmission modes of HIV as well as the risk of having many sexual partners to HIV infection. Access to HTC increased through linkages and there is reduction in the number of sexual partners among older youths on this program. Communication with parents improved due to community meetings on SRHR for the youths in the community,while teenage pregnancies and school drop outs among girls decreased within the period of implementation in the targeted schools eg one school before the interventions had 54 pregnancies in a year but after implementation reduced to 26 in 2015.Youths acquired other skills such as presentation and leadership.
**Lessons learned:** Active participation of youths in SRH and HIV prevention activities has the potential to build their ability to demand and access services. Interventions for youths must focus on building skills and making them "do it for themselves." Building a supportive environment is important. The approach can be used beyond SRH issues as it has proved to be empowering.
**Conclusions/Next steps:** There is need to scale up the intervention and have further evaluations to validate its impact for replication. The project has been extended within the districts and has raised demand from other areas in districts.

# INCREASING CAPACITY OF PUBLIC HEALTH SYSTEMS TO DELIVER HIV CARE AT SCALE

## WEPEE607

### TRANSITIONING AN HIV RESPONSE TO LOCAL OWNERSHIP, A WAY FOR ACHIEVING 90-90-90

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**Background:** Between 2004 and 2013, our program supported rapid scale-up of HIV care and treatment services for poor and underserved people in ten countries across Africa, the Caribbean, and Latin America. The program established a basic package of HIV care and treatment services in resource-constrained environments with the goal of transitioning it to local partners (LPs). LPs capacities were strengthened to ensure smooth transition and sustainability of the HIV response program. This abstract compares their current antiretroviral treatment (ART) qualitative and quantitative outcomes with the program's achievements at the time of transition two years ago.
**Methods:** A qualitative evaluation; conducted in Kenya, South Africa, Tanzania and Uganda; consisted of a review of pre-transition program documents, including transition plans, and 61 phone/Skype interviews with CRS staff, LPs, current and former program staff, local partner treatment facility staff, and government health ministry staff. A common interview guide, developed in consultation with former program staff, was used in all interviews. Interviews were triangulated to account for any potential biases. A comparison of the pre-transition program's and three LPs' patient enrollment on ART for years 2012/13 and 2014 (excluding South Africa) was conducted.
**Results:** Country profiles were compiled for Uganda, Tanzania, Kenya and South Africa. The range of increase in patient enrollment on ART was between 24% and 40%. Uganda had the highest increase in patient enrollment (40%). After the transition, LPs initiated care and treatment services at 57 additional facilities and the number of patients enrolled on ART increased by 53%. Loss to follow up, retention and mortality rates were analyzed and general LPs performance was found to be at similar levels as the pre-transition program.
**Conclusions:** LPs should be provided with capacity strengthening to ensure that sustainable and quality programs are provided by local communities. LPs have shown their capability to maintain and continue providing a high-quality ART program. Under their leadership, the number of patients enrolled on ART has increased and qualitative outcomes have been maintained at preferred levels. This shows that local ownership is a critical factor in achieving the PEPFAR 3.0 and UNAIDS 90/90/90 goal by 2020.

## WEPEE608

### SCALE UP AND SUSTAINABILITY OF HIV TESTING AND COUNSELING THROUGH TASK-SHIFTING APPROACH

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**Background:** In an effort to scale up HIV testing services and respond to the critical shortage of health care providers in Namibia, the President Emergency Plan for AIDS Relief (PEPFAR) and the Ministry of Health and Social Services (MOHSS) entered into a partnership to implement a task-shifting approach by introducing lay community counsellors (CCs) in public health facilities to provide HIV testing and counseling (HTC). We present findings of program evaluation after ten years of implementation and describe the process of transitioning this new cadre into formal government workforce.
**Description:** An end-term mixed methods program evaluation was conducted that triangulated results of multiple qualitative and quantitative data sources to determine the extent to which task-shifting affected the workload on other healthcare providers, the role of CCs in the scale-up of HTC in Namibia, the quality of services provided by CCs and the level of client satisfaction with their services. There were 535 CCs in service at the time of this evaluation; 70% were females; 88.4% had secondary school education; 60% worked in clinics and 42% had worked for 6 or

more years. Between 2007 and 2013, CCs conducted 98-100% of rapid HIV testing in public health facilities and quality control data indicated an average of 99.9% concordance rate for proficiency tests and 0.2% error during re-testing. Although CCs reported receiving low remunerations for their services, interview and focus group discussions (FGDs) with healthcare workers (n=84) revealed their invaluable contributions towards the scale-up of HTC, ART, TB/HIV care and PMCT programs. More than 90% of the interviewed clients (n=800) reported that CCs provided sufficient information about HTC, adhered to confidentiality and adequately explained test results.

**Lessons learned:** MOHSS, fully transitioned all 535 lay counsellors from PEPFAR support to the Government Staff Establishment as Health Assistants by end of September 2015. This program provides a best practice example of how effective multilateral partnerships, careful planning and government ownership can increase access to sustainable HIV response through task-shifting.

**Conclusions/Next steps:** Continued monitoring of the transitioned cadre to ensure that their core function of HTC services is maintained given their additional responsibilities as health assistants.

## ROLE OF COMMUNITY ORGANIZATIONS IN LINKING PEOPLE TO HIV SERVICES AND STRENGTHENING THE HEALTH SYSTEM

## WEPEE609

### THE GETTING TO ZERO SAN FRANCISCO CONSORTIUM: EARLY RESULTS

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**Background:** Cities are mobilizing to address UNAIDS "90,90,90" targets. In 2013, San Francisco formed a new, independent, multisector "Getting to Zero (GTZ) consortium aiming to harness public and private efforts to reduce new HIV infections and related deaths by 90% in San Francisco by 2020.

**Description:** The consortium activated community, providers, researchers, government and private sector to develop a strategic plan and committees to address gaps in the City's response. Because 94% of infected persons are already aware of HIV status in San Francisco, the plan emphasized high yield prevention and treatment care cascade strengthening programs to address 4 problems
1) Underdeveloped systems for pre-exposure prophylaxis (PrEP);
2) Inadequate HIV care initiation for new diagnosis;
3) Gaps in retention and re-engagement in care;
4) HIV-related stigma.

**Lessons learned:** The PrEP committee coordinated
1) "Getting the word out" through media, social network, and PrEP ambassadors
2) "Kick Starting PrEP" through provider training and health navigators.
Over the last year, PrEP delivery sites increased to >30 clinics, >120 providers were trained to deliver PrEP, and community surveys of MSM report PrEP use increased from 15% to 22%. The GTZ "RAPID" committee expanded a pilot public hospital program already achieving time from HIV diagnosis to viral suppression of 65 days through same day linkage and comprehensive medical and social support to 3 sites city-wide, with over 100 enrollees. The Retention and Re-engagement committee identified
1) gaps in support services,
2) need for navigators to re-engagement clients and prevent loss to follow-up and
3) frontline worker capacity-building goals.
After one year, 73% of patients enrolled in navigation have re-linked to care; three public health clinics are implementing an evidence based reengagement and retention package. The stigma committee is developing a city-wide needs assessment through engaging communities affected by HIV. GTZ is supported by the Mayor, Director of Public Health, and private sector.

**Conclusions/Next steps:** The SF GTZ Consortium has achieved multiple process outcomes of its strategic plan including
1) increased PrEP demand and access,
2) reduced time from HIV diagnosis to viral suppression
3) increased navigator support for retention.

## WEPEE610

### SOCIAL AND FINANCIAL INCLUSION SCHEMES AND HIV VULNERABILITY REDUCTION: A STUDY OF MEN WHO HAVE SEX WITH MEN IN SOUTHERN INDIA

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**Background:** HIV prevention interventions are increasingly focusing on social and financial inclusion of high-risk groups as a vulnerability reduction strategy. Our study examines the association between participation in savings and ownership of social entitlements, and HIV risk, among men who have sex with men (MSM) in southern India.

**Methods:** Data are drawn from a cross-sectional survey (2014) among 1200 MSM. Social and financial inclusion was measured using a composite index of ownership of four basic entitlements: three government-promoted social entitlements (ration card, voter identity card, and Adhaar card, which allow access to social security programs and voting rights); and a bank account; those with all four entitlements were defined to have high social and financial inclusion, and others were considered to have low inclusion. Multivariate analysis explored the association between high/low social and financial inclusion and four binary HIV risk outcome indicators: HIV testing, sexually transmitted infection (STI) (past 6 months), experience of violence (past year), and consistent condom use with regular non-paying male partners (past year).

**Results:** Just half (50%) of all MSM owned all four entitlements. Around two-fifths (58%) owned a bank account and 78% had accessed all three social schemes. High social and financial inclusion was positively associated with lower HIV risk; MSM with access to all four entitlements were significantly more likely than those without access to all four entitlements to report HIV testing (Adjusted Odds Ratio [AOR] 1.6; 95%CI 0.96-2.63) and significantly less likely to report recent STI symptoms (AOR 0.3; 95%CI 0.18-0.60). High social and financial inclusion was also positively associated with higher consistent condom use with non-paying regular partners and less experience of violence.

**Conclusions:** Linking high-risk populations to social and financial inclusion schemes presents an important vulnerability reduction opportunity. Findings highlight that MSM who participate in savings and social inclusion schemes are at substantially lower STI risk, have a higher likelihood of seeking prevention services such as HIV testing, and are more likely to adopt safer sex practices. For a sustained HIV response, and to promote service utilization, prevention programs must prioritize efforts to link all MSM to social and financial inclusion schemes.

## WEPEE611

### FEMALE SEX WORKERS' AWARENESS OF AND ACCESS TO HEALTH RIGHTS: FINDINGS FROM A COMMUNITY MOBILIZATION INTERVENTION IN SOUTHERN INDIA

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**Background:** To promote access to HIV prevention and treatment, the health rights of key populations must be protected. Female sex workers (FSWs) bear a large burden of HIV infection, and community mobilization (CM) programs are adopting strategies to protect and promote FSWs' health rights to reduce vulnerability and demand services. This study examines awareness of health rights and associated factors, and barriers and facilitators in accessing rights, among FSWs who are part of a CM intervention for HIV prevention in Andhra Pradesh, India.

**Methods:** Data are drawn from a cross-sectional survey (2014) among 2400 FSWs who are community organization (CO) members. CM was measured based on three binary indices: collective efficacy, collective action and collective agency. Descriptive data were analyzed and odds ratios calculated using STATA 11.

**Results:** Just 45% of FSWs were aware of health rights. FSWs who reported HIV-positive status (adjusted odds ratio [AOR] 1.9; 95% CI 1.31-2.69), had availed a social protection scheme in the past year (AOR 1.4; 95% CI 1.14-1.65) and had a bank account (AOR 1.3; 95% CI 1.06-1.56) were significantly more likely to be aware of health rights than others. Similarly, high collective agency (AOR: 1.8; 95% CI 1.44-2.13) and high collective action (AOR 2.2; 95% CI 1.82-2.56) were positively associated with health rights awareness. Facilitators in claiming rights were mainly COs (57%), followed by government officials (10%) and health clinics (15%); barriers to accessing rights were neighbors (35%), spouse (19%), lack of knowledge (15%) and stigma (13%).

**Conclusions:** FSWs' awareness of health rights is limited, compromising access to preventive services and elevating vulnerability. Current prevention programs that focus on CM must be continued, given the facilitating role of COs in claiming rights, and the positive association between rights awareness and CM (collective agency and collective action) as well as participation in social/financial inclusion schemes

(which are promoted by COs). To reduce HIV risk and protect health rights, COs must prioritize building rights awareness among vulnerable FSWs, support them to claim rights and access services, and build linkages with key stakeholders--government, legal authorities and police—to facilitate service access. Additionally, barriers to claiming rights must be addressed.

## WEPEE612

### "TOGETHER, WE CAN IMPROVE": FACILITY-COMMUNITY PMTCT DATA REVIEWS IN MALAWI

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**Background:** Malawi has made good progress towards eliminating mother-to-child transmission of HIV and keeping mothers healthy and alive. New pediatric infections declined from 21,000 in 2010 to 10,000 in 2014. However, in 2014, only 64% of HIV-positive pregnant women received antiretroviral treatment (ART), and one-third discontinued their treatment ('loss to follow-up') at some point along the continuum of care.
**Description:** Under Malawi's Optimizing HIV Treatment Access Initiative, healthcare workers and community representatives in three districts addressed loss-to-follow up by jointly identifying challenges and developing strategies to better support pregnant and breastfeeding women to access services and stay in care. The process included: revitalizing 85 community-based Health Advisory Committees (HACs); convening quarterly health facility data review meetings with district officials, HAC members, community representatives, and health facility staff; and providing follow up and support to facilities and HACs.
At data review meetings, participants reviewed dashboards which illustrate quarterly performance for 13 indicators, including antenatal (ANC) attendance during the first trimester, male participation in ANC, delivery in health facilities, and retention in HIV care of women and children. Participants discussed reasons why indicators are colored red (poor performance), yellow (making some progress), or green (achieving targets). Strategies to address bottlenecks at the community and facility levels were debated and agreed upon by facility staff and community members.
**Lessons learned:** Key indicators showed improvements in facilities participating in the community-facility data reviews. For example:
· Uptake of testing of HIV-exposed infants at 12 months at Jenda Heath Centre increased from 13% in May 2015 to 100% in July 2015
· Uptake of HIV-exposed infant testing within two months of delivery increased from 0% in March 2015 to 100% in April - August 2015 at Katete Community Hospital
· Attendance at 4 ANC visits, 12-month retention of pregnant women on ART and 2 month infant HIV testing uptake increased across 31 facilities in two of the three districts.
**Conclusions/Next steps:** Joint data reviews increased community accountability and resulted in better prioritization of health interventions to improve the impact of PMTCT programs. Involving communities in joint problem solving and action provided a strong pathway to influencing behavior and practices.

# INNOVATIONS IN TESTING AND LABORATORY SUPPORT (INCLUDING POINT-OF-CARE DIAGNOSTICS)

## WEPEE613

### EVALUATION OF SECOND-LINE ART FAILURE AND ELEVATED BILIRUBIN AS A SURROGATE FOR ADHERENCE TO PROTEASE INHIBITOR BASED ART IN TWO URBAN CLINICS IN LILONGWE, MALAWI

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**Background:** Atazanavir/Ritonavir (ATV/r), the current boosted protease inhibitor (PI/r) used for second line antiretroviral therapy (ART) in Malawi, causes a rise in indirect bilirubin. We sought to determine if elevated serum bilirubin, as a surrogate of ATV/r adherence, can aid in the evaluation of second line ART failure in Malawi.
**Methods:** We conducted a cross-sectional study of HIV-infected patients >13 years who were on PI/r-based second line ART in two urban clinics in Lilongwe, Malawi for at least 6 months. ART and adherence data were extracted from the Electronic Medical Records (EMR) and blood was drawn for HIV-1 RNA, serum total bilirubin, and CD4 count at a clinic visit. Second line ART failure was defined as HIV-1 RNA >1000 copies/ml. Factors associated with ART failure were assessed using multivariate logistic regression model.
**Results:** 379 HIV-infected patients on second line ART were evaluated; 373 (98.4%) were on ATV/r-based therapy. Mean age was 40.7 years (SD±10.3), and 144 (38%) were male. Mean duration on second line ART was 41.9 months (SD±27.5), bilirubin level was 2.2 mg/dL (SD±1.6), and 256 patients (67.6%) had elevated bilirubin (>1.3 mg/dL). Overall, 35 (9.2%) patients were failing on second line ART. Among the ART failing vs. non-failing patients, bilirubin was elevated in 34.3% vs. 70.9% respectively (p< 0.001), although adherence by pill count was similar (62.9% vs. 60.5%, p= 0.783). The odds of ART failure were higher for young adults aged 25-40 years (adjusted Odds Ratio (aOR) 2.5, p=0.048), those with CD4 count< 100 (aOR 17.7, p< 0.001), and those with normal bilirubin levels (aOR 5.4, p< 0.001); but were lower for the overweight/obese patients (aOR 0.3, p=0.026). Poor adherence by pill count (aOR 0.7, p=0.4) and male gender (aOR 1.2, p=0.698) were not associated with increased risk of ART failure.
**Conclusions:** Among patients receiving ATV/r therapy, bilirubin levels better predicted ART failure than pill count adherence. Strategic use of bilirubin and viral load testing to target adherence counseling and support may be a cost effective ART response monitoring strategy for young adults and those with CD4 count < 100 who are at increased risk of second line ART failure.

# TRAINING, MENTORING, AND SUPERVISION TO IMPROVE HIV PROGRAMMES

## WEPEE614

### THE NEED TO DEVELOP EFFECTIVE HIV EDUCATION FOR MEDICAL STUDENTS IN CENTRAL ASIA: INSIGHTS FROM A CROSS-SECTIONAL STUDY AMONG MEDICAL STUDENTS IN ALMATY, KAZAKHSTAN

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**Background:** The HIV epidemic continues to expand in Central Asian countries including Kazakhstan. Having gained a foothold in the region through transmission in the injecting drug using communities, the epidemic has now bridged to the general population, largely through heterosexual sexual transmission. In Kazakhstan, HIV education was introduced into the medical curriculum in 2011. The purpose of the study was to learn of medical students' attitudes and behaviors around HIV and safe sexual practices.
**Methods:** Medical students in Almaty, the largest city of Kazakhstan were invited to participate in a cross-sectional study between April and November, 2013. The self-administered survey included questions about the participant's risk behaviours (e.g., injecting drug use, condom use), concerns related to HIV infection risk (e.g., medical care exposures, personal behaviours), and ability to identify HIV-positive individuals without asking their status. Bivariate analyses (Chi-square test or Fisher's Exact Test) and multivariate analysis (log-binomial regression) were conducted.
**Results:** A total of 647 medical students provided sufficient information to be included in these analyses. The majority of students were female (82.2%) and single (92.8%) with a median age of 21-22 years. Sexual activity was reported by 176 (27.2%) students with males much more likely to report sexual activity compared to females (74.8% vs. 16.9%, p< .0001). The majority of sexually active medical students believed they can determine if their partner is HIV-positive without asking or seeking a laboratory test. For males and females who were neither married, nor cohabitating, 65.6% and 68.3%, respectively, believed they usually could spot HIV-positive individuals. For married or cohabitating women, 92.6% believed they knew their partner's HIV status without asking. No association between perceived ability to ascertain HIV status and condom use was identified. In general, among non-cohabitating couples, about half of males and a quarter of females reported using condoms consistently with no significant difference based on perceived ability to ascertain HIV status of partners.

**Conclusions:** The medical students had a relatively naive perception of HIV risk, and their knowledge of risk did not translate to appropriate precautionary behaviours. Much work remains if the epidemic in Central Asia is to be contained.

## WEPEE615

### TASK SHARING: EVALUATION OF INTENSIVE CLINICAL MENTORSHIP ON MID-LEVEL PRACTITIONERS' MANAGEMENT OF TB AND HIV

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**Background:** In Uganda, majority of the health workforce are mid-level practitioners (MLPs), including clinical officers, registered nurses and midwives, most of whom are often ill-equipped to manage clinical cases of HIV/TB. The Government has embraced task-shifting and clinical mentorship of MLPs to help increase access to quality HIV/TB treatment. However, mentorship quality remains highly variable and inadequate. The study tested the effect of intensive onsite clinical mentorship on MLPs competence in clinical management of HIV/TB.
**Methods:** We conducted a cluster-randomized trial, in which four MLPs from each of five randomly selected health centers in rural Uganda were assigned and received one to one, onsite clinical mentorship for eight hours a week, every six weeks, over a nine-month period; while four MLPs from each of other similar five health centers acted as controls. All MLPs were assessed on HIV/TB knowledge, competence and practice at baseline, and immediately post-intervention. Knowledge and competence assessments respectively used case scenarios and clinical observation tools of patient care, administered at the participants' work-stations by blinded independent assessors. Statistical analysis was done using mixed effects linear regression model and accounted for the study design.
**Results:** Mean scores for knowledge increased by 14.5% (p<0.001) and competence by 27% (p<0.001) in the intervention arm relative to the control arm. There was a greater increase in knowledge scores among registered nurses/midwives (17.8%, p<0.001) compared to clinical officers (7.6%, p=0.278) in the intervention arm relative to the control arm. Similar improvements among both cadres were seen in competence scores (nurses/midwives improving by 28.3% [p<0.001] and clinical officers by 23.6% [p=0.007]). MLP in larger ART clinics showed greater improvements in both assessments. Relative to the control arm, the adjusted increase in mean knowledge scores for MLPs in the intervention arm was 16.7 (95% CI: 9.8, 23.6; p<0.001) and 25.9 (95% CI: 14.4, 37.5; p<0.001) for competence.
**Conclusions:** One-on-one clinical mentorship was an effective in improving MLP knowledge and competence in HIV/TB clinical management. As HIV treatment services scale-up, incorporating clinical mentorship as an approach for in-service training can improve the competence of the available workforce to deliver quality care.

## WEPEE616

### SUCCESSES AND CHALLENGES OF HIV MENTORING IN A PEPFAR-USAID PROGRAM IN MALAWI: THE MENTEE PERSPECTIVE

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**Background:** HIV clinical mentoring has been utilized for capacity building in Africa, but few formal program evaluations have explored mentee perspectives on these programs. EQUIP is a PEPFAR-USAID funded program in Malawi that has been providing HIV mentoring on clinical and health systems since 2010. We sought to understand the successes and challenges of EQUIP's mentorship program through interviews with mentees.
**Methods:** From June-August 2014 we performed semi-structured, in-depth interviews with EQUIP mentees who had received mentoring for ≥1 year. Interview questions were focused on program successes and challenges and were performed in English, audio recorded, coded, and analyzed with ATLAS.ti version 7. Inductive content analysis was used to identify themes from interviews and proportions of themes were calculated.
**Results:** Fifty-two mentees from 32 health centers were interviewed. The majority of mentees were 18-40 years old (79%, N=41), 69% (N=36) were male, 50% were nurses (N=26), 29% (N=15) medical assistants, and 21% (N=11) clinical officers. When asked whether EQUIP mentoring was successful, all mentees answered affirmatively (100%, N=52). The most common benefit reported by mentees (33%, N=17) was the increase in clinical knowledge that allowed them to initiate antiretroviral therapy (ART). One-third of mentees (N=17) reported that patient encounters benefitted from EQUIP's systems mentoring, including support for supply chain (basic supplies and equipment) and the provision of minor construction at clinics allowing for improved efficiency and creating a better environment for mentoring and patient care. The most common challenge (52%, N=27) was understaffing at facilities, with mentees having multiple responsibilities during mentorship visits resulting in impaired ability to focus on learning. Mentees also reported that lack of furniture/limited space in the clinic (46%, N=24) and problems with medication stock-outs (42%, N=22) created challenges for the mentoring process.
**Conclusions:** EQUIP's systems-based mentorship and infrastructure improvements allowed for an optimized environment for clinical training. Shortages of health workers at sites pose a challenge for mentoring programs because they pull mentees away from learning experiences to perform duties outside of the HIV clinic. Evaluations of existing mentoring models are needed to continue to improve upon mentoring strategies that result in sustainable benefits for mentees, facilities, and patients.

## WEPEE617

### IMPROVING ACCESS TO HIGH-QUALITY CARE AND TREATMENT FOR PEOPLE LIVING WITH HIV (PLHIV) IN NAMIBIA USING THE ECHO (EXTENSION FOR COMMUNITY HEALTHCARE OUTCOMES) MODEL OF VIRTUAL TRAINING AND MENTORING

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**Background:** Project ECHO ® is an educational initiative started in 2003 at the UNM whose mission is to expand access to high quality medical care in rural and underserved communities across NM and globally. The ECHO model uses a combination of videoconferencing technology for case-based learning, promotion of best practices, and monitoring of outcomes to support professional communities of learning and practice. The Namibia HIV and STI Control program adapted and implemented this model to support its goal to improve HIV care quality and capacity, empowering front line care teams with the knowledge and skills needed to ensure effective clinical management of HIV.
**Description:** The Namibia Project ECHO HIV TeleECHO Clinic, a collaboration between the Namibia MOHSS, CDC Namibia, CDC Atlanta, EGPAF, Project ECHO, and I-TECH, was launched in November 2015, and offers an opportunity for doctors, nurses, pharmacists, and laboratorians at ten pilot ART sites to meet virtually on a weekly basis for didactic training using a standard HIV care and treatment curriculum and review of complex educational cases. The didactics allow participants to earn up to one hour of continuing professional development credit each week. A one-day initiation training for providers and clinical mentors was held prior to the launch. Participants completed baseline assessments of HIV care and treatment knowledge and self-efficacy evaluations. These assessments will be repeated after completion of the nine-month pilot to evaluate if ECHO has increased clinicians' self-efficacy to provide HIV care and treatment services.
**Lessons learned:** Namibia MOHSS successfully launched the first HIV TeleECHO clinic in Africa. Six weekly clinics have been held with 102 unique participants. Fifty-one percent of participants were nurses and 12% doctors. The improving infrastructure of 3G and Wi-Fi technologies in Africa offer an opportunity to expand medical education to remote areas.
**Conclusions/Next steps:** Weekly HIV ECHO promotes interdisciplinary, case-based learning and enhances extension of technical support to remote settings. Such levels of provider participation indicate acceptance and need for this model of mentorship and training. TeleECHO clinics will be expanded to additional sites, if participation rates remain high and provider knowledge and self-efficacy improve.

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Wednesday 20 July Poster Exhibition

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Late Breaker Posters

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## WEPEE618

### THE EFFECT OF A DIFFERENTIATED MSM SEXUAL HEALTH TRAINING PROGRAMME FOR CLINICIANS AND CLINICAL SUPPORT STAFF ON KNOWLEDGE IMPROVEMENT AND HOMOPHOBIC ATTITUDE ABATEMENT IN THE WESTERN CAPE, SOUTH AFRICA

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**Background:** While most attention has been paid to offering clinicians MSM training in Africa, there is also a need to offer training to clinical support staff as both groups come into contact with MSM at public facilities. Here it is also important to interrogate a key assumption underpinning clinic training programmes; that an improvement in MSM knowledge is accompanied by a reduction in homophobic attitudes.
**Methods:** In 2015, 83 clinicians and 113 support staff from 5 clinics in the Western Cape undertook *Health4Men MSM Competency training*. Both clinicians and support staff undertook 'foundational' training covering the need to acknowledge and appropriately address MSM health needs. Clinicians also undertook 'advanced' training covering technical details for appropriate sexual health and HIV care. Surveys were administered prior and immediately after training.
**Results:** Post-training improvements in foundational knowledge and reductions in homophobia were significant for both clinicians and support staff (p< 0.001).
Foundational knowledge scores were lower for support staff compared to clinicians prior to training (p< 0.01) and remained so post-training (p< 0.05). Among support staff, the relationship between foundational knowledge and homophobic attitudes was significant pre-training (r (113) = -0.427, p< 0.001) and post-training (r (113) = -0.388, p< 0.001).
For clinicians, advanced knowledge improved overall (p< 0.001) but its association with homophobic attitudes was only significant pre-training (r (83) = -0.266 p< 0.05) and not post-training (r (83) = -0.097, p=0.384).
Participants that scored above 82% in foundational knowledge had a significantly greater probability of showing improvement in homophobia score compared to those who scored below this threshold (p< 0.01).
**Conclusions:** A need clearly exists not just for clinicians but also support staff to undergo MSM training, with support staff scoring significantly lower in foundational knowledge than clinicians before and after training. Data also shows that a reduction in homophobic attitudes is most apparent only after a threshold in foundational knowledge score is obtained for both groups. Clinicians' advanced knowledge necessary to offer appropriate care need not be associated with a reduction in homophobic attitudes. Policy workers must appreciate the relationship between knowledge improvement and homophobia abatement is not straightforward when considering future training initiatives.

## WEPEE619

### BETTER HIV CARE AND ENGAGED HEALTH WORKERS: A MIXED METHODS STUDY FROM TANZANIA

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**Background:** Low- and middle-income countries are experiencing notable heath worker shortages, challenging the provision of quality HIV services at scale. In 2008, the Tanzanian Ministry of Health and Social Welfare declared a health workforce crisis and a plan to increase the workforce by five-fold. By 2013, there were 64,449 health workers, an increase from 47,000 in 2007. An engaged worker is one who is involved, satisfied, and has enthusiasm for their work. Engaged workers also perform better and are more productive. This study sought to identify characteristics of an engaged health workforce and influencing factors; explore the relationship between engagement, performance and retention; and validate a tool to measure engagement.
**Methods:** Self-administered surveys were completed by 1330 health workers; qualitative interviews were conducted with 50 health workers. Facility-level data were gathered via a survey and record review at 183 randomly selected facilities from 27 districts and 6 regions. Principle Components and Cluster Analyses were performed. Content analysis was conducted.
**Results:** Four characteristics of an engaged worker were identified: being a change agent (α 0.75); being accountable (α 0.69); job satisfaction (α 0.72); and equitable and client-centered care (α 0.58). Perceived support from supervisors (α 0.70) and perceived adequacy of competencies to perform (α 0.60) were found to influence engagement. Qualitative data indicate that feedback and praise from colleagues and patients impacted engagement. Engagement was not associated with perceived adequacy of resources, but interviews revealed that insufficient human and material resources can contribute to job dissatisfaction. Less than 10% of health workers intended to change jobs in the next two years; engagement characteristics did not determine health worker intentions. Some interview respondents felt changing jobs would negatively impact services while others shared that leaving a job for further education was necessary for professional advancement.
**Conclusions:** By engaging health workers, the existing health workforce can be optimized to improve and scale-up quality HIV services. Strengthening relationships with immediate supervisors, supporting quality improvement efforts, and strengthening peer learning to improve competencies can improve health workforce engagement.

## WEPEE620

### AN ASSESSMENT OF PERCEIVED AND OBJECTIVE HIV KNOWLEDGE AMONG COUNSELORS PROVIDING HIV DIAGNOSTIC SERVICES IN SOUTH-EASTERN MALAWI

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**Background:** Reaching the UNAIDS 90-90-90 goals requires significant scale-up in the number of staff trained to provide HIV diagnostic services (HDS) including HIV Testing and Counseling (HTC), Early Infant Diagnosis (EID), and viral load (VL). Training and mentorship are necessary to ensure high quality service delivery, however there is a paucity of evidence describing current knowledge gaps to guide these efforts. Our objective in this study is to assess perceived and objective knowledge of HDS among active counselors in Malawi.
**Methods:** We provided a self-administered anonymous survey to counselors employed by the Malawi Ministry of Health (MOH) in six districts within Malawi's Southeast Zone. Perceived knowledge was assessed using a standard four-point Likert scale and objective knowledge measured using multiple-choice problem-based scenarios based on MOH guidelines. The survey was administered over a 6-month period in 2015. Data was summarized by descriptive statistics (mean, sd, frequency and percentage). Spearman correlation coefficient was calculated to assess the correlation between objective and perceived knowledge using summarized scores by topic.
**Results:** 216 counselors from 66 facilities (catchment area population=1.9 million) participated in the study. Mean(SD) age was 36(5.8) and 73(33.8%) were female. 170(77.3%) had provided testing services in the previous month. The majority (68%) rated themselves as "knowledgeable" or "expert" on self-assessment. Mean (SD) overall score on objective assessment was 84%(9%) Scores were highest on questions about early infant diagnosis (EID) (91%) and HTC (84%). Scores were lower on questions about viral load (69%). Overall, perceived and objective knowledge were positively correlated (0.23, p=0.0008). There was a positive correlation between perceived and objective knowledge in the areas of viral load (0.32, p< 0.0001) and HTC (0.26, p< 0.0001). Perceived and objective EID knowledge was not significantly correlated.
**Conclusions:** Counselors providing HIV diagnostic services in Malawi meet expected knowledge standards and perform particularly well on questions addressing EID and HTC. Knowledge gaps in viral load testing should be addressed. The correlation between perceived and objective knowledge suggests that counselor self-assessment may be an appropriate surrogate for objective assessment in setting training priorities.

## WEPEE621

### ASSESSMENT OF KNOWLEDGE OF PEDIATRIC HIV CARE AND TREATMENT AMONG HEALTH WORKERS IN SOUTH-EASTERN MALAWI

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**Background:** 2.6 million children under 15 are living with HIV globally, but 1.8 million lack access to lifesaving treatment. To close the treatment gap and provide quality care, well-trained health workers (HCW) are needed. Focused mentorship can equip HCWs to diagnose HIV in children and administer quality care, but there is a paucity of research on specific mentorship needs. Our objective was to assess self-perceived and objective knowledge of pediatric HIV topics (PMTCT/EID, diagnosis, HIV-related diseases, staging, treatment/monitoring) among HCW caring for HIV-infected patients in Southeastern Malawi.
**Methods:** We provided a self-administered anonymous survey to HCWs in six districts (catchment area 1.9 million) within Malawi's Southeast Zone. Perceived knowledge was assessed using a standard four-point Likert scale (1-beginner,2-somewhat knowledgeable, 3-knowledgeable, 4-expert) and objective knowledge measured using multiple-choice problem-based scenarios based on 2014 Malawi Ministry Of Health ART-PMTCT guidelines defining expected standard knowledge. The survey was piloted, refined, and administered over a 6-month period. Data was entered into an MSAccess database and summarized by descriptive statistics (mean, sd, frequency, percentage). Spearman correlation coefficient was calculated to assess correlation between objective and perceived knowledge using summarized scores by topic.
**Results:** 292 HCW from 66 facilities participated. Mean(SD) age was 32.9(10.1) years, 56.9% were female, 32.9% were clinicians (Medical/Clinical Officers and Medical Assistants) and 66.4% nurses. Most providers (79.1%) had treated patients with HIV in the previous month. Mean(SD) self-assessed knowledge score was 2.79 (0.66). Mean(SD) objective score was 71.9%(6.4%). Scores were highest in EID/PMTCT (81%) and poor in pediatric TB(47%). Treatment/monitoring and staging were also suboptimal. Overall perceived and objective knowledge were positively correlated(p< 0.0001).

| Topic | Self-Assessment Score (mean, sd) | Objective Assessment Score (mean, sd) | Coefficient | p-value |
|---|---|---|---|---|
| EID/PMTCT | 2.9 (0.86) | 81% | 0.24 | 0.69 |
| Diagnosis | 2.87 (0.79) | 76% | 0.22 | 0.0002 |
| HIV-Related Diseases | 2.64 (0.73) | 71% | 0.14 | 0.0191 |
| TB (subtopic) | 2.25 (0.88) | 47% | | |
| Staging | 2.72 (0.87) | 68% | 0.23 | <0.0001 |
| Treatment and Monitoring | 2.81 (0.71) | 64% | 0.26 | <0.0001 |
| Overall Score | 2.79 (0.66) | 71.9% (6.4) | 0.31 | <0.0001 |

*[Perceived and Objective Assessment Results]*

**Conclusions:** HCW in Malawi have knowledge deficits in pediatric HIV, with notable gaps in tuberculosis, treatment/monitoring, and staging. Focused attention to these may improve quality care for HIV-infected children. The correlation between perceived and objective knowledge suggests that self-assessment may be an appropriate surrogate for objective assessment in setting training priorities.

## WEPEE622

### PARTNERING TO STRENGTHEN OBSTETRICS AND GYNECOLOGY (OB/GYN) TRAINING AS A WAY TO PREVENT NEW HIV INFECTIONS IN ETHIOPIA

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**Background:** Ethiopia is home to approximately 800,000 people living with HIV (PLHIV). Young women are between two and six times as likely to be HIV-infected compared to young men. HIV prevalence among pregnant women has steadily decreased in the last decade and sites that provide prevention of mother-to-child transmission (PMTCT) services have expanded. However, PMTCT coverage and uptake by women in Ethiopia is still low. In 2011, only 33.4% of pregnant HIV-positive women received PMTCT services and only 9.3% of HIV-exposed infants received ARV prophylaxis.
**Description:** In 2013, the American International Health Alliance (AIHA) began managing an institutional, voluntary, peer-to-peer institutional partnership between the University of Michigan in the United States and St. Paul Hospital Millennium Medical College (SPHMMC), a tertiary level referral hospital, in Addis Ababa. The partnership provided pre-service and in-service training to Ob/Gyn residents to improve the overall quality of women's healthcare, with a specific focus on PMTCT and cervical cancer screening and treatment.
**Lessons learned:** In two years, the institutional partnership enabled SPHMMC Ob/Gyn residents to significantly increase the number of pregnant women who received PMTCT services. For example, the number of pregnant women who tested for HIV and knew their status during pregnancy, labor and delivery, and the postpartum period increased by more than 45.6% from 2,587 to 3,767. Services for HIV-exposed infants also improved: the number who received an HIV test within two months of birth increased from zero to 44; the number of HIV-exposed infants who received co-trimoxazole prophylaxis within two months of birth more than doubled, and the number who received antiretroviral (ARV) prophylaxis more than tripled. The Ob/Gyn residents provided cervical cancer screening, which had never been provided before, to 1,192 women ages 30-49. Almost 20% had precancerous or cancerous lesions and were able to receive treatment.
**Conclusions/Next steps:** AIHA's twinning model, which depends on voluntary contributions of time and technical assistance from both partner institutions, has the potential to build specialized healthcare worker capacity and significantly improve and expand access to HIV prevention, care, and treatment services.

## WEPEE623

### LAY COUNSELORS EMBRACE NEW TECHNOLOGY IN HIV CARE IN BOTSWANA

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**Background:** HIV Care is improving over time. This is in line with the global goal of 90-90-90. HIV care is also increasingly becoming costly, especially in less developed countries like Botswana. New technology is continuously being introduced with the aim of facilitating affordable, efficient, and improvement of management of HIV patients. Task-shifting continues to be an option in Botswana. Lay Counsellors are now involved in electronic data collection using tablets and performing Point of Care CD4 testing using a portable PIMA Analyser.
**Description:** Tebelopele Voluntary Counselling and Testing Centre (TVCT) is participating in the Botswana Combination Prevention Project (BCPP), which seeks to investigate the impact of combination of HIV prevention services in reducing HIV incidence over 36 months in 16-64 year old residents of Botswana. TVCT provides HIV testing and counselling to all residence aged 16 - 64 years in the fifteen communities across Botswana. TVCT recruited and trained seventy (70) Lay Counsellors and deployed them to provide home and mobile testing to eligible residents in each of the communities. Lay Counsellors use tablets for electronic data collection, and perform Point of Care CD4 testing for clients with HIV positive results. Later during the implementation of the study, Lay Counsellors were also trained in the preparation of Dry Blood Spot for Viral Load Testing. Quality Assurance procedures both for data collection and laboratory processes have been established. Electronic data collection provides timely data to guide client management decisions. Point of Care CD4 eliminates the challenge of transporting samples to far off laboratories and the delay in the provision of the CD4 test result back to the patient.
**Lessons learned:** The Lay Counsellor cadre continues to be effective and cost-effective cadre in the provision of HIV prevention and care interventions. Lay Counsellors are trainable and easily adapt to change and innovation.
**Conclusions/Next steps:** With the diminishing resources, governments should continue to adopt and harness the Lay Counsellor cadre as per the 2015 WHO HIV Testing Services Guidelines. The current funding landscape dictates that governments and NGOs do more with less. Optimising efficiency in a cost effective manner is key to sustainability.

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## WEPEE624

### SCARLET ALLIANCE NATIONAL TRAINING AND ASSESSMENT PROGRAM, DIPLOMA IN COMMUNITY DEVELOPMENT: PROVIDING A NATIONALLY CONSISTENT, BEST PRACTICE APPROACH TO PEER EDUCATION FOR SEX WORKERS

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**Background:** Sex worker peer-education has been central to Australia's successful HIV/STI response and its value and effectiveness is widely recognised as best practice, including by the UN and Government. The role is complex and highly skilled, yet the skills and knowledge of peer-educators is not acknowledged or valued.
**Description:** Scarlet Alliance National Training and Assessment Program (SANTAP) aims to increase the workforce development of, and number of, trained, qualified sex worker peer-educators. SANTAP sets a national benchmark for sex worker peer-education, providing a set of nationally-recognised qualifications as well as nationally-consistent, best-practice approach to sex worker peer-education. Sex worker peer-educators with at least one year experience are guided by qualified sex worker peer-assessor to identify their skills, prior experience and learning process as evidence to attain a national qualification-the Diploma of Community Development.
**Lessons learned:** It is often the case peer-educators have acquired skills and knowledge informally in the workplace with little access to nationally structured systematic training and assessment. SANTAP provides an opportunity to hone existing skills and examine complexities involved in providing peer-education to their own community and assists in maximising the effectiveness of peer-education programs at sex worker organisations through provision of workforce development and formal accreditation of staff.
**Conclusions/Next steps:** Importantly, the SANTAP is an opportunity for peer-educators to have their work validated and confirmed. The skills and knowledge that inform the complex work of sex work peer-education have never been formally recognised. Recognition assessment makes it possible for sex worker peer-educators to experience respect for and validation of, their skills and competence.

# HIV WORKFORCE: ENUMERATION, REMUNERATION, MOBILITY, TASK SHIFTING AND MULTISKILLING

## WEPEE625

### THE SOCIAL ACCEPTABILITY OF COMMUNITY HEALTH WORKER-LED HIV-TESTING: FINDINGS FROM A MIXED-METHODS STUDY IN SWAZILAND

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**Background:** Community health worker (CHW)-led HIV testing has been proposed as a key strategy for increasing HIV testing coverage. The CHW Performance Logic Model posits that CHWs' relationship with the community impacts CHW performance. Community trust in CHWs is likely to be of particular importance for CHW-led HIV testing. To inform the model, this mixed-methods study aims to ascertain trust in CHWs and attitudes towards CHW-led HIV testing in Swaziland.
**Methods:** The data collection tools were designed to assess factors impacting CHW performance as posited by the CHW Performance Logic Model. From June to September 2015, we conducted a household survey covering 2,000 households across 100 enumeration areas using two-stage stratified cluster random sampling in two of Swaziland's four regions. We also carried out 19 semi-structured focus group discussions (FGDs) with an average of nine participants, stratified by gender, in four rural and four urban communities in Swaziland. Qualitative data was coded and analyzed using an inductive approach.
**Results:** 48.7% (905/1,859) of household survey respondents stated that they do *not* trust national CHWs (called RHMs) with confidential medical information. Having ever been visited by a RHM was highly predictive of distrusting RHMs with confidential medical information (OR: 0.32; 95% CI: 0.25-0.42; p< 0.001). Similarly, FGD participants expressed hesitance toward receiving HIV tests from RHMs due to concerns around confidentiality and inadequate training of RHMs in providing HIV tests. Two main reasons for confidentiality concerns were that RHMs are
1) members of the same community as their clients, and
2) mostly female. Social acceptability of HIV testing from CHWs in general, as opposed to RHMs, was higher with 67.7% (1,468/2,168) of household survey respondents trusting CHWs with medical information.
**Conclusions:** Low social acceptability is a significant obstacle to CHW-led HIV testing in Swaziland, particularly if implemented through RHMs. Our findings suggest that increasing community trust in RHMs' technical skills and their ability to maintain confidentiality will substantially improve social acceptability, and thus their performance for HIV services. Furthermore, assigning RHMs to work in communities other than the ones in which they reside will likely increase uptake of services for high stigma conditions.

## WEPEE626

### AN ASSESSMENT OF DECENTRALIZATION OF ANTIRETROVIRAL THERAPY IN MYANMAR

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**Background:** In the context of expansion plans for improved antiretroviral therapy (ART) coverage, the National AIDS Programme (NAP) under the Ministry of Health Myanmar, with support from WHO, UNAIDS, CDC/PEPFAR, and with involvement of the implementing partners, conducted an ART decentralization assessment of 13 decentralized ART sites across the country in March 2015 by a joint team of national and international experts.
**Methods:** The decentralized (DC) ART sites' staff were interviewed using an assessment questionnaire to understand the operations, capacity and management of the sites. Focus group discussions were organized with the site director, partners, and the representatives of PLHIV networks and NGOs, to understand issues related to successes, challenges, and proposed actions to improve access to ART. Short patient interviews were conducted with 3-5 PLHIV who were receiving services from the respective sites to understand their perception of quality of and satisfaction with services.
**Results:** Planning, and coordination partnerships have been established at central and district levels, but not yet at the ART centre/site level. Patient transfer procedures are generally well understood and followed. Task shifting was observed in some DC sites. Most of the essential services: HIV testing and counselling, TB screening and treatment, PMTCT and STI services were available on site, or through referral. In general, patients reported satisfaction with services in the DC sites. However, viral load (VL) and dry blood spots (DBS) for early infant diagnosis (EID) are not currently available in most of the sites. CD4 testing was not available for most of the sites, to which quality assurance (QA) has not been observed. There is generally a lack of system to assess the performance of the DC site, especially with respect to the cascade of HIV services.
**Conclusions:** Initial success has been achieved in a number of the ART decentralized sites with scale up of HIV service provision and enhanced staff'scapacity in Myanmar. Continuous efforts are required to further strengthen planning, coordination, partnerships, monitoring and supervision, and expand key services for HIV identification, ART initiation, retention and virologic suppression for all people in need.

## WEPEE627

### HUMAN RESOURCE FOR MANAGEMENT OF HIV/AIDS: A REVIEW OF NURSE-INITIATED AND MANAGED ANTI-ETROVIRAL THERAPY (NIMART) IN PRIMARY HEALTH CENTERS (PHC) IN AKWA IBOM STATE, NIGERIA

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**Background:** The provision of antiretroviral treatment in Akwa Ibom is mainly offered in secondary facilities with physicians providing ART management. However, the paucity of physicians as well as skewed distribution of healthcare workers toward urban areas resulted in rural areas being underserved. This has restricted access to ART treatment in some parts of the state. In line with the task shifting

strategy to increase access to high quality HIV/AIDS services, NIMART was introduced in Akwa Ibom to increase access to ART services in primary health centers (PHC) in the state.
**Description:** Nurses in existing PHC already offering PMTCT services were trained in ART management. The PHCs were upgraded structurally with the provision of service points, laboratory equipment, consumables, data management tools and commodities. Continuous Quality improvement activities were provided by Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS) and Ministry of Health Clinicians to ensure conformity with the national guidelines on ART. Prompt referrals for specialized care where necessary were ensured in the NIMART PHCs.
**Lessons learned:** The 9 SIDHAS supported NIMART sites commenced ART management in June 2014 with 14 clients placed on treatment. This progressively increased to 3236 clients by November 2015. Quarterly Data Quality Assessment conducted in June 2014 - November 2015 showed comparably the data quality in NIMART site as 85%, and Secondary health facilities at 89%.
Also retention rates across NIMART health facilities ranged from 50 - 78% compared to Secondary health facilities ranging from 55 - 80%.
Findings also showed that management of HIV/AIDS can be implemented at PHCs by Nurses and lower cadre of staff when properly mentored and supported, however documentation of HIV services was reported as voluminous.
**Conclusions/Next steps:** Implementing agencies to ensure existing ART training manuals are modified to fit the need of nurses and other cadre of staff in the PHCs. Documentation of ART services in the PHCs to be further simplified to ensure staff workload is manageable. Continuous mentorship and quality improvement in the PHCs should be maintained to ensure outcomes of ART management in the PHCs remain comparable to higher levels of healthcare.

## WEPEE628

### THE HIV DIAGNOSTIC ASSISTANT: PRELIMINARY FINDINGS FROM A NOVEL HIV TESTING CADRE

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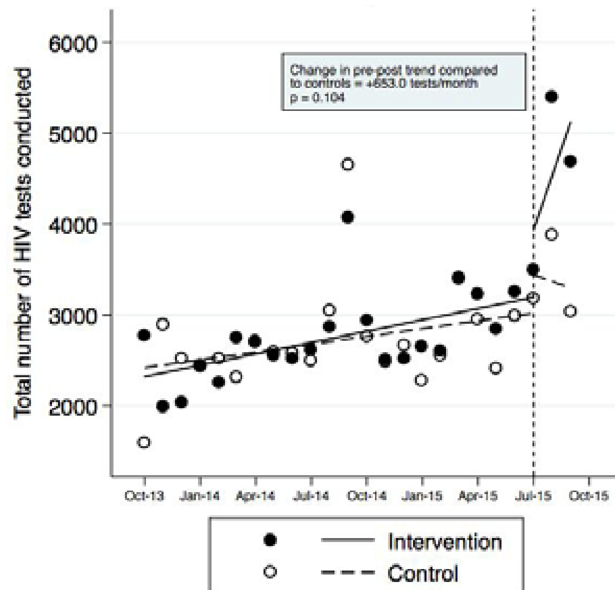
**Background:** New strategies for HIV testing and counselling (HTC) are needed to meet UNAID's 90-90-90 targets. One strategy being piloted in Malawi is the HIV diagnostic assistant (HDA) cadre. Previously, health workers were trained to provide HTC, but maintained additional responsibilities. In contrast, HDAs are tasked almost exclusively with HIV testing. In this observational study, we describe the early impact of HDA deployment.
**Methods:** Thirteen health facilities in one district of Malawi's Southeast Zone deployed HDAs in July 2015. We used routine data to assess number of HIV tests done per month pre-post HDA deployment. Thirteen controls in the Southeast Zone were matched to treatment sites according to mean level and rate of change in pre-intervention (Oct 2013-Jun 2015) monthly HIV tests, with control sites paired at p>0.10 to minimize bias. Multiple-group interrupted time series analysis was conducted on the aggregated number of HIV tests done at treatment and control sites to compare pre-post trends.
**Results:** Treatment and control groups were similar at baseline (Table 1). We detected a monthly increase in the pre-post monthly HIV tests trend compared to the change observed in controls (+653 tests/month, p=0.104, Figure 1). Post-intervention, treatment sites recorded more HIV tests (4,528 vs 3,367, p=0.0657) and a higher rate of increase in monthly HIV testing (593.4 vs -71.5, p=0.2031) compared to controls.

| Pre-intervention | Treatment | Control | p-value |
|---|---|---|---|
| Number of HIV tests done per month—mean | 2,735 | 2,703 | 0.4221 |
| Monthly rate of change of HIV tests done—mean | 41.6 | 28.7 | 0.5380 |
| **Post-intervention** | | | |
| Number of HIV tests done per month—mean | 4,528 | 3,367 | 0.0657 |
| Monthly rate of change of HIV tests done—mean | 593.4 | -71.5 | 0.2031 |

*[Table 1. Pre-post number and rate of change in monthly HIV tests]*




*[Figure 1. Impact of HDA deployment, treatment vs. control sites]*

**Conclusions:** Following HDA deployment there was a trend towards an increase in pre-post HIV monthly testing relative to control sites. However, the small number of post-intervention observations limits the significance of our findings. Further analysis is needed as data becomes available to better ascertain the magnitude and durability of the effect.

## HUMAN RESOURCES DEVELOPMENT FOR A MULTI-SECTORAL RESPONSE

## WEPEE629

### THE GAIA SCHOLARSHIP PROGRAM: ENFORCING HEALTH WORKER PUBLIC SERVICE COMMITMENTS TO INCREASE HUMAN RESOURCES FOR HEALTH AND IMPROVE ACCESS TO QUALITY HEALTH CARE IN MALAWI

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**Background:** To achieve Sustainable Development Goal (SDG) 3, good health and well-being, and the UNAIDS 90-90-90 targets, it is necessary to build stable, fully-staffed health care systems that provide universal access to and equity in essential health services. In Malawi, a country where the public sector nursing vacancy rate is 65%, every nurse graduated and retained in the public sector is a vital human resource.
**Description:** For the past decade, in collaboration with the Malawi Ministry of Health, and since 2010 with funding from USAID, The Global AIDS Interfaith Alliance (GAIA) Nursing Scholarship Program has worked towards:
1. increasing the number of nurses graduating from Malawian nursing institutions and
2. increasing the number of nurses employed and retained in Malawi's public health sector. By providing scholarships comprising tuition, stipends, material and psychosocial support, GAIA has supported 485 Malawian nursing students, primarily orphaned young women, who have agreed to a public sector service commitment of four to five years post-graduation.
**Lessons learned:** By the end of 2015, 239 scholars had graduated (96% graduation rate) of which 194 have attained licensure (98% licensing rate) and 45 are preparing for licensure exams. One third of all GAIA scholar graduates have been sponsored by the public sector to upgrade their degree post-graduation.
One hundred and twenty-two scholars, monitored at public health facility deployments biannually post-graduation, have completed their public sector service commitment (95% completion rate). Moreover, 81% (29/36) of those who have completed at least three years of work post-commitment have been retained in the public sector. Of the 16 scholars no longer working in the public sector post-commitment,
14 continue to work as nurses within Malawi at private health centers or NGOs. Two have been lost to follow-up.

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| | Scholars successfully completing public sector service commitment | Scholars completing public sector service commitment + 1 year | Scholars completing public sector service commitment + 2 years | Scholars completing public sector service commitment + 3 years |
|---|---|---|---|---|
| % Retained in the public sector | 95% | 94% | 91% | 81% |

*[Scholars retained in the public sector 0-3 years post service commitment]*

**Conclusions/Next steps:** Programs that emphasize and enforce public sector service post-graduation can be successful in ensuring nurses remain working where needed most. The service commitment affords nurses the opportunity to become established within the public health system, which provides secure employment and opportunities to advance academic qualifications.

## WEPEE630

### SCALING ACCESS TO FAMILY FOCUSED ANC/PMTCT B+ SERVICES VIA TASK-SHARING TO PRIVATE SECTOR NURSES AND MIDWIVES: ADVANCING POLICY AND ACTUALIZING COMMUNITY-BASED PRACTICE TO DELIVER AN AIDS-FREE GENERATION

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**Background:** Nurses and midwives are often available in rural and underserved areas where prescribing physicians are lacking. However, they often have limited formal authority to prescribe and deliver antiretroviral therapy (ART). The USAID-funded SHOPS project implemented a two year policy and practice intervention enabling Tanzania's nurses and midwives to prescribe and deliver the full spectrum of PMTCT and ART services.
**Description:** At the national level, SHOPS supported the Tanzanian Nursing and Midwifery Council (TNMC) to develop the country's first scope of practice (SOP) for nurses and midwives. The project then implemented the SOP's expanded prescribing and task-sharing authorities for PMTCT/ART by integrating family-focused PMTCT and maternal ART services at 53 community-based facilities affiliated with the Private Nurses and Midwives Association of Tanzania (PRINMAT). During just the first nine months of service implementation (June 2014 through Feb 2015) PRINMAT facilities provided HIV testing to a total of 18,942 men and women as part of integrated ANC/PMTCT B+ services. The facilities also progressively increased the number of HIV positive pregnant women and HIV exposed infants accessing integrated care via PRINMAT's private sector network.
**Lessons learned:** Despite early challenges in routinely accessing PMTCT commodities, the project empowered nurses and midwives to play a much stronger and formal role in Tanzania's AIDS response. Community-level implementation further demonstrated that nurses and midwives working in the private sector can be successfully leveraged for rapid scale-up and extension of HTS, PMTCT and ART services to both women and men as part of family-focused integrated services.

| Service Indicator | June 2014 through March 2015 |
|---|---|
| # of HTS provided to pregnant women | 7,017 |
| # of individual HIV Testing Services (HTS) provided | 18,942 |
| Increase in provision of HTS from baseline | Nine fold increase (from 227 HTS /mnth to 2,105/mnth) |
| Pregnant HIV+ women enrolled on ART | 317 |
| Number of HIV+ deliveries | 157 |
| Increase in number of HIV+ deliveries receiving PMTCT intervention via PRINMAT | 5.6 fold increase (from 3/mnth to 17/mnth) |
| Number of HIV exposed infants initiated on short course NVP | 130 |
| # of HIV exposed infants provided with early infant diagnosis (EID) | 47 |
| # of HIV exposed infants testing negative 6 weeks mark post-natal | 42 (89.3%) |

*[Outcomes of PRINMAT Integrated ANC/PMTCT B+ Service Delivery]*

**Conclusions/Next steps:** Nurses and midwives in the private sector have a latent capacity to be unleashed by expanded scopes of practice that advance task-sharing and multi-sectoral collaboration towards scaling PMTCT B+ and ART services. Mobilizing these health cadres can be a much-needed game-changer in rural and underserved communities of high-HIV prevalence countries pursuing the 90-90-90 goals.

## WEPEE631

### HIGH LEVELS OF SELF-REPORTED PERSONAL ACCOMPLISHMENT AMONGST THREE CADRES OF HEALTHCARE WORKERS: BASELINE FINDINGS FROM THE FIRST ROUND OF THE HPTN 071 (POPART) STIGMA ANCILLARY STUDY

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**Background:** There is increased recognition of the impact of work stress and burnout on healthcare workers (HCWs) in low and middle income countries with a high burden of disease and limited resources. HPTN 071 (PopART) is a cluster-randomised trial evaluating the impact of a multi-component intervention, including universal access to ART, on HIV incidence. This ancillary study examined levels of HIV-related stigma and job stress among HCWs, and included an open cohort of HCWs involved in implementing the PopART intervention. We describe self-reported job stress amongst three cadres of HCWs in Zambia and South Africa at baseline (entrance into the cohort).
**Methods:** Three types of HCWs participated: (a) facility-based worker, (b) community-based care worker, and (c) Community HIV-Care Providers (CHiPs - employed to deliver the community-based PopART intervention). The former two categories of workers were government employees while CHiPS were employed by the study. All workers were invited to participate. The questionnaire was self-administered using electronic data capture devices. Job stress is assessed using the Maslach Burnout Inventory (adapted for language competency) which groups items into three domains:
1) emotional exhaustion
2) depersonalisation (in attitudes toward clients) and
3) personal accomplishment. Items are displayed in English with translations available on the device or from the research assistant.
**Results:** Of 2818 eligible HCW's, 66.5% participated at baseline, a total of 1,875 HCWs (Zambia = 1,244; South Africa = 631) 300 also reported living with HIV. Self-reported levels of personal accomplishment are uniformly high, (82% in Zambia; 77% in South Africa). Low levels of job stress are reported across job cadres in both countries. Moderate to high levels of emotional exhaustion were reported by 37% of HCWs in Zambia and 33% of HCWs in South Africa. Moderate to high levels of depersonalization were reported by 10% of Zambian HCWs and 15% of South African HCWs.
**Conclusions:** The high levels of personal accomplishment reported by HCW's may build resilience and offer a protective effect from burnout. The surprisingly low levels of job stress in these high burden contexts is encouraging. Additional research is needed to understand how HCWs perceived accomplishments impact quality of care and service delivery.

## WEPEE632

### BURNOUT AND SELF-REPORTED PATIENT CARE AMONGST HEALTH CARE WORKERS PROVIDING HIV CARE IN MALAWI

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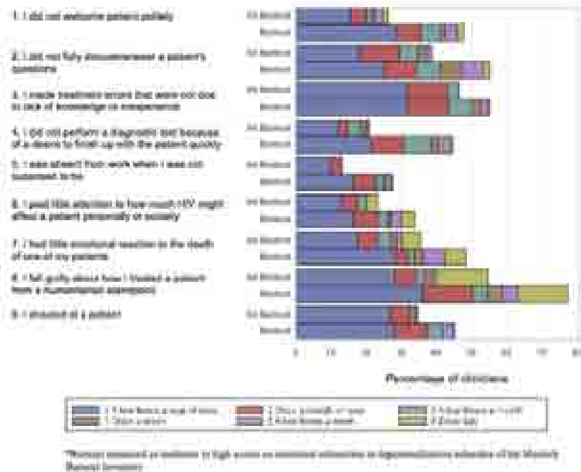
**Background:** Since 2002 there has been a > 100-fold increase in the number of persons accessing antiretroviral treatment, without a concomitant increase in healthcare workers (HCWs) providing HIV care. Burnout is a syndrome of emotional exhaustion (EE), depersonalization (DP), and a sense of low personal accomplishment (PA). Burnout amongst HCWs may have a negative impact on services. The aim of this study was to determine the prevalence of burnout amongst HCWs in Malawi and explore its relationship to self-reported patient care practices.
**Methods:** Cross-sectional study amongst HCWs providing HIV care in 66 facilities, across 6 high HIV prevalence districts in southeastern Malawi. Burnout was mea-

sured using the Maslach Burnout Inventory and defined as scores in the mid-high range on the EE or DP subscales. Nine questions developed for this study assessed self-reported patient care. Surveys were administered anonymously. Data was summarized by descriptive statistics (mean, SD, frequency). Chi-square test was used to test the association between burnout and any self-reported suboptimal patient care practices.
**Results:** Among 292 HCWs (mean (SD) age 33 (10) years, 57% female, 56% married) 56% met criterion for burnout. In the three dimensions of burnout, 47% reported moderate-high EE, 28% moderate-high DP. Participants reported several suboptimal patient care practices including making mistakes in treatment not due to lack of knowledge/experience (51%), shouting at patients (41%), and not performing diagnostic tests due to a desire to finish up quickly (34%). Compared with non-burned-out HCWs burned-out HCWs were significantly more likely to self-report any suboptimal patient care practice (93% vs. 81%; P=0.001).



[Figure 1. Relationship of burnout to self-reported suboptimal patient care practices]

**Conclusions:** Burnout was common among HCWs providing HIV care and was associated with self-reported suboptimal patient care. Additional research is needed to identify factors that contribute to or protect against burnout to inform the development of strategies to reduce burnout.

# NOVEL EMPIRICAL APPROACHES TO EVALUATE THE IMPACT OF HIV PROGRAMMES AND POLICIES, INCLUDING REGRESSION DISCONTINUITY AND OTHER NON-EXPERIMENTAL APPROACHES

## WEPEE633

### SAMPLING DESIGN ALTERNATIVES IN POPULATION-BASED SURVEY FOR HIV PROGRAMMING

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**Background:** Household surveys based on census sampling frame are a standard practice in conducting surveys. However cost of their fieldwork is too high for many organisations and programmes relying on surveys for programmes management. This makes achieving more results with less resources difficult hence the need for alternative approaches. This study establish if alternative approach (mapped public places sampling frame) can provide comparable results to that of household survey for circumcision study.
**Methods:** Two quantitative cross-sectional studies were conducted simultaneously on the same locations using the same questionnaire. However the study participants were sampled using two different approaches. The first approach was the use of Census sampling frame. The second sampling approach used mapped public places as a sampling frame for respondents. Inclusion criterion were males aged 15 to 49 years randomly selected and agreeing to participate in the study through an informed consent process. Binary logistics regression was used to establish factors influencing uptake of circumcision (alpha set at 0.05).
**Results:** The age distribution of the two samples were significantly different from each other, p< 0.001. The proportion of men circumcised was not significantly different (p=0.563) between the samples at 22% and 23% from household and public places samples respectively. Logistic regression table below show consistent odds ratios though with discordances.

| Variable | Household OR | Public Places OR |
|---|---|---|
| Service access knowledge | 3.106 | 3.488 |
| Penis appearance | 3.105 | 3.093 |
| Educational (Tertiary / No Tertiary) | 2.17 | * |
| Eligibility knowledge | 1.967 | * |
| Excessive bleeding fear | 1.775 | 1.901 |
| Penis hygiene | 1.661 | * |
| Believe pain during procedure | 0.325 | 0.39 |
| Believe pain AFTER procedure | * | 0.332 |
| Risk death | 0.224 | * |
| Constant | 0.04 | 0.13 |
| *not significant | | |

*[Odds Ratio of being circumcised by sample group]*

**Conclusions:** Mapped public places sampling frames can be used for estimation, however, care should be taken to ensure that age groups and other demographics of interest are controlled for during sampling.

# USE OF IMPLEMENTATION RESEARCH TO SUPPORT THE EVIDENCE-BASED RESPONSE TO HIV

## WEPEE634

### A HOME-BASED REHABILITATION INTERVENTION FOR ADULTS LIVING WITH HIV AND DISABILITY: A RANDOMIZED CONTROLLED TRIAL

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**Background:** South Africa has the highest number of people living with HIV (PLHIV) globally. With an increased uptake of ART, PLHIV are living longer lives but this is accompanied by an increased risk of disabilities. Effective management of disability requires rehabilitation interventions. Rehabilitation professionals are in short supply in South Africa's public sector, which makes it challenging to deliver rehabilitative care close to patients' homes. There is a dearth of literature related to home-based rehabilitation (HBR) interventions for PLHIV in South Africa.
**Methods:** A single blind randomised controlled trial was conducted in a public health care setting in KwaZulu-Natal. Adult participants on ART for more than six months, who were identified with mobility-related challenges, were recruited. A total of 76 participants were allocated to either the intervention or control group. The intervention group received weekly rehabilitation in their homes for 16 weeks, provided by home-based care workers, trained and supervised by a qualified physiotherapist. Participants in the control group received the standard of care as well as written advice on healthy living. Pre and post intervention testing assessed disability (WHODAS 2.0), quality of life (WHOQOL-HIV BREF), functional mobility (Rivermead Mobility Index) and functional capacity (6 Minute Walk Test).
**Results:** Participants in the HBR intervention group improved in overall quality of life as well as the physical quality of life domain (p< 0.05). WHODAS 2.0 scores showed improvements in perceived disability for both study groups. No significant improvements were recorded with the Rivermead Mobility Index, while both groups improved significantly in the total distance walked in the 6 Minute Walk Test (p< 0.05). Although the participants in the intervention group improved more than the participants in the control group across all four outcome measures, between-group differences were non-significant.
**Conclusions:** HBR for PLHIV is a safe means of addressing the functional deficits experienced by this population and appears to improve their quality of life. It was of further interest to note the improvements in the control group who received health information only. This task-shifting approach is a feasible method of addressing disability, however the impact of such interventions needs to be tested on a larger scale.

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## WEPEE635

### ASSESSING INDIVIDUAL AND DISSEMINATED EFFECTS OF A NETWORK INTERVENTION FOR HIV PREVENTION

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**Background:** In network-randomized trials, some group members randomized to an intervention receive the intervention directly while others receive it indirectly if at all. The individual effect is that among directly treated participants; the disseminated effect is that among participants in the same network as those directly treated. Estimation of crude effects (i.e., average treatment effect compared among all study participants) and composite effects (i.e., sum of the separate individual and spillover effects) is of interest.
**Methods:** We developed new statistical methods for point and interval estimation of individual, disseminated and composite effects in studies with a network feature. We proved that the average effect is less than or equal to the composite effect. Even when the networks are randomized to the intervention, the validity of some of these quantities of interest do not benefit from randomization, and we developed causal inference methods for estimating these quantities. We estimated individual and disseminated effects in HPTN037, a Phase III network-randomized HIV prevention trial among injection drug users and their network members. The index participant in a treated network received a repeated educational intervention. Log-binomial models were used to estimate relative risks and 95% confidence intervals (CIs), accounting for correlations using a robust variance. The specific risk behavior was *shared cotton* (an indicator of sharing needle/syringe "works").
**Results:** HPTN037 included 515 participants, of whom 48% were in treated networks and 52% were in control networks. There was a 44% reduction in risk (95% CI= 0.37, 0.84) for "sharing works" (crude effect), while the adjusted composite effect was more strongly protective (adjusted rate ratio (aRR)= 0.37, 95% CI = 0.19, 0.75). The individual effect trended towards protection (aRR=0.70, 95% CI = 0.33, 1.47), while the disseminated effect among non-treated network members in the intervention arm compared to control was significantly protective (aRR= 0.62, 95% CI = 0.40, 0.95).
**Conclusions:** This analysis highlights the utility of these novel methods to quantify the complex information available in network-based interventions. These new methods will improve best preventative practices among people who inject drugs and their risk networks by leveraging network-based effects.

## WEPEE636

### THE ROLE AND IMPACT OF DATA QUALITY IN IMPLEMENTATION SCIENCE RESEARCH: EXAMPLE FROM AN ASSESSMENT OF PMTCT SERVICES IN CÔTE D'IVOIRE

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**Background:** Implementation science aims to understand and improve health care delivery systems in context. However, intervention identification and impact assessment can be confounded by poor data quality of health information systems. This paper discusses the role and impact of poor data quality on conducting implementation science research in the context of a national assessment and intervention project on PMTCT in Côte d'Ivoire.
**Methods:** We randomly selected a cross-sectional sample of 30 Ivorian health facilities providing PMTCT services. At each site we retrospectively assessed all available primary data sources for eight PMTCT-related indicators for the period June 2011-May 2012 to determine data completeness. We also compared on-site data with data reported in the national PMTCT database to identify the degree of concordance between site-based data and nationally reported data. Finally, we compared data from different data sources including patient charts to identify incongruence between sources and to identify potential areas for data quality improvement.
**Results:** Across the 30 site sample, 2,628 of 2,880 data elements (91.25%) were available on site in at least one of 18 different official and unofficial data sources. Of 240 values compared between on-site data and nationally reported data, 97 (40%) were concordant, 69 (29%) were discordant with lower values reported at the facility level, and 74 (31%) were discordant with lower values reported at the national level. We also found incongruent data when comparing registry data with data on the availability of and representativeness of patient charts.
**Conclusions:** Data quality issues suggest that facility staff, health directors, and national policy makers may be misinformed regarding performance at all levels of the PMTCT cascade. Implementation science research aiming to improve service delivery should:
1) review data for completeness, concordance, consistency and representativeness to create a more informed overall picture of service bottlenecks;
2) data quality concerns that illuminate systemic weaknesses in the intervention phase and address these as part of the intervention.
These two recommendations will help improve reliability of the measurement of impact of the intervention while improving data quality as part of the overall health system.

## WEPEE637

### CAUSAL EFFECTS OF TIME TO ART INITIATION ON THE SURVIVAL OF HIV-INFECTED PATIENTS IN A REGIONAL REFERRAL HOSPITAL IN WESTERN KENYA, 2011-2014

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**Background:** Estimating causal inferences in observational studies with time varying covariates require methods that can address complexities such as non-random allocation of patients' to treatment groups, possible censoring of, exposure variables e.g., time to antiretroviral therapy (ART) initiation, and outcome variables e.g., mortality. We set out to evaluate the causal effects of time to ART initiation on the survival of human immunodeficiency (HIV) infected patients in a longitudinal observational study.
**Methods:** We conducted a retrospective review of patient records of HIV-infected adults' aged≥15 years enrolled between January 2011 and December 2013 at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kenya. ART was initiated as per the WHO 2010 ART guidelines. Time to ART initiation was defined as time from the earliest date of ART eligibility to date of ART initiation and patients were categorized as 'early-initiators' (ART initiation within 12 weeks of eligibility) or 'late- initiators' (ART initiated after). Occurrence rate of death was computed as the number of deaths per 100 person-years of follow-up in each group (early/late initiators).
The hazard of death among early-initiators versus late-initiators was computed using unadjusted Cox proportional hazards (Cox-PH) model, adjusted Cox-PH model (adjusting for age, gender, CD4 category, WHO stage, education level, marital status, and weight) and marginal structural Cox-PH model.
**Results:** Of 786 patients enrolled; 606 (77%) were ART-eligible. Of 444 (73%) patients with documented time to ART initiation, 41 (9%) were late-initiators. With 3 deaths and 9.2 person-years of follow-up; 31 deaths and 115.8 person-years of follow-up; the occurrence rate of death was 33 and 27 per 100 person-years among late-initiators compared to early-initiators respectively.
Compared to early-initiators, the hazard of dying among late-initiators computed using unadjusted Cox-PH model, adjusted Cox-PH model and marginal structural Cox-PH model was 1.6 (95% CI 0.5-5.4) and 1.9 (95% CI 0.5-6.7) and 3.2 (95% CI 1.7-6.4) respectively.
**Conclusions:** Marginal structural Cox-PH model, adjusting for and assuming no unmeasured confounders, revealed that delay in time to ART initiation increases the hazard for death. Clinical longitudinal observational studies should employ appropriate models in estimating treatment effects for accurate conclusions.

## WEPEE638

### FACTORS ASSOCIATED WITH RETENTION OF HIV EXPOSED CHILDREN AT 18 MONTHS: A LONGITUDINAL COHORT STUDY, MAHARASHTRA, INDIA

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**Background:** As per the National guidelines in India, all HIV positive pregnant women are initiated on lifelong ART irrespective of CD4 count or WHO clinical staging. During postnatal period, HIV exposed babies are followed up for early infant diagnosis (EID) starting at 6 weeks of age, aiming to the final antibody testing at 18 months of age. Minimizing loss to follow up among HIV positive pregnant women

and their infants in the postnatal period is crucial to ensure elimination. To ensure retention at every step of the PMTCT service, a line list of HIV positive pregnant women was developed in Maharashtra province in India. To understand the gaps in the cascade, the cohort data form the line list of HIV positive mothers and their babies from 2008-2013 were analysed. The objective of this study is to identify the possible socio-demographic characteristics and other factors associated with retention in care of HIV exposed children at the age of 18 months.
**Description:** Data on 10,697 HIV positive mothers from 2008-2014 were analysed. Retention in care at 18 months of age was determined by assessing whether the child was followed up until the age of 18 months for antibody testing. If a child was tested or was confirmed to have died before the age of 18 months, it was considered to be in care, otherwise it was considered as lost to follow up (LTFU). Logistic regression analyses were performed to assess factors associated with retention in care at 18 months.
**Lessons learned:** Out of 10697 live births to HIV positive women, 77% children were either tested at 18 months or confirmed to have died, and 23% were LTFU. Children with HIV negative fathers were 25% more likely to be LTFU (AOR=1.24, 95% CI=1.1-1.4), whereas children whose father's HIV status was not known were 74% more likely to be LTFU (AOR=1.74, 95% CI=1.49-2.03), compared to children who had HVI positive fathers.
**Conclusions/Next steps:** Findings highlight the need to to closely monitor the children of sero-discordant couple to ensure regular follow up and higher retention at 18 months of age. Couple counselling and disclosure need to be encouraged by the program.

## WEPEE639

### USING COMPUTER SIMULATION TO OPTIMIZE DESIGN OF A MULTILEVEL HIV INTERVENTION: A CROSS-DISCIPLINARY EXPERIMENT

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**Background:** Multilevel interventions (for example, including both treatment and prevention goals at individual, group and community levels) are instrumental in efforts to end the HIV pandemic. However, multilevel interventions may be composed of a number of constituent interventions or risk targets, and it is unclear which ones should be included. Our objective was to apply a quantitative optimization approach to inform multilevel intervention trials targeting alcohol-using HIV patients on ART in India.
**Methods:** We developed, parameterized and calibrated a simulation of HIV disease progression and transmission to estimate the effect of one or more single focus interventions on HIV infections averted, costs, and quality-adjusted life expectancy (QALY). Input data came from an extensive literature review and analyses of Maharashtra state level HIV patient data collected from 2007- 2014 (n=23,701). We included 15 unique constituent interventions defined by target, level and duration, which could be combined into 32,768 possible configurations of the multilevel intervention. To identify the optimal configurations, we estimated 20-year clinical and economic outcomes and compared their value ($/QALY) using three criteria: greatest health benefit given budget constraints, greatest health benefit for the money (not considering budget constraints), and consideration of the extent to which additional research could enhance value for India.
**Results:** We found that 23% of the possible 32,768 configurations of a multilevel intervention were cost saving, and 27% offered favorable value (< $15,000/QALY based on WHO standards). Given budget constraints, the optimal multi-level intervention would have constituents including *individual alcohol counseling*, *individual text-message support* and *group counseling for sex-risk*. Not considering budget constraints, the optimal multi-level intervention would have constituents including *individual alcohol counseling*, *individual text-message support*, group counseling for *sex-risk, individual counseling for sex-risk and community level sex-risk intervention*. Explicitly considering the value of additional research, the top intervention for the trial would be *individual depression counseling alone*.
**Conclusions:** This study was the first to use operations research methods to inform how to constitute a multilevel intervention with a vast array of possible constituents. Using simulations to predict the best investment for clinical trials can be extended to broader HIV epidemics or other clinical settings.

## WEPEE640

### APPLICATION OF A SOCIAL NETWORK INTERVENTION TO IDENTIFY OPINION LEADERS AMONG PEER HEALTH WORKERS TO SUPPORT UPTAKE OF HIV SERVICES IN KENYA

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**Background:** Using opinion leaders to accelerate the dissemination of evidence-based public health practices is a promising strategy for closing the gap between evidence and practice. Network interventions (using social network data to accelerate behavior change or improve organizational performance) are a promising but under-explored strategy. We used mobile phone technology to quickly and inexpensively map a social network and identify opinion leaders among a cadre of peer health workers in a large HIV program in western Kenya.
**Methods:** In May 2015, we administered a five-item socio-metric survey to community health assistants using a mobile phone SMS-based questionnaire. We used the survey results to construct and characterize a social network of opinion leaders among respondents. We calculated the extent to which a particular respondent was a popular point of reference ("degree centrality"), and the influence of a respondent within the network ("eigenvector centrality").
**Results:** Surveys were returned by 38/39 (97%) of peer health workers contacted; 52% were female. Median survey response time (from initial "trigger" SMS to survey completion) was 13.75 minutes (inter-quartile range: 8.8-38.7). Each incoming and outgoing SMS cost US$0.01 to relay through a secure cloud-based SMS aggregator, for a total cost of US$2.85 for outgoing and US$2.82 for incoming response messages.Resulting social networks were dense - there was a high number of connections as a proportion of the maximum possible connections. The most connected individuals (high degree centrality) were also the most influential (high eigenvector centrality). The distribution of influence (eigenvector centrality) was highly skewed in favor of a single influential individual at each site.
**Conclusions:** Leveraging increasing access to SMS technology, we mapped the network of influence in a cadre of peer health workers associated with a HIV care and treatment program in Kenya. Using mobile phones, we carried out a socio-metric survey over the course of three days and at a cost of 8.46 dollars. Efficient mapping of social networks opens the door to reproducible, feasible and efficient empirically-based network interventions that seek to spread novel practices and behaviors among health care workers.

# CAPACITY-BUILDING IN IMPLEMENTATION RESEARCH

## WEPEE641

### INTEGRATOR-BASED IMPLEMENTATION RESEARCH: LOCALLY-LED CAPACITY BUILDING FOR DEVELOPMENT OF PRAGMATIC EVIDENCE ON HIV PROGRAM PERFORMANCE

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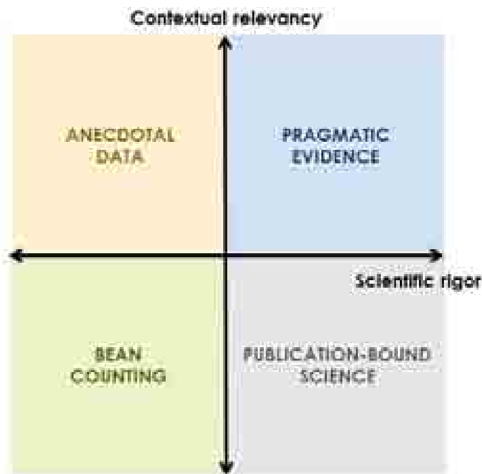
**Background:** Quality implementation research requires integration of contextual knowledge of local implementers with evidence-based interventions, using rigorous scientific methods. Reaching 90-90-90 goals requires generation of pragmatic evidence regarding program effectiveness in near-to-real time. Local capacity to conduct implementation research remains limited in many high-burden settings, resulting in missed opportunities. We describe our experience as a local organization actively pursuing implementation research in Zimbabwe's HIV Care and Treatment Program.
**Description:** OPHID Trust uses an integrator-based approach to building capacity for implementation research in Zimbabwe's HIV Care and Treatment Program, actively involving multiple stakeholders including Ministry of Health and Child Care (MOHCC), academic collaborators, a dedicated operational research unit, program and strategic-information staff, to facility and community-level stakeholders. Research and assessment topics are derived from current trends within routinely collected program data. Results are disseminated among MOHCC structures at multiple levels in near-to-real time.




*[Quadrant diagram depicting relationship between contextual relevancy and scientific rigor for generation of pragmatic evidence]*

**Lessons learned:** Since 2011, in collaboration with its partners, OPHID has led the registration and completion of 6 study protocols; conducted over 10 targeted program assessments and presented more than 30 abstracts at national, regional, and international AIDS conferences. Research and evaluation findings have contributed to national program and policy approaches; development and testing of new interventions to increase demand, uptake and retention; identification of bottlenecks and real-time corrections in Zimbabwe's HIV Care and Treatment Program. Challenges of local capacity building in implementation research include effective use of theoretical frameworks, 'resource-rigor' compromises in design and data management, publication of findings and supporting active involvement of academic and MOHCC collaborators within resource-constrained program contexts.
**Conclusions/Next steps:** OPHID's integrator-based approach to implementation research has proved a low-cost, productive model for the generation of pragmatic evidence in Zimbabwe's HIV Care and Treatment Program. Investment in local implementation research capacity, particularly within MOHCC structures, should be prioritized for sustainable and context-relevant evidence generation on HIV programs.

## DATA SYSTEMS TO SUPPORT HIV PREVENTION AND CARE

### WEPEE642

### ENHANCING SYSTEMS FOR MONITORING AND EVALUATION OF OPTION B+ REGIMEN FOR PMTCT: RWANDA EXPERIENCE IN RETROSPECTIVE COHORT MONITORING

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**Background:** In order to cost-effectively monitor implementation of option B+ and measure MTCT rate by 18 months, routine PMTCT data for HIV infected mothers and exposed infants was collected using longitudinal registers. Data from a three month retrospective cohort of HIV exposed children born 18 months prior to the survey was analyzed to determine MTCT rate.
**Description:** The purpose of the Programme is to determine the final status of HIV exposed infants and the impact of option B+ in reducing MTCT rate. Longitudinal registers were designed to monitor HIV infected mother-infant pairs enrolled in PMTCT facilities using unique identification numbers: The ANC and ART number of the mother and the registration number of the exposed child are linked. Key indicators were integrated in the registers and monitored at 6 weeks, 9 months and 18 months, the time when exposed infants are offered HIV testing. Health workers were trained, mentored on data collection and use, for service improvement.
**Lessons learned:** In June 2015, Rwanda conducted a retrospective review of data from a three month cohort of mother-infant pairs enrolled between Sept-November, 2013 to estimate MTCT rate by 18 months. Data on key PMTCT indicators from 402 (81%) facilities was extracted and analyzed using STATA. A total of 2,378 HIV exposed infants were enrolled, of whom 2146 (95%) received ARV prophylaxis at birth. At six weeks, 1.11% (25/2251) were HIV positive; 0.63% (15/2378) died and 3.11% (74/2378) missed appointments. At 9 months, 0.24% (5/2092) were HIV positive, 0.79% (18/2268) died; 4.32% (98/2268) were lost to follow-up. At 18 months, 0.26% (5/1925) were HIV positive; 0.47% (10/2119) died and 3.87% (82/2119) were lost to follow-up. The overall MTCT rate by 18 months was 1.79 (35/1955), 1.95% (43/2198) deaths and 7.57% (180/2378) loss to follow-ups.
**Conclusions/Next steps:** The low MTCT rate is an indication that Rwanda is close to eliminating MTCT. Use of longitudinal registers and retrospective cohort analysis is a cost-effective method of monitoring option B+ implementation and in determining MTCT rate and other outcomes. Results from other ongoing studies on HIV exposed infants will show the determinants of HIV transmission, loss to follow up and deaths.

### WEPEE643

### UTILIZATION OF MULTIPLE STRATEGIC INFORMATION TO INFORM PROGRAM BARRIERS TOWARDS THE "ENDING AIDS BY 2020" IN BANGKOK, THAILAND

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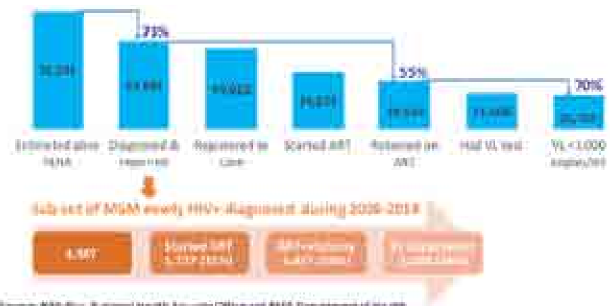
**Background:** Thailand commits to launch the 2014 Paris Declaration on Fast-Track Cities Initiative in Bangkok through achieving the 90-90-90 targets by 2020, 90% of persons living with HIV (PLHIV) knowing their status, 90% of PLHIV who know their status on antiretroviral therapy (ART), and 90% of those on ART virologically suppressed. To address the intervention status, multiple strategic information (SI) were analyzed.
**Description:** SI sources were (1) AIDS Epidemic Model (AEM), updated in 2015, estimating number of PLHIV and new infections; (2) Community-based Integrated Bio-Behavioral Surveillance (IBBS) using time-location-sampling among men having sex with men (MSM), biennially implemented during 2007-2014, reporting the percentage of MSM reached by community outreach and receipt of HIV counseling and testing (HCT), and (3) Patient program monitoring (NAP), reported by 63 ART sites in Bangkok, describing the Test-Treat-Retain cascade among PLHIV and MSM newly HIV+ diagnosed during 2008-2014. The results were synthesized to identify areas for intensified responses.
**Lessons learned:** AEM outputs revealed estimated 72,591 PLHIV in 2014 with 2,000 annual new infections. MSM was the major driver for HIV epidemic. The IBBS indicated constant trend of MSM reached by outreach interventions (35.2%-53.3%) during 2007-2014, and substantially declining in receiving HCT with knowing their test result from 52% in 2007 to 28% in 2014, $p < .05$. Using NAP and AEM outputs, the Test-Treat-Retain cascade among PLHIV was 73%-55%-70% in 2014 (Figure 1). A sub-set of 4,987 MSM, newly diagnosed and reported in NAP during 2008-2014, showed only 35% starting ART and 30% retained in-care.




*[Figure 1: Test-Treat-Retain Cascade among PLHIV, Bangkok, Thailand, 2014]*

**Conclusions/Next steps:** To achieve the 90-90-90targets in Bangkok remains challenging. Intensified community outreach is urgently needed to increase recruitment of MSM for prevention and HCT. Assessing the barriers limiting referral and access to ART services, especially among MSM should be considered. Effective quality ART services to improve ART retention are essential.

## WEPEE644

### DEVELOPMENT OF A NEW RESOURCE FOR HIV AND HEPATITIS C DRUG THERAPY/DRUG INTERACTIONS

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**Background:** Antiretrovirals (ARVs) and directly acting antivirals (DAAs) for hepatitis C (HCV) continue to be developed and marketed at a rapid pace. There is a high potential for drug interactions with these medications, particularly in patients with high rates of comorbidities and polypharmacy. Existing tools for the management of drug interactions are specific to either HIV or HCV, and often lack in offering a holistic approach to patient care.
**Methods:** The application development team consists of 3 specialized pharmacists, two computer programmers/developers and a medical interface designer. Key elements for the application design included an intuitive, multiplatform search engine allowing for rapid access of scientific information on drug-drug interactions, as well as a function proposing alternatives to treatments. A drug database was developed from existing, internationally recognized drug interaction websites (www.hivclinic.ca and www.hcvdruginfo.ca).
**Results:** The web application includes information on 45 HIV and HCV licensed and investigational drugs and allows for interaction searches with over 500 other commonly prescribed drugs. The database is regularly updated to include the latest publications and presentations from major HIV and HCV scientific conferences, and currently includes interaction information on over 15,000 unique drug combinations. The application is available on the HIV & HCV websites, which receive over 2000 separate visits per month. A free mobile application, with the potential to operate in absence of an internet connection, is available for download from the websites and from iTunes/Google Play stores in order to reach a vastly greater audience.
**Conclusions:** This web application consolidates ARV and DAA information from two established, internationally recognized drug therapy websites into a single program, and allows practitioners to quickly identify and manage significant drug interactions in HIV and/or HCV-infected patients.

## WEPEE645

### DISCREPANCIES BETWEEN 'MY ADDRESS', 'WHERE I LIVE', AND 'WHERE YOU MIGHT FIND ME': QUALITATIVE LESSONS FOR HIV DATA CAPTURE IN EXPANDING HIV CLINIC SERVICES TO COMMUNITY-BASED SERVICES

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**Background:** In South Africa, clients eligible for ART are entitled to receive care at any facility offering ART services. Across South Africa, such HIV-related health-services are expanding from facilities into communities. Accurate linkage of information across service-delivery platforms is important for
(1) ensuring continuum of care,
(2) monitoring and evaluation to improve public health implementation, and
(3) identification of fraudulent addresses.
Electronic capture and linkage create the possibility of unified client records across the service delivery network. Such a system will be facilitated by accurate records of which health facilities' clients visit and where clients might be reached by community-based services. We present a case study of a community where a door-to-door HIV-service referral intervention (as part of HPTN 071 (PopART)) is implemented, to identify gaps in creating a client record system.
**Methods:** At the clinic, paper-based patient folders are routinely captured into the 'TIER.Net' health information system. We conducted a qualitative review of folders of clients receiving ART at the clinic who were not reported as living with HIV by the door-to-door intervention team in the clinic's catchment area. This was supplemented by 24 months of ethnographic observations and discussions. The clinic catchment area is an Afrikaans-speaking suburb of a farming/minor-industry town with government-built basic-housing developments and informal settlements around it.
**Results:** From the addresses in the patient folders (and our ethnography), we identified five conditions where clients were missed by door-to-door service delivery:
(1) short-term absences from home (often due to hospitalisation, temporary employment, and incarceration).
(2) Cyclical absences, particularly migration to former 'homelands' and seasonal farm labour.
(3) Clients providing an address in the catchment area because they stay there occasionally whilst actually living outside the catchment area.
(4) Non-disclosure of HIV-status in homes leading to active avoidance of home-based HIV-related services.
(5) Membership of multiple households within or outside the catchment area.
**Conclusions:** Client addresses are currently experienced as primarily an administrative detail and their value for ensuring quality care is not emphasized. In highly mobile or migrant places, greater emphasis should be placed on integrating accurate capture and linkage of not just a client 'home' address but also alternatives.

## WEPEE646

### ENHANCING SUPPLY CHAIN MANAGEMENT OF ANTIRETROVIRAL DRUGS IN A RESOURCE-LIMITED SETTING THROUGH WEB-BASED ORDERING SYSTEM TO INCREASE THEIR AVAILABILITY: A CASE OF EAST CENTRAL UGANDA

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**Background:** Uganda is having problems getting the right type of medicines to the right people at the right time. When essential medications are out of stock especially in remote areas where there is no alternative solution, patients blame the health workers who have no control over the medicine supply chain. The Uganda National Minimum Health Care Package (UNMHCP) obliges the government to make essential drugs available to the population including (Anti Retro Viral drugs-ARVs) drugs for HIV/AIDS, TB, malaria and other infectious diseases. Because of these concerns, MoH replaced the use of hard copies of reports and orders with the web based ordering system an easy and quick way to place drug orders from the lowest level of care in the most remote and hard to reach area to the national ware house so as to enhance the supply chain management of ARVs.
JSI under a USAID funded project "Strengthening TB and HIV& AIDS Response in East Central (STAR-EC) Uganda has since supported this system in the facilities to acquire ARVs.
**Description:** STAR-EC trained ART in charges and stores personnel in facilities offering ART in proper quantification and ordering of ARVs and with the help of Health Management Information System personnel, health facilities submit drug orders which are directly submitted to the national ware house which in turn determines the needed quantities per facility and drugs are supplied on a bimonthly basis.
**Lessons learned:** There has been an improved reporting rate in all facilities under STAR-EC from 60% to 80% in a period of approximately 2 years since introduction of the system which is attributed to the fact that one does not have to incur costs of travelling from the furthest place to submit an order to the national supplier. There is improved efficiency in disseminating information from one place to another as well as reducing on time spent especially from facilities found in hard to reach areas.
**Conclusions/Next steps:** With improved use of technology and good internet connectivity, even the hard to reach areas can have an improved supply chain management system.

## WEPEE647

### PATIENT LEVEL TRACKING THROUGH AN ELECTRONIC DATABASE IN RESOURCE-LIMITED SETTINGS: LESSONS LEARNT IN IMPLEMENTATION OF AN ELECTRONIC DATABASE (EDB) IN ZIMBABWE

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**Background:** The urgent need to monitor the HIV and AIDS epidemic of affected populations has required health information systems to go beyond its traditional capacities. Electronic patient-level databases (EDB) have emerged as promising tools. In September 2011, EGPAF-Zimbabwe supported Ministry of Health and Child Care (MOHCC) to develop an EDB that collects prevention of mother-to-child HIV transmission (PMTCT) longitudinal client data for routine program monitoring, rapid assessments, and PMTCT outcome evaluation.
**Description:** The EDB was implemented in 36 public health facilities across five districts in three phases;
(1) five district hospitals - September 2011,
(2) 13 facilities - March 2012 and
(3) 18 facilities July 2012.
EGPAF and MOHCC sourced IQSolutions, an open-source database supportable in-country with limited resources. The database was customized to include indicators from six MOHCC PMTCT registers. Facilities were selected based on patient volume

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and accessibility from the district hospital using public transport. Eighteen data entry clerks (DECs) were recruited and trained to enter patient level longitudinal data into the EDB on an ongoing basis. Site support and supervision was provided by technical staff from MOHCC and EGPAF.

**Lessons learned:** Involvement of key decision-makers from the inception resulted in early buy-in of the database and utilization of an open-source system that did not require any licensing reduced the costs. Phased implementation enabled testing and modifications to refine the database in a small number of sites before scale up to additional sites. The database helped reduce the workload of the health workers on reporting and follow-up of defaulting clients as these were generated from the system easily. Site selection based on accessibility enabled one clerk to support more than one facility to reduce costs.

**Conclusions/Next steps:** The MOHCC started implementing a national level patient level database based on the lessons learned from EGPAF. DECs have been recruited and implementation in a phased approach was adopted. The goal is to eventually have the database in all the sites.

## WEPEE648

### ACHIEVING REAL TIME QUALITY AND EFFICIENCY MONITORING THROUGH ELECTRONIC DATA SHARING ARCHITECTURE FOR NATIONAL POPULATION-BASED BIOMARKER SURVEYS IN DEVELOPING COUNTRIES: THE POPULATION-BASED HIV IMPACT ASSESSMENTS (PHIA) PROJECT 2015-2017

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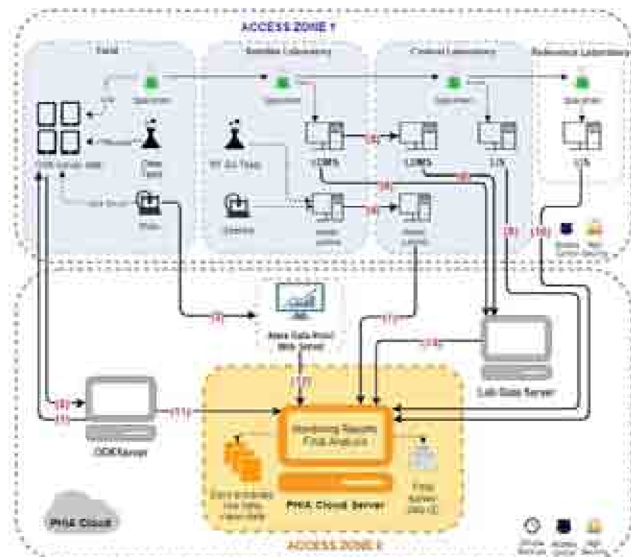
**Background:** With improvements in technology and increasing affordability, electronic data capture (EDC) is quickly replacing paper-based data collection (PDC) as a standard for large-scale surveys in developing countries. Electronic data can be efficiently processed and summarized, permitting timely identification of potential implementation challenges.

**Description:** ICAP at Columbia University is implementing the Population-based HIV Impact Assessment (PHIA) Project, a PEPFAR initiative funded through the Centers for Disease Control and Prevention to conduct population-based HIV biomarker surveys measuring national HIV incidence and subnational estimates for viral load suppression. The surveys involve questionnaires, and HIV and other point of care whole blood tests, including CD4, syphilis and hepatitis B. Additional tests, including viral load and HIV incidence testing, are conducted at laboratories. A data collection form was developed in ODK (Open Data Kit) and deployed on Android tablets to capture consents with electronic signatures, household and individual interviews, and specimen collections. Specimen transport and processing as well as QA/QC data are captured in laboratory databases. A data sharing architecture was developed to securely transmit the data in near real-time from the field teams and laboratories to a central data warehouse (Figure 1).




*[Figure 1: PHIA Data Architecture - Survey Collection Data Flow]*

**Lessons learned:** The PHIA Project started data collection in Zimbabwe and Malawi in late 2015. Overall, 10,199 interviews, 11,396 blood draws, and 17,169 specimen tubes have been collected to date. A survey monitoring dashboard that pulls data from questionnaire and laboratory data sources provides PHIA partners with daily updates that summarize response and recruitment rates by participant age group, survey team, and survey week as well as specimen quality indicators.

**Conclusions/Next steps:** The PHIA Project has demonstrated the need for EDC and a robust data sharing architecture that efficiently integrates data from multiple devices and users, for effective monitoring on quality and efficiency of the survey effort.

## WEPEE649

### IMPROVING HIV OUTCOMES: USING RYAN WHITE HIV/AIDS PROGRAM CLIENT-LEVEL DATA TO TARGET INTERVENTIONS AND ADDRESS HEALTH INEQUITIES IN THE UNITED STATES

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**Background:** To address the HIV epidemic in the United States (U.S.), Congress passed legislation in 1990 for the Health Resources and Services Administration to implement the Ryan White HIV/AIDS Program (RWHAP), a comprehensive system of care that addresses the needs of low-income and vulnerable people living with HIV (PLWH). To monitor the program, its impact, and clients' HIV-related outcomes, it was necessary for the RWHAP to establish a client-level data collection system.

**Description:** In 2010, the RWHAP fully implemented the "Ryan White Services Report" (RSR), a client-level data collection system that collects de-identified data from the nearly 2,000 RWHAP-funded sites across the U.S. In December 2015, the RWHAP published its inaugural client-level data report, featuring RSR data about the half-million clients served by the RWHAP during 2010-2014. The publication provided an in-depth look at the socio-demographic composition of clients (e.g., age, race/ethnicity, transmission risk, poverty level, health care coverage, housing status) and key HIV care indicators measuring the RWHAP's progress toward the goals of the National HIV/AIDS Strategy for the U.S.

**Lessons learned:** Through the implementation of its RSR client-level data system, the RWHAP can better identify and understand health inequities and guide RWHAP investments and programmatic efforts to improve care, treatment, and health outcomes for PLWH. The data report showed that the RWHAP provided HIV medical care, treatment, and supportive services to approximately 52% of all people living with diagnosed HIV in the U.S. Among clients receiving medical care, viral suppression increased from 69.5% in 2010 to 81.4% in 2014. Although inequities remain, the program demonstrated increases in viral suppression among several key populations, including youth aged 15-24 (45.8% in 2010 to 64.3% in 2014); women (66.3% to 80.2%); men who have sex with men (71.9% to 82.8%); and transgender individuals (61.5% to 74.0%).

**Conclusions/Next steps:** Client-level health information management systems are important tools to inform policy, programmatic, and clinical decisions about HIV care by governmental agencies and non-governmental organizations. Making national RWHAP client-level data publically available allows stakeholders and partners to better target interventions and measure the effectiveness of these strategies for improving HIV-related outcomes.

## USE OF BIG DATA TO ASSESS IMPACT OF HIV PREVENTION AND TREATMENT PROGRAMMES

### WEPEE650

### PROGRESS TO 90-90-90: A LONGITUDINAL ANALYSIS OF THE TANZANIAN NATIONAL TREATMENT CASCADE FROM 2006 TO 2014

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**Background:** In order to end HIV as a global health threat it is essential that countries analyse the development of their HIV treatment cascade over time and adapt their treatment programs to improve coverage and reduce attrition. In addition they need to identify whether any progress achieved is generalised or whether certain population sub-groups have sub-optimal, engagement with or retention in, care. This study provides such an analysis using routine data collected at clinics throughout Tanzania.
**Methods:** Repeated cross-sectional analyses were carried out annually of data collated in the Tanzanian national care and treatment centre (CTC) database. The study population was defined as all those with a visit to a CTC within 90 days of the mid-year cut-off date.
**Results:** Over the period 2006 to 2014 the percentage of those who were engaged with CTC's who were on treatment increased from 22.2% to 82.1%. The percentage of these successfully treated (WHO stage 1-3) increased from 65.2% to 82.1% over the same period. By 2014 44.4 % of those on treatment had been so for more than 4 years. The sex ratio (female:male) for those on treatment increased from 1.7 in 2006 to 2.4 in 2014. From 2008 to 2012, the percentage of males aged 15-19 in care who were on treatment was significantly higher than for their female contemporaries. Otherwise similar trends were seen for all age and sex strata in the population. The median time between individuals first knowing their HIV status and starting treatment increased for all groups between 2007 and 2012 from 46 to 64 days and then decreased to 25 days by 2014. The decrease was greater for females than males.
**Conclusions:** These results demonstrate that considerable progress has been made since the introduction of ART in Tanzania. All sub-groups in the population have experienced these benefits. Of particular concern however is the evidence for an increasing female:male gender ratio amongst those on treatment which is only partially explained by the higher HIV prevalence for adult females (5.7%) compared to males (3.9%). Strategies to overcome barriers to care experienced by males are urgently indicated by these results.

### WEPEE651

### DATA FROM RECENTLY DEPLOYED ONLINE HEALTH SERVICES INFORMATION COLLECTION SYSTEM SHOWS MOTHER TO CHILD TRANSMISSION (MTCT) RATES OF HIV IN GHANA ARE HIGHER THAN PREVIOUSLY ESTIMATED

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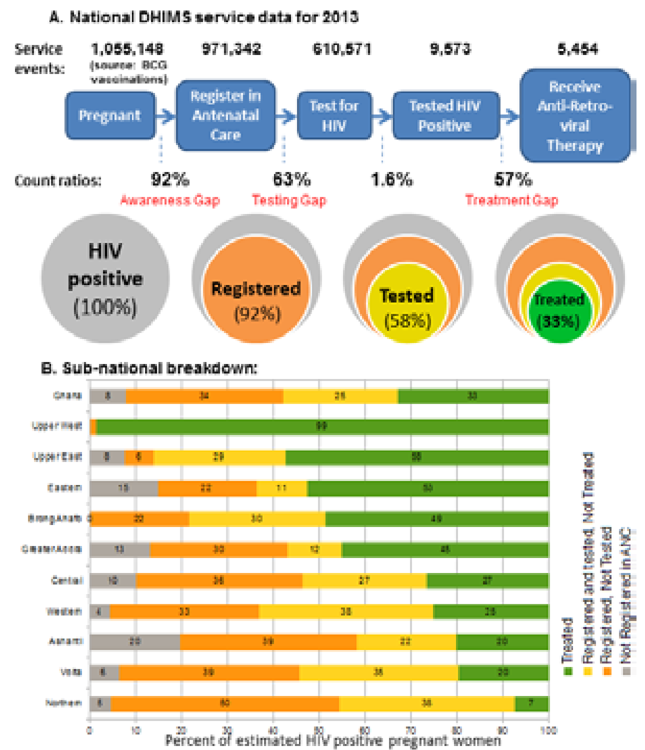
**Background:** The rate of Mother-to-child transmission (MTCT) of HIV in Ghana is estimated using the Spectrum software, based on a mix of estimated variables. The national MTCT rates were 8.99% and 8.37% for 2012 and 2013, respectively. We hypothesized that replacing estimated variables in the Spectrum model with actual service data obtained through the digital health information systems (DHIS) platform, would yield more accurate and actionable national (and sub national) rates.
**Methods:** Data were analyzed using the DHIS reporting system. Best indicators of number of births, ANC registration, PMTCT testing, HIV prevalence among the pregnant population and ARV treatments during pregnancy were collected at the national and regional levels. MTCT was estimated using DHIS data as opposed to that generated with the Spectrum model.
**Results:** The resulting DHIS-estimated rates of HIV MTCT for 2012 and 2013 in Ghana were 24.8 % and 24.2% respectively, significantly higher than estimates published in the 2014 national report. We observed large gaps across the PMTCT care cascade at both the regional and national levels (Figures 1A and 1B). Based on the projected total number of HIV infected women, only 33% were likely to have received ARV treatment during pregnancy, compared with the previously reported national estimate of 76%.
**Conclusions:** MTCT will continue to fuel the HIV epidemic in Ghana at the current performance level of its PMTCT program. Our findings demonstrate that DHIS platforms, which are already deployed in many resource-limited countries, are effective at providing valuable, low-cost, real-time information that can be used to shape policy at local, regional, and national levels. Based on this assessment, the Ghana National AIDS/STI Control Program (NACP) has embarked on remedial actions, including commodity and stock management, resource allocation based on district-specific disease burden, and national targeting of gaps in PMTCT services.




**National and regional gaps in Ghana for 2013: A. the Antenatal care cascade. Shows service event counts and their rations in percentages. Onion layers provide national percentages of subgroups from the total estimated number of women in need of treatment. B. Subnational breakdown. Percent values reflect the size of each group minus the size of the next group. In Upper West and Brong Ahlo where the ANC registered HIV positive population was greater than the estimated population size (based on the number of BCG doses and HIV prevalence), the HIV population size was set to the number of HIV positive registrants.**

*[Figure 1]*

### WEPEE652

### CHARACTERISTICS OF CHILDREN ENTERING CARE AND AT ANTIRETROVIRAL THERAPY INITIATION IN THE CENTRAL AFRICA IEDEA COHORT, 2004-2013

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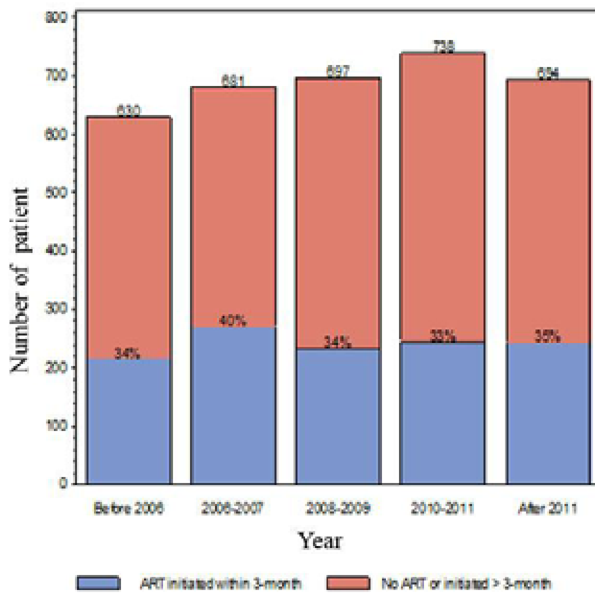
**Background:** Despite the World Health Organization (WHO) regularly updating guidelines to allow earlier initiation of antiretroviral therapy (ART) in children, the proportion of HIV-infected children initiating ART in sub-Saharan Africa lags behind adults. The impacts of implementing increasingly less conservative ART guidelines

on access to care and treatment initiation has not been described in Central Africa. We describe trend characteristics of children 0 - 12 years entering HIV care and initiating ART from 2004-2013 in Burundi, Democratic Republic of Congo, and Rwanda.

**Methods:** Data are from the Central Africa International Epidemiologic Databases to Evaluate AIDS (IeDEA) pediatric cohort of all children (n=5508) entering care. Measures included CD4 count, WHO clinical stage, age, and weight-for-age Z score (WAZ) using 2006 WHO standards, taken both at enrollment into HIV care and at ART initiation. Changes in the median or proportions of each measure by year of enrollment and at ART initiation were assessed to capture potential impacts of changing ART guidelines.

**Results:** Median age at care enrollment was 77.2 months (interquartile range (IQR); 44.8, 110) in 2004-2005, decreasing progressively to 30.3 months (IQR 5.8, 86.6) in 2012+. The proportion of children ≤24 months increased from 12.7% in 2004-2005 to 46.7% in 2012+. Similar, though less pronounced trend was observed at ART initiation with median age decreasing from 83.0 months (IQR 49.8, 117) in 2004-2005 to to 66.9 (IQR 24.3, 115) in 2012+. The proportion of children 0-24 months at ART initiation also increased from 9.6% in 2004-2005 to 24.2% in 2012+.




*[Proportion of children initiating ART within 3 months of enrolling in HIV care]*

**Conclusions:** Changes in guidelines may have succeeded in increasing the number of children entering care and/or initiating ART earlier. Gaps remain and more needs to be done to reduce time between diagnosis, enrolment in care and ART initiation.

## WEPEE653

### THE RELATION BETWEEN EFFECTIVENESS AND EFFICIENCY: ECONOMIC IMPACT OF SUBOPTIMAL PERFORMANCE IN HIV TREATMENT INITIATION AND VIRAL SUPPRESSION

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**Background:** Over 70,000 individuals currently benefit from universal antiretroviral treatment (ART) in Mexico provided at MoH facilities. As in most low- and middle-income countries today, the financial constraints of the Mexican publicly funded system and the implementation of the new WHO guidelines of HIV treatment initiation threat the sustainability of the national treatment program. Facility-level performance data is one of the most promising tools to increase value-for- money in HIV spending and access to more patients within the current budget constraint.

**Methods:** We analyzed the SALVAR database of the Mexican MoH to calculate three indicators of facility-level performance: percentage of patients who initiated ART with CD4>200 cel/mm$^3$, percentage of patients in viral suppression (viral load< 50 copies/mm$^3$) and percentage of patients in viral suppression and CD4 recovery. The sample included 116 facilities and 4,831 patients who started treatment in 2012. We calculated total annual costs of antiretroviral drugs per patient and compared the cost per person-year along three stages in the continuum of care: cost per patient on treatment, cost per virally suppressed patient, and cost per virally suppressed and immunologically recovered. We estimated best-practice frontiers to assess heterogeneity in facility performance.

**Results:** In 2012, 49% of all new patients initiated ART with CD4>200 cel/mm$^3$(IC 95%: 47.4;52.3), and 77% were below the undetectable viral load threshold (IC 95%: 73.8;79.4). Average annual cost per patient treated was 4,137 USD, and this figure increased steadily along the treatment cascade: 9,210 per early initiated patient, 6,028 per virally suppressed patient and 9,329 per patient in viral suppression and CD4 recovery. The difference in costs between the least and the most expensive facility was 4.3 times the cost per treated patient, 11.6 times the cost per early initiated patient, 13.9 per virally suppressed patient and 11.4 per patient with viral suppression and CD4 recovery.

**Conclusions:** In Mexico, there is enormous potential for gains in health outcomes and costs efficiency due to early initiation and treatment effectiveness of HIV patients receiving ART. Our results advocate for the proper measurement of patient attrition to the treatment cascade and the prompt dissemination of public performance data.

## WEPEE654

### UTILIZING LABORATORY DATA TO IMPUTE ART START DATES AND MONITOR COHORT TREATMENT OUTCOMES

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**Background:** Routine laboratory data can be used to impute missing clinical records in resource-limited settings. We previously demonstrated ART start dates can be imputed with high sensitivity and PPV based on laboratory results. We assess the validity of using imputed start dates relative to known start dates in the validation cohort to asses treatment outcomes.

**Methods:** Utilizing data from an urban public-sector facility in Johannesburg, South Africa, we created two cohorts: 1) known ART start date from clinical records and 2) start date imputed using only laboratory data (first documented hemoglobin or alanine transaminase test among patients with CD4 count in 12-months prior to these tests). We then estimated CD4 count and viral load responses by 12 months on ART (defined as the period 3 months prior to, and up to 3 months after, 12 months on ART). We report simple proportions achieving these outcomes stratified by cohort.

**Results:** Among the individuals retained on ART at 12 months post-initiation (n=9620 for the known cohort; n=9515 for the imputed cohort), almost identical CD4 and viral load outcomes at 12 months were observed for both cohorts (Table 1). Median CD4 count at 12 months post initiation was 262 (IQR 180-364) and 258 (IQR 178-361) in the known and imputed cohorts, respectively while proportion with a suppressed viral load was 87.3% and 87.1 % respectively.

**Conclusions:** Evaluation of clinical treatment outcomes in HIV care programs is possible national-level laboratory data. ART start dates imputed through a simple algorithm are sufficiently accurate to be used as a reference date for assessing ART treatment outcomes, and can be used in monitoring and evaluation of treatment programs.

| | | Known ART start date (n=9620) | Imputed ART start date (n=9515) |
|---|---|---|---|
| CD4 count at ART start date | *Number with CD4 result (n; %)* | 9120 (94.8%) | 9294 (97.7%) |
| | *Absolute CD4 result (median; IQR)* | 99 (38-172) | 102 (39-175) |
| CD4 count at 12 months post initiation | *Number with CD4 result (n; %)* | 7835 (81.4%) | 7724 (83.1%) |
| | *Absolute CD4 result (median; IQR)* | 262 (180-364) | 258 (178-361) |
| | *Absolute change in CD4 count (median; IQR)* | 158 (90-241) | 155 (86-237) |
| Viral load at 12 months post initiation | *Number with viral load result (n; %)* | 8434 (87.7%) | 8349 (89.8%) |
| | *Number achieving viral suppression (n; %)* | 8394 (87.3%) | 8285 (89.1%) |

*[Clinical outcomes among individuals retained in care at 12 months post initiation for the known and imputed ART start date cohorts (n=19,135)]*

## WEPEE655

### WILL LOW HIV RE-TEST RATES THREATEN THE MTCT ELIMINATION AGENDA? PROGRAMMATIC EVIDENCE FROM ZIMBABWE

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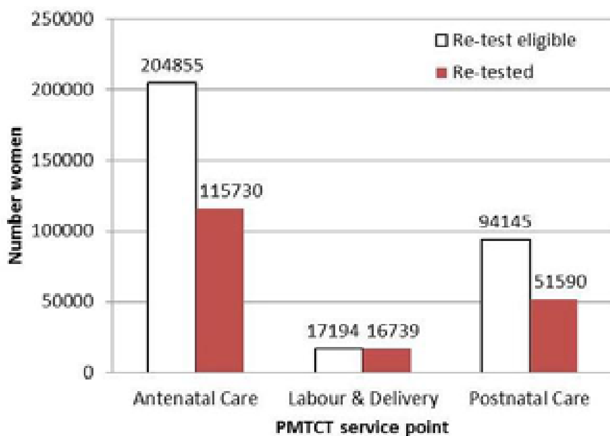
**Background:** Zimbabwe has an HIV prevalence of 16.1% among women in antenatal care and HIV is the leading cause of maternal death. Elimination of mother-to-child-transmission (MTCT) of HIV in Zimbabwe (< 5%) will require effective identification and enhanced interventions among groups of HIV positive women at high risk of MTCT. National guidance recommends re-testing all women without confirmed HIV status every 3 months during pregnancy and breastfeeding. Our objective was to determine recorded rates of HIV re-testing in Zimbabwe's PMTCT program.
**Description:** We utilised routinely collected aggregate data from 824 health care facilities offering PMTCT services in 6 Provinces of Zimbabwe. We descriptively analysed program data from September 2014 to December 2015 to determine HIV re-test rates among women accessing services along the PMTCT cascade. Chi square tests were used to determine significance of differences in proportion of women re-tested for HIV in PMTCT care setting.
**Lessons learned:** From Sept 2014-Dec 2015, among 245,816 women recorded in ANC, 6.7% (n=16,583) had a known positive HIV status and 6.4% (n=15,880) tested positive. Overall, 115,730 re-tests were recorded in ANC. Compared to number identified as eligible for re-testing, documented re-tests in Labour and Delivery were high (97.4%) while re-test rate in postnatal care was low (54.8%), a highly significant difference in proportion $\chi^2(1, N = 179,668) = 2265.55$, $p < 0.001$.




*[Number pregnant and lactating women HIV re-test eligible vs. re-tested, Jan 2014 - Dec 2015]*

**Conclusions/Next steps:** While limited by our inability to document cohort-based re-testing and individual outcomes, our analysis documented low HIV re-test rates among eligible pregnant and breastfeeding women in ANC and PNC in Zimbabwe. Low re-test rates in ANC are likely attributable to late gestational age at first ANC booking. Future research on supply- and demand-side barriers and implementation research on enhanced interventions to increase HIV re-testing in Zimbabwe's PMTCT program should be supported as a national priority in the drive to eliminate pediatric HIV and keep mothers alive.

# SCALE UP OF POINT-OF-CARE TECHNOLOGIES

## WEPEE656

### IMPROVING MARKET TRANSPARENCY AND STRATEGIC PROCUREMENT TO IMPROVE ACCESS TO POC EID

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**Background:** Globally, only half of infants born to HIV-infected mothers undergo early infant diagnosis (EID) and of these, only half ever receive test results. EID is the first step to getting onto treatment and without ART, 80% of children die by 5 years of age. Point-of-care (POC) EID can improve both coverage of EID and receipt of results, increasing the number of children linked to care and enrolled on ART. As access to and uptake of new POC EID is still limited, innovative strategies are required to improve overall access to this essential technology. EGPAF, MSF and CHAI support are working in 13 countries to document POC EID's impact on pediatric diagnosis and treatment, model cost effectiveness, and use strategies to improve price and terms and conditions to improve access to POC EID.
**Description:** In order to strengthen negotiations and improve access to POC EID, several organizations with large proportions of the nascent POC EID market are collaborating to pool volumes, jointly negotiate contracts, analyze cost of goods, and provide transparency for price and terms and conditions for procured products.
**Lessons learned:** Pooling volumes and joint negotiations can result in manufacturer contract terms that will improve access for POC EID, including service and maintenance agreements that are responsive to key priorities identified by in-country staff, such as more rapid module replacement and provision of loaner platforms when off-site repairs are required. Cost of goods for cartridges ranged from $6.20-10.91 USD, while market prices average about $20 USD, suggesting there is some room for price reductions in this market, particularly if volumes were to increase or be bundled with similar diagnostics, such as POC HIV viral load.
**Conclusions/Next steps:** Although the POC EID market is relatively small, use of procurement strategies, especially: pooled procurement; contract transparency; and knowledge of cost of goods can help to support healthier markets that support affordable and sustainable access to this critical diagnostic. In the future, bundling procurement of this test with POC diagnostics for other diseases (e.g. tuberculosis) can help further reduce prices of cartridges and transactional costs.

## WEPEE657

### AMPLIFICATION REFRACTORY MUTATION (ARMS) WITH REAL TIME DETECTION OF MUTATIONS M184V AND K103N AMONG NAIVE PATIENTS IN PANAMA

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**Background:** The HIV epidemic is still ongoing in Central American countries. Here we analyze the use of the ARMS technique for detecting known point mutations (M184V and K103N) in the HIV polymerase gene. This method is suitable for rapid, cost-effective and safe, and also an adaptation to a real time system.
**Methods:** Fifty plasma samples were analyzed for viral load and genotyping of HIV-1. The ARMS qPCR results were compared with the genotype test Viroseq v2.5. RNA was extracted using QIamp viral RNA mini kit. For the ARMS-PCR we used the primers described by Nanfack et al. and probes that allow the detection of each mutation using Rotorgene Q.
**Results:** For the M184V mutation 48 naive patients were analyzed; from them we obtained a concordance of 100 % with the sequencing method. Instead, for the mutation K103N, 5 samples for the analysis of K103N were mutated and the test got a concordance of 80 percent. On the other hand, The ARMS qPCR had a 95.56 % of concordance capable of detecting wild type samples for K013N.
**Conclusions:** ARMS qPCR proved to be capable of detecting specific mutations M184V and K103N, which is important because both are common in transmitted drug resistance. This could be an option as novel method for the detection of the status of the patient before the beginning of their treatments in countries with low resources where sequencing methods are not available. This method could minimize the time to obtain the results.

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## SCALE UP OF VIRAL LOAD MONITORING

### WEPEE658

### VIRAL LOAD AWARENESS AMONG PEOPLE ON ANTIRETROVIRAL TREATMENT IN NSANJE DISTRICT, MALAWI

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**Background:** In 2014 routine viral load (VL) monitoring was implemented in Nsanje district, Malawi. To increase patient's awareness of VL, health talks on VL were held in ART waiting areas and VL was explained individually to patients with a high VL. Patients' awareness of VL is vital to motivate their adherence and create demand for VL. We assessed patients' understanding of VL in order to further adapt patient education strategies.
**Methods:** A questionnaire was developed and pretested in Chichewa, examining patients' understanding of the goal of a VL test, its result interpretation and the offer of a VL test at the clinics. The questionnaires were administered in August 2015 at three health facilities to adults on ART greater than 18 years presenting in the ART waiting area of the health facility.
**Results:** A total of 384 patients were interviewed and the majority (76%) were female. Two hundred sixty seven (70%) patients had heard about VL testing of whom 77% reported that a VL test measures the amount of HIV in the blood, 88% understood that an undetectable VL means there is still HIV to be found in the blood and 21% knew the threshold at which their VL may require action. Sixty five percent identified poor adherence as the primary reason for having a high VL, while 24% thought this was due to having unprotected sex with an HIV+ person. Of the 267 who had heard about VL, 156 (58%) had never had a VL test performed, with 65% stating that the test had not been offered to them by the health care worker. Of the 111 who did get a VL test, only 50% received the result.
**Conclusions:** Empowerment of patients to request their VL and act upon on its result are important steps in the scale-up of viral load monitoring. Patient education on VL has led to a majority of patients on ART being aware of new HIV treatment monitoring standards. Interpretation of VL results by patients remains unsatisfactory and further patient education on result interpretation is needed, in conjunction with strategies targeting health care workers.

### WEPEE659

### ROLE OF COMMUNITY ART GROUP (CAGS) IN INTRODUCING ROUTINE HIV VIRAL LOAD MONITORING IN A RURAL DISTRICT OF MOZAMBIQUE

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**Background:** In December 2013, in line with WHO guidelines, Médecins Sans Frontières together with the Ministry of Health introduced routine monitoring of viral load (VL) for ART-enrolled patients in Changara District, Mozambique. Dried blood spots (DBS) were tested using the BioMerieux NucliSENS assay. More than 50% of ART patients in Changara are CAG members. The aim of the evaluation is to assess the VL cascade in Changara District, Mozambique and to compare outcomes between community ART group (CAG) and non-CAG patients.
**Methods:** Routinely collected data from the VL monitoring program was analysed retrospectively. The study population consisted of all patients more than 6 months on ART and attending Changara district ART facilities between December 2013 and September 2015. Coverage of VL and VL cascade outcomes were analysed by age, sex, time on treatment, and CAG membership. The high VL cascade included patients with first VL before October 2014.
**Results:** Among 3378 eligible patients, 62% (2108) completed a first VL. Coverage was higher among CAG than non-CAG patients (72% vs. 47%). 40% had a VL ≥1000; 60% and 38% among patients < 15 years and ≥15 years, respectively. There was no significant difference in proportion with elevated VL by sex, CAG status, or time on treatment.
Among 352 patients with VL ≥3000 copies/ml, 70% had ≥1 adherence counselling session. Of 82 (23%) who had a repeat VL 3-9 months later, 22% had a VL < 3000 copies/ml. Of an additional 27% (97) with a repeat VL 9-15 months later, 30% had a VL < 3000 copies/ml. 10% (13/131) of patients switched to second-line drugs.
**Conclusions:** Routine VL testing is feasible in this remote setting, with DBS sent to a centralised laboratory. Coverage remained low after 2 years but was higher among CAG members; CAGs were integral in disseminating information within CAG and mobilizing other members for VL sample collection. Rates of virological failure were worryingly high in all groups, suggesting that resistance and poor adherence are significant problems in this population. Further work is needed to clarify the reasons for failure and to ensure rapid access to second-line.

### WEPEE660

### HIV VIRAL LOAD TESTING SCALE UP IN MOZAMBIQUE: LABORATORY PERSPECTIVES AFTER 2 YEARS OF IMPLEMENTATION

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**Background:** The project purpose was to support Mozambican Ministry of Health to implement and scale up viral load (VL) testing and to investigate the feasibility in the country. The current paper describes the implementation strategy, outcomes and challenges after 2 years of VL testing from a laboratory perspective.
**Description:** In September 2013 MSF in partnership with Ministry of Health implemented Viral Load testing in Maputo and Tete. The Biomerieux NUCLISENS platform was installed in Maputo. The initial capacity estimated was 2500 tests per month. DBS samples were collected for routine viral load from 16 Health Centers with a cohort of 50405 patients on ART. Additional 26 facilities had access to target viral load. The laboratory received 46400 samples between Jan-2014 and Dec-2015 and carried out 44565 tests. Monthly collection increased from 933 to 3585. On average 1348 and 2366 tests/month were done in 2014 and 2015 respectively.
**Lessons learned:** The scale up was successful due a close collaboration between clinicians, laboratory staff and the counsellor team. Initially clinicians were failing to identify eligible patients through their files, while laboratory staff were playing a key role scheduling and collecting additional VL for all eligible patients with a request combined with CD4. Counsellors were also involved e in identifying eligible patients attending the health centre, i.e pharmacy for drug refill or waiting areas, and highlighting them to clinicians. The difference between number of samples collected and tests done was due to frequent breakdowns of the platform and reagent stock outs. The invalid rate was 2% and 3% for 2014 and 2015 respectively. Lack of skilled human resources at facility and central laboratory level and access to safe disposal of laboratory reagents were major challenges encountered.
**Conclusions/Next steps:** This experience demonstrates the feasibility of rapid scale-up of viral load in Mozambique. Lessons learned highlight the importance of adequate laboratory staffing, machine maintenance, robust reagents supply and effective waste disposal, and the importance of close cooperation between laboratory, clinical, and counselling teams in promoting uptake of viral load.

Thursday 21 July

# ORAL ABSTRACT SESSIONS

## THAA01 TARGETING RESERVOIRS FOR CURE

### THAA0101

### FREQUENT AND 'BURST-LIKE' REACTIVATION FROM LATENCY IN SIVMAC239M INFECTED MACAQUES

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**Background:** Anti-retroviral treatment interruption is usually followed by the recrudescence of infection within a few weeks. This is thought to arise from the reactivation and viral production of a number of latently infected cells. However, very little is known about the basic dynamics of reactivation from latency, such as the frequency of latent cell reactivation, whether reactivated cells live for a prolonged period, how much virus they produce, and whether they die following reactivation. We have developed a novel system of 'tagged' viruses to study the reactivation of individual latent cell 'reactivation founders' and combine this with viral dynamics modeling to better understand HIV reactivation.
**Methods:** Rhesus macaques were infected with 2.2 x 10^5 IU of a modified SIVmac239 containing an SIV population with ≈10,000 different clonotypes differing only at a 34bp 'tag' inserted between the Vpx and Vpr genes (SIVmac239M). Animals were treated with TFV/FTC/RAL at day 6 for 82 days (n = 3, group 1), or with TFV/FTC/IND/RTV on day 4 for >300 days (n = 2, group 2) prior to treatment interruption. Illumina sequencing was used to identify the frequency of individual clonotypes following treatment interruption.
**Results:** All animals showed a diversity of SIVmac239M clonotypes in serum prior to treatment, and rapid recrudescence of infection after treatment interruption. Analysis of the number and relative size of individual reactivation founder clonotypes revealed that between 3 and 63 unique clonotypes were detectable in different animals. Modeling of the ratios of the clonotypes in different animals showed that the frequency of reactivation from latency ranged from 27.3 reactivations per day to 0.46 per day.
Moreover, the ratio of clonotypes also showed that the duration of viral production from individual latent after reactivation must be "burst-like" in order to produce the observed frequencies.
**Conclusions:** The use of 'tagged' SIVmac239M is an extremely powerful tool for analyzing the dynamics of HIV reactivation from latency. Analysis of the reactivating clonotypes shows that the frequency of reactivation is higher in animals treated for shorter periods of time. The rapid 'burst-like' production of virus from reactivated cells suggests that these cells may be short lived following reactivation.

### THAA0102

### EXCISION OF HIV-1 DNA BY GENE EDITING: IN VITRO, EX VIVO AND IN VIVO STUDIES

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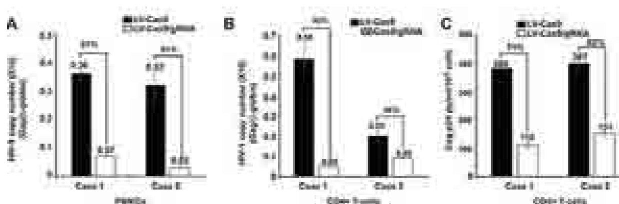
**Background:** Cure strategy for HIV-1 infection and AIDS should include methods that directly eliminate the proviral genome from HIV-1 positive cells and/or eliminate infected cells harboring latent virus.
**Methods:** We modified the CRISPR/Cas9 system to enable recognition of specific DNA sequences positioned within the HIV-1 promoter spanning the 5' long-terminal repeats (LTR) and various viral genes including Gag. We applied CRISPR/Cas9 by several methods including plasmid, lentiviral and Adeno-associated virus to cell models for latency, in vitro HIV-1 infection of CD4+ T-cells, CD4+ T-cells from HIV-1 positive patients and transgenic animals encompassing integrated copies of HIV-1 to assess efficacy of our gene editing molecule in excising a segment of HIV-1 for cells in in vitro, ex vivo and in vivo systems.
**Results:** We demonstrated complete elimination of HIV-1 DNA from latently infected cells, a drastic decrease in HIV-1 replication in in vitro replication of PBMCs and CD4+ T-cells, suppression of HIV-1 expression in PMCs and CD4+ T-cells for HIV-1+/AIDS patients due to InDel mutations in the viral genome and excision of viral DNA positioned between the LTR and Gag gene in tissues of HIV-1 transgenic mice upon injection of AAV-CRISPR/Cas9.
**Conclusions:** CRISPR/Cas9 can offer an effective, precise, efficient and safe strategy for eradication of HIV-1 in several laboratory model systems and can be considered for its advancements toward clinical trials.



*[Figure 1. Suppression of HIV-1 replication in PBMCs and CD4+ T-cells of HIV-1 infected patients]*

PBMCs or CD4+ T-cells from HIV-1 infected volunteers were treated with LV-Cas9 or LV-Cas9 plus LV-gRNAs A/B. **A.** Viral DNA determined by qPCR and normalized to β-globin DNA show decrease in viral copy number with LV-gRNAs. **B.** LV-Cas9 or LV-Cas9 plus LV-gRNA A/B infected CD4+ T-cells show reduction in HIV-1 DNA copy number with LV-gRNAs. **C.** Quantitation of p24 Gag ELISA from infected cells as measure of viral replication.

### THAA0103

### CCR5 GENE EDITED CELLS TRAFFIC TO VIRAL RESERVOIR TISSUES AND UNDERGO SHIV-DEPENDENT POSITIVE SELECTION IN NONHUMAN PRIMATES

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**Background:** Gene editing of the CCR5 coreceptor locus in hematopoietic stem/progenitor cells (HSPCs) is a promising therapy for HIV infection. We have previously demonstrated the feasibility of this approach in nonhuman primates. Here, we leverage our expertise with gene editing in the pigtailed macaque, *M. nemestrina* to interrogate the clonal persistence, trafficking, and antiviral efficacy of CCR5-edited cells. Our objectives were to understand how individual gene-edited HSPCs persist following autologous transplantation and virus infection, determine whether HSPC-derived, gene-edited progeny traffic to viral reservoir tissues, and develop strategies to increase the number of these cells *in vivo*.
**Methods:** Zinc Finger Nucleases (ZFNs) are used to target the CCR5 locus in macaque HSPCs. Gene edited HSPCs are transplanted into animals either prior to infection with simian/human immunodeficiency virus (SHIV), or in SHIV-infected animals that are treated with a combination antiretroviral therapy (cART) regimen designed to approximate a well-suppressed $HIV^+$ patient. Edited cells are measured in peripheral blood, bone marrow, gastrointestinal (GI) tract, lymph nodes, and at necropsy in a panel of 25 tissues, using methods including deep sequencing.
**Results:** We observe up to 14-fold enrichment of CCR5-gene edited memory $CD4^+$ T-cells in SHIV-infected animals, consistent with virus-dependent selection against CCR5 wt memory $CD4^+$ T-cells. Gene edited cells are found in a broad array of anatomical sites. These include tissues that we have identified as viral reservoirs in our model, namely GI tract and lymph nodes. Spatial and temporal tracking of CCR5 mutations suggests that gene edited cells persist long-term, and are polyclonal. Homology directed repair (HDR) pathways can be exploited in macaque $CD34^+$ HSPCs, facilitating knock-in of selectable markers at the disrupted CCR5 locus.
**Conclusions:** Our gene editing strategy results in stable engraftment of CCR5-mutated and SHIV-resistant HSPCs and their progeny in blood, and in tissues known to serve as viral reservoirs. Importantly, gene-edited $CD4^+$ T-cells undergo positive selection during active infection, further supporting the validity of this approach in the clinic. Our preliminary *ex vivo* HDR data suggest that these gene-edited cells could be engineered to undergo positive selection without the need for ongoing viral replication.

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## THAA0104LB

### NO EVIDENCE OF ONGOING REPLICATION IN TISSUE COMPARTMENTS DURING COMBINATION ANTIRETROVIRAL THERAPY

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**Background:** Sources of HIV persistence during combination antiretroviral therapy (cART) remains uncertain, and the contribution of active cycles of HIV replication in tissue compartments is unknown. Genetic analyses are sensitive measures to detect ongoing cycles of virus replication, particularly in individuals who undergo cART early after infection, when HIV populations are relatively monomorphic and increases in genetic diversity are easily detectable. To investigate whether ongoing replication occurs in tissues, we studied HIV populations in blood and anatomic compartments from 3 individuals who initiated antiretroviral therapy shortly after HIV infection and maintained viral suppression for > 8y.
**Methods:** Samples from three individuals in IRB-approved studies were studied. Individuals started cART soon after infection, maintained HIV RNA < 50 c/ml for 8-16y, and underwent autopsy for primary effusion lymphoma (N=1), or colonoscopy (N=2). HIV from autopsy was quantified (RT-PCR), and HIV sequences (*pro-pol*, 1200 nt) were obtained from tissues and peripheral blood lymphocytes (PBL) using single genome sequencing (SGS). Sequences were aligned, subjected to phylogenetic (MEGA), and compartmentalization (Slatkin-Maddison, FST, geographic subdivision) analyses; 263 sequences from autopsy and 293 from individuals undergoing colonoscopy were analyzed.
**Results:** HIV DNA was detected in most tissues at autopsy (median 1.8 copies/1e6 cells, range 1-75/1e6 cells). HIV had limited genetic diversity in tissues and PBL (average pairwise difference, APD 0.3 - 0.6%). From the autopsy, PBL (N=124), spleen (38), lymph node (30), ileum (30), jejunum (12), colon (5), effusion cells (10), kidney (5), lung (3), testes (1) were obtained; no HIV was recovered from frontal lobe, spinal cord, or the cell-free effusion fluid. HIV populations were well-mixed in tissues and non-divergent from PBL-derived HIV, with no evidence of compartmentalization in any tissue. Identical hypermutated sequences in PBL and several tissues demonstrated distribution of clonally expanded cells had occurred. In 2 individuals undergoing colonoscopy, analysis of HIV from ileum, colon, and PBL revealed no evidence of ongoing replication and no divergence from pretherapy plasma RNA obtained 12-16 years prior to colonoscopy.
**Conclusions:** No evidence of ongoing replication was detected in tissues compared to peripheral blood in individuals undergoing cART, suggesting combination antiretroviral therapy blocks active HIV replication, including in tissues.

## THAA0105

### ALLOGENEIC STEM CELL TRANSPLANTATION IN HIV-1-INFECTED INDIVIDUALS; THE EPISTEM CONSORTIUM

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**Background:** To date, the only and most compiling evidence of a medical intervention that has been able to cure HIV-1 infection (the “Berlin patient”), involved an allogeneic stem cell transplant (SCT) from a donor who was homozygous for CCR5Δ32. Although this high-risk procedure is only indicated for certain hematological malignancies, the strategy raised tremendous scientific potential to gain insight in the mechanisms of HIV eradication.
**Methods:** The EpiStem consortium aims to guide clinicians of HIV infected patients who require an SCT in donor search and CCR5 screening, ethical regulations, the SCT procedure, sampling procedures and in depth investigations to study HIV persistence. The patients are included in the EPISTEM observational cohort. Detailed analysis of the cohort should provide insight as to whether additional factors such as conditioning regimen, total body irradiation and graft versus host disease may contribute to the eradication of the potentially infectious viral reservoir in addition to the lack of a functional CCR5 receptor.
**Results:** Nearly 30,000 cord blood units in multiple European blood banks and more than 1.000.000 adult donors have been genotyped for CCR5 to generate a registry of CCR5Δ32 available donors. Twenty HIV positive patients with diverse hematological malignancies have been registered to the EPISTEM cohort. Since 2012, 13 patients have been transplanted; 4 with a CCR5Δ32, 1 with a heterozygous, and 8 with a CCR5 WT donor. In 3 cases the donor cells came from cord blood and in 10 cases from an adult donor. So far, 5 patients have successfully passed the 12 months follow-up after transplantation, and 8 patients have died after transplantation, despite achieving full donor chimerism in most cases. Preliminary analysis of virological and immunological data from blood and tissue samples shows a systematic reduction of HIV-1 reservoirs to very low levels.
**Conclusions:** EPISTEM is actively recruiting new cases and continues to systematically investigate HIV persistence over time to gain insight in potential HIV-1 eradication.

## THAA0106LB

### ELIMINATION OF HIV-1 LATENTLY INFECTED CELLS BY PKC AGONIST GNIDIMACRIN ALONE AND IN COMBINATION WITH A HISTONE DEACETYLASE INHIBITOR

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**Background:** Several classes of HIV-1 latency reversing agents (LRAs) including PKC agonists and HDACis have been investigated for their effects against latent HIV-1 infection. Although many LRAs were capable of reactivating latent HIV-1, it is less certain if they can actually reduce the latent viral reservoirs. To identify potent LRAs that can effectively eliminate/reduce latent HIV-1 reservoirs, we investigated the PKC agonist gnidimacrin (GM) alone and in combination with a selective HDAC inhibitor thiophenyl benzamide (TPB) for their effectiveness on elimination of HIV-1 latently infected cells.
**Methods:** 1) cell line model: U1 cells were treated with various concentrations of GM with/without the presence of TPB. The culture supernatant was then collected for P24 ELISA to quantify latent HIV-1 activation; 2) *ex vivo* model: PBMCs from HIV+ patients (with >5 years of ART and undetectable viral load) were treated with GM, GM+TPB, or vorinostat in the presence of anti-retroviral agents. The viral DNA in the lately infected cells were quantified with RT-PCR and the frequency of latently infected cells was determined by using a limiting dilution viral outgrowth assay.
**Results:** In U1 model, the $EC_{50}$ of GM was 18 pM for latent viral activation and its potency was enhanced about three-fold in the presence of TPB. In *ex vivo* model, GM alone (20 pM) was able to reduce pro-viral DNA and the frequency of latently infected cells by 5-10 folds. Addition of TPB further increased the effect of GM by over three-fold.
**Conclusions:** The results of this study demonstrate that GM is an extremely potent LRA that can effectively reduce HIV-1 latently infected cells *ex vivo* at pM concentrations. In the presence of TPB, the effect of GM was further enhanced. TPB exhibited good selectivity with no overlapping cytotoxic and effective doses in contrast to other tested HDACIs. Moreover, TPB may antagonize the potential side effects of GM by inhibiting high dose GM-induced inflammatory cytokine production. Thus, combination of GM and TPB provides a unique and effective option in reducing the latent HIV-1 reservoir.

# THAA02 IMMUNE CONTROL OF HIV

## THAA0201

### NOVEL CONSERVED ELEMENT HIV/SIV DNA VACCINES MAXIMIZE BREADTH AND MAGNITUDE OF IMMUNE RESPONSE

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**Background:** HIV sequence diversity and potential "decoy" epitopes are hurdles in the development of an effective AIDS vaccine. To target immune responses towards invariable viral regions, we engineered DNA-based immunogens encoding conserved elements (CE) of HIV-1 selected on the basis of stringent conservation, functional importance, broad HLA-coverage, and association with viral control.
**Methods:** DNA vectors were generated expressing 7 collinearly arranged CE from $p24^{gag}$ to cover >98% of group M sequences. By analogy, a similar vaccine was developed against SIV Gag. Heterologous DNA regimens consisting of CE prime were followed by a boost with DNA expressing either full-length Gag or a combination of CE+full-length Gag. Immune responses were evaluated in macaques vaccinated by IM/electroporation.
**Results:** All HIV and SIV CE DNA-vaccinated macaques developed robust CE-specific memory responses with a significant fraction of cytotoxic T cells. In contrast, vaccination with HIV or SIV full-length *gag* DNA was very inefficient in inducing CE responses (50% responders; fewer CE recognized). Subsequent *gag* DNA vaccination significantly boosted the preexisting CE responses. Interestingly, vaccination with a combination of CE+*gag* DNA efficiently increased the breadth of preexisting CE responses, indicating a significant change in epitope hierarchy both for the HIV and SIV vaccine regimens. The induced T cell responses rapidly disseminated into secondary lymphoid organs and effector mucosal sites. CE responses were maintained for >2 years. A single booster vaccination with CE DNA resulted in rapid increase of pre-existing responses reaching up to ~7% of total T cells.
**Conclusions:** Priming with CE DNA is critical to induce broad responses to vulnerable sites of the virus while avoiding variable or decoy targets that may divert effective T cell responses towards less protective viral determinants. Combination of CE and full-length immunogens provides a novel strategy to increase the breadth and magnitude of cellular and humoral immunity. This strategy allows for the development of robust T cell responses targeting a broad number of epitopes, including subdominant conserved viral epitopes. The expanded breadth of the responses could provide an advantage in restricting viral propagation. This vaccine regimen is currently under development for testing in an HVTN clinical trial.

## THAA0202

### CD8+ T CELL BREADTH AND EX VIVO VIRUS INHIBITION CAPACITY DISTINGUISH BETWEEN VIREMIC CONTROLLERS WITH AND WITHOUT PROTECTIVE HLA CLASS I ALLELES

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**Background:** The mechanisms of viral control and loss of viral control in chronically infected individuals with or without protective HLA class I alleles are not fully understood. We characterized longitudinally the immunological and virological features that may explain divergence in disease outcome in 70 HIV-1 C-clade infected antiretroviral therapy (ART)-naïve South African adults, 35 of whom possessed protective HLA class I alleles.
**Methods:** Viral loads, CD4 counts, HLA typing and sequencing were performed by standard molecular methods. HLAs A*74:01, B*57, B*58:01, B*81:01 were considered protective. HIV-specific $CD8^+$ T-cell immune responses were quantified using the interferon gamma (IFN-g) enzyme-linked immunosorbent spot (ELISPOT) assay after stimulation with overlapping peptides (OLP) and HLA-specific optimal peptides derived from the C clade HIV consensus sequence covering the whole proteome. T cell polyfunctionality and proliferation upon stimulation with Gag peptide pool was assessed by flow cytometry and CFSE assay respectively. Virus inhibition was assessed by an *ex vivo* co-culture assay.
**Results:** Over five years of longitudinal follow-up, 35% of individuals with protective HLA class I alleles lost viral control compared to none of the individuals without protective HLA class I alleles (p=0.06). Sustained HIV-1 control in patients with protective HLA class I alleles was associated with breadth of HIV-1 $CD8^+$ T-cell responses against Gag and enhanced ability of $CD8^+$ T cells to suppress viral replication *ex vivo*. In some cases loss of virological control was associated with reduction in both total breadth of $CD8^+$ T cell responses and the ability of $CD8^+$ T cells to suppress viral replication *ex vivo,* in the absence of differences in HIV-1-specific $CD8^+$ T cell polyfunctionality or proliferation. In contrast, viremic controllers without protective HLA class I alleles possessed low breadth of HIV-1-specific $CD8^+$ T cell responses characterized by reduced ability to suppress viral replication *ex vivo*.
**Conclusions:** These data suggest that the control of HIV-1 in individuals with protective HLA class I alleles may be driven by broad $CD8^+$ T cell responses with potent viral inhibitory capacity while control among individuals without protective HLA class I alleles may be mediated by $CD8^+$ T cell independent mechanisms.

## THAA0203

### NEUTROPHILS MEDIATE POTENT AND RAPID ANTI-HIV ANTIBODY-DEPENDENT FUNCTIONS

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**Background:** Functional antibodies have been shown to mediate innate immune effector responses such as antibody dependent cellular cytotoxicity (ADCC) and their importance in HIV protection was highlighted by the RV144 HIV vaccine trial. However, the majority of studies have focused on antibody activation of NK cells and monocytes, while neutrophils remain understudied. Neutrophils are of particular importance as they are abundantly present in the mucosal sites of HIV transmission, constitute 40-70% of white blood cells and can respond rapidly to stimuli. We investigated the repertoire of antibody dependent functions in HIV infected patients and examined any differences between long-term slow progressors (LTSP) and progressors.
**Methods:** Neutrophils, PBMC, monocytes and NK cells were isolated from healthy donors and were evaluated for ADCC killing kinetics utilising HIV-specific antibodies. In addition, antibody-dependent phagocytosis (ADP) and ADCC activity of purified plasma IgG from 33 HIV positive subjects not on antiretroviral therapy was evaluated using healthy donor neutrophils. Nineteen subjects were LTSP, who maintained CD4 T-cell >450 cells/µl (median 656/µl) for over 7-years after infection, while 14 were HIV progressors who progressed to treatment within 6-years of infection (median CD4 T-cell 478/µl) at the time of sample collection.
**Results:** Neutrophils readily mediated HIV-specific ADCC and ADP and significant correlations between the functions were observed for LTSP $R_s$=0.626 (p=0.004) and progressors $R_s$=0.653 (p=0.014). Neutrophils mediated potent ADCC activity, having 2 fold greater responses than NK cells, enhanced killing capacity compared to PBMC's, and induced similar responses to monocytes. Neutrophils required a higher concentration of HIV IgG to reach their maximal ADCC activity compared to NK cells, PBMC and monocytes. Similar levels of ADP and ADCC were observed in neutrophils between the LTSP and progressors patient groups.
**Conclusions:** HIV-specific IgG can activate neutrophils to mediate ADP and ADCC against HIV-1 envelope protein. As both of these functions are highly correlated, the same Fc receptors/antibodies may be utilised to mediate these responses. Neutrophils may require more Fc receptor/antibody interactions for activation. The rapid action and high magnitude of ADCC by neutrophils highlights their potential importance early in HIV infections.

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## THAA0204

### IMPACT OF ANTIBODY ISOTYPE AND ASSOCIATION CONSTANT RATE ON ANTIVIRAL FUNCTIONS AGAINST HIV-1

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**Background:** Both IgG and IgA are found at mucosal surfaces where HIV-1 enters the body in over 90% of the cases. However, few studies have investigated whether IgG and IgA recognising the same epitopes presented different antiviral abilities that could prevent HIV-1 infection. Here, we compared the antiviral properties of IgG and IgA in various assays and examined the relationships between kinetics parameters of antibody-virions interactions and antiviral functions.
**Methods:** A panel of 12 neutralising monoclonal antibodies (mAbs) including IgG, monomeric (m)IgA and dimeric (d)IgA were compared for their ability to bind, capture, mediate viral aggregation, neutralise and inhibit HIV-1 virions transcytosis across epithelial cells. Kinetics parameters of mAbs and HIV-$1_{Bal}$ gp140 interactions were measured using Bio-Layer Interferometry (BLI), HIV-$1_{Bal}$ capture by the panel of mAbs was determined by ELISA, antibody mediated viral aggregation (AMVA) was detected using Nanoparticle Tracking Analysis (NTA), neutralisation was assessed by TZM-bl assay and inhibition of viral transcytosis through a monolayer of HEC-1A cells was quantified by real-time Reverse Transcription Polymerase Chain Reaction (RT-PCR).
**Results:** We showed previously that the association constant rate ($K_{on}$) correlates with antibody ability to capture viral particles, with IgG binding more quickly to its target and capturing more HIV-1 virions than its mIgA and dIgA counterparts with the same epitope specificity. In this study, we demonstrated that not only the $K_{on}$ of neutralising mAbs significantly correlates with viral capture but also with neutralisation ($p< 0.01$). Additionally, we found a significant relationship between the proportions of virions captured and the antibody neutralisation activity ($p< 0.01$). However, no relationship was observed between $K_{on}$ and AMVA or between $K_{on}$ and inhibition of viral transcytosis. Interestingly, dIgAs were able to induce viral aggregates and to inhibit HIV-1 transcytosis while IgGs and mIgAs recognising the same epitopes failed to show these functions.
**Conclusions:** Thus, this work implies that the association constant rates of mAbs might be use as an indicator of antibody ability to capture viral particles and to neutralise infectious virions. Moreover, it shows that antibody isotype influences antiviral functions and provided insights for the selection of potent antibody against HIV-1.

## THAA0205

### T REGULATORY CELL DEPLETION IN CONTROLLER MACAQUES REACTIVATES SIV AND BOOSTS CTLS

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**Background:** T regulatory cells (Tregs) may be involved in formation of latent reservoir, being susceptible to HIV/SIV infection. Resting Tregs harbor high levels of HIV/SIV. During acute infection, Tregs decisively contribute to the establishment of HIV reservoir by reversing CD4+ T cell immune activation status. During chronic infection, they contribute to the impairment of CTL responses, as Treg expansion correlates with loss of CTL function and their ex vivo depletion enhances T cell responses to HIV/SIV antigens. HLAB27+and B57+ HIV-specific CD8+ T cells from elite controllers evade Treg suppression. We hypothesized that Treg depletion is a valid approach for HIV cure, in which a single intervention reduces the size of the reservoir, reactivates the virus and boosts cell-mediated immune responses.
**Methods:** Five SIVsab-infected RMs, in which spontaneous supercontrol of virus replication (< 3 copies/ml plasma) associates complete control of immune activation, were depleted of Tregs with Ontak (Denileukin diftitox), an engineered protein combining IL-2 and diphtheria toxin. Treg depletion was monitored by flow cytometry and immunohistochemistry; plasma viral load was measured by single copy assay; specific cellular immune responses to SIV antigens were monitored flow-cytometrically by intracellular cytokine staining after stimulation with SIVsab peptides.
**Results:** Ontak administration to SIVsab-infected RMs resulted in significant depletion (>75%) of the circulating Fox-P3+CD25+CD4+ T cells. Up to 60% and >50% of Tregs were depleted from gut and the lymph nodes, respectively. Ontak impact on overall CD8+ T cell counts was minimal. Treg depletion resulted in a major increase of the levels of CD4+ T cell activation (Ki-67). In the absence of antiretroviral therapy, virus rebound to 103 vRNA copies/ml of plasma occurred after Ontak administration. Importantly, Treg depletion resulted in a significant boost of the SIV-specific CD8+ T cells and rapid clearance of the reactivated virus.
**Conclusions:** Treg depletion in chronically SIV-infected superelite controller RMs resulted in both reactivation of latent virus and a boost of CTL responses. The overall Treg ability to control immune responses was significantly impaired despite the fact that Treg depletion was incomplete. As no latency reversing agent in development has such a dual activity, our strategy holds great promises for cure research.

## THAA0206

### PD-1 BLOCKADE SYNERGIZES WITH ART FOR RESTORING ANTI-VIRAL CD8 T CELL FUNCTION AND POSSIBLY DESTABILIZING THE VIRAL RESERVOIR IN SIV INFECTED MACAQUES

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**Background:** The expression of the inhibitory receptor programmed death-1 (PD-1) on anti-viral CD8 T cells and virally infected CD4 T cells provides an immunological signature for both T cell dysfunction and viral latency during chronic SIV/HIV infection. We hypothesized that PD-1 blockade administered during the initiation of anti-retroviral therapy (ART) and under fully suppressive ART would have direct effects on both dysfunctional CD8 T cells and latently infected CD4 T cells. To test our hypothesis we developed a primatized anti-human PD-1 Ab to allow for repeated infusions in rhesus macaques (RMs) and administered PD-1 blockade to chronically SIV infected RMs in combination with ART.
**Methods:** SIVmac251 infected RMs were administered 5 infusions (over 14 days) of a 3mg/kg dose of primatized anti-PD-1 Ab 10 days prior to the initiation of ART. About 8 months post ART, RMs received 3 monthly infusions of 10mg/kg anti-PD-1 or saline. ART was interrupted at 2 weeks after the final PD-1 Ab infusion.
**Results:** PD-1 blockade administered during the initiation of ART enhanced proliferation of anti-viral CD8 T cells ($p=0.02$), increased their cytotoxic potential ($p=0.04$) and polyfunctionality ($p=0.01$). Importantly, the PD-1 Ab treated animals showed more rapid viral suppression (42 days in the PD-1 group versus 140 days in saline group; $p = 0.01$) and greater reconstitution of Th17 cells in the rectal mucosa ($p = 0.01$) following initiation of ART. Moreover, PD-1 blockade administered under suppressive ART resulted in transient but significant increases in viremia, suggesting possible effects on destabilizing the latent viral reservoir. Following ART interruption, PD-1 Ab treated animals showed up to 80-fold reduction in set point viremia compared to set point levels prior to initiation of ART.
**Conclusions:** These results reveal for the first time the potential of PD-1 blockade both on restoring anti-viral CD8 T cell function and possibly destabilizing the viral reservoir under ART. They highlight the potential of PD-1 blockade to work synergistically with other therapeutic agents such as vaccines and latency reversing agents to effectively diminish HIV reservoir under ART as a means to establish a functional cure.

# THAB01 TREAT EARLY AND STAY SUPPRESSED

## THAB0101

### EXTENDED ART INITIATION CRITERIA CAN BE IMPLEMENTED SUCCESSFULLY IN RURAL SOUTH AFRICA

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**Background:** There is concern that earlier initiation of antiretroviral treatment (ART) in lower resource settings may compromise access to care for patients with lower CD4 counts, and that patients with higher CD4 counts may have lower retention in care (RIC). In July 2014, we extended ART initiation criteria from CD4 cell counts of ≤350 to ≤500 copies/ µl in 9 primary health clinics in KwaZulu-Natal, South Africa. Here we assess whether any compensatory reduction in initiation of sicker patients was seen and whether retention among those newly eligible was satisfactory in this public sector setting.
**Methods:** In this retrospective cohort analysis we compare proportions initiated on ART and RIC at 6 months among patients with baseline CD4 taken between July 1

and December 31, 2014 (CD4≤500 eligibility cohort) and between July1 and December 31, 2013 (CD4≤350 eligibility cohort). Pregnancy, TB, age < 15 years and WHO stage 3 or 4 were exclusion criteria. Outcomes were determined from baseline CD4 and analysed using survival analysis.
**Results:** There were 768 patients in the CD4≤350 eligibility cohort, with 31% having baseline CD4 ≤200; 51% 201-350, and; 12% 351-500. Of the 856 in the CD4 ≤500 eligibility cohort 23% had a baseline CD4 ≤200, 37% 201-350 and 33% 350-500. In both cohorts, median age was 31 years and 67% were female. Among participants with CD4 351-500, percentage initiated on ART within 3 months increased 10 fold between the periods from 7% (95%CI:3.4-13.0) to 70% (95%CI: 61-78); among those with CD4≤200 this increased from 70% (95%CI:55-80) to 86% (95%CI:79-93). The proportion initiated within 3 months among those with baseline CD4 201-350 remained unchanged at approximately 75%. RIC at 6 months was 82% (95%CI:79%-85%) in the CD4≤500 cohort and 80% (95%CI:76%-84%) in the CD4≤350 cohort.
**Conclusions:** Expanding eligibility for ART to CD4≤500 resulted in rapid change in time to ART initiation among those with baseline CD4 351-500 without compromising initiation or RIC among those with a CD4 ≤ 350. Extended initiation criteria can be successfully implemented in high HIV prevalence, low resources-settings without compromising access to care for more vulnerable patients.

## THAB0102

### IMMEDIATE HIV TREATMENT PREVENTS NEW INFECTIONS: CAUSAL EVIDENCE ON THE REAL-WORLD IMPACT OF IMMEDIATE VERSUS DEFERRED ART IN RURAL SOUTH AFRICA

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**Background:** Immediate initiation of antiretroviral therapy (ART) reduces HIV transmission in serodiscordant couples in randomized controlled trials. However, the effect of immediate ART under real-life conditions is not well characterized. We investigate the effect of immediate ART eligibility on HIV incidence among HIV-uninfected household members using a large population-based longitudinal cohort in KwaZulu-Natal, South Africa. We use a quasi-experimental regression discontinuity design to estimate causal effects using the CD4 count-based threshold rule for ART initiation.
**Methods:** Households members of patients seeking care at the Hlabisa HIV Treatment and Care Programme between January 2007 and August 2011 with CD4 counts up to 350 cells/µl were eligible for inclusion if they had at least two HIV tests and were HIV-uninfected at the time the index patient linked to care (N=4,115). A regression discontinuity design was used to assess the intention-to-treat effect of immediate versus delayed ART eligibility on HIV incidence among household members. Exploiting the CD4-count based threshold rule for ART initiation (CD4< 200 cells/µl until August 2011), we used Cox proportional hazards models to compare outcomes for household members of patients who presented for care immediately above versus immediately below the threshold.
**Results:** Characteristics of household members of index patients initiating HIV care were balanced between those with an index patient immediately eligible for ART (N=2,489) versus delayed for ART (N=1,626). In the immediate group, median age was 20 years (IQR 16 to 48) and 61.4% were female, compared to median age 20 years (IQR16 to 47) and 62.4% female in the delayed group. Seventy-eight percent of index household members immediately eligible for ART initiated ART within 6 months of initiating care, compared to 22.3% of those delayed for ART. Overall HIV incidence among household members was 2.8 infections per 100 person-years (95% CI 2.5 to 3.1). Immediate eligibility for treatment resulted in a 45% decrease in HIV incidence in households (HR=0.55, 95% CI 0.35-0.87).
**Conclusions:** Outside of a tightly-controlled clinical trial setting, we demonstrate substantial reductions in household-level HIV incidence with immediate eligibility for ART. The benefit of ART uptake may extend outside of couples into spillover effects in households.

## THAB0103LB

### RANDOMIZED TRIAL OF STOPPING OR CONTINUING ART AMONG POST-PARTUM WOMEN WITH PRE-ART CD4 > 400 CELLS/MM³ (PROMISE 1077HS)

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**Background:** Health benefits of postpartum antiretroviral therapy (ART) for women with high CD4 counts have not been assessed in randomized trials.
**Methods:** Asymptomatic, HIV+, non-breastfeeding women with pre-ART CD4 cell counts ≥ 400 cells/mm³ started on ART during pregnancy were randomized up to 42 days after delivery to continue or discontinue ART. LPV/RTV+TDF/FTC was the preferred ART regimen. The primary composite endpoint included death, AIDS-defining illness, and serious non-AIDS events. The sample size was selected to provide 88% power to detect a 50% reduction from an annualized primary event rate of 2.07%. A post-hoc analysis evaluated WHO Stage 2 and 3 events. All analyses were intent to treat.
**Results:** 1652 women from 52 sites in Argentina, Botswana, Brazil, China, Haiti, Peru, Thailand and the US were enrolled (1/2010-11/2014). Median age was 28 years and major racial categories were Black African (28%), Thai (16%) and White (15%). Median entry CD4 count was 696 cells/mm³, median ART exposure prior to delivery was 19 weeks (IQR 13-24) and 94% had entry HIV-1 RNA < 1000 copies/ml. After a median follow-up of 2.3 years, the primary composite endpoint rate was 0.34%, significantly lower than expected and not significantly different between arms. WHO Stage 2 and 3 events were reduced with continued ART (Table). Toxicity rates were higher in the continue arm but the difference was not statistically significant. Among women randomized to continue ART, 189/827 (23%) had virologic failure. Of the 155 with resistance testing, 134 (86%) failed without resistance to their current regimen, suggesting non-adherence.

| Endpoint (time to first event) | Continue ART | | Discontinue ART | | Hazard Ratio | p-value |
|---|---|---|---|---|---|---|
| | no. | no./ 100 pyr | no. | no./ 100 pyr | | |
| Primary Endpoint | 6 | 0.31 | 7 | 0.36 | 0.87 (0.29, 2.59 | 0.80 |
| AIDS Defining (WHO 4) | 2 | 0.10 | 3 | 0.15 | 0.67 (0.11, 4.02) | 0.66 |
| Serious Non-AIDS (Renal) | 2 | 0.10 | 1 | 0.05 | 2.00 (0.18, 22.01) | 0.56 |
| Death | 2 | 0.10 | 4 | 0.20 | 0.52 (0.09, 2.81) | 0.44 |
| Secondary Endpoints | | | | | | |
| Composite Endpoint of HIV/AIDS related events and WHO stage 2-3 events | 57 | 3.09 | 100 | 5.55 | 0.56 (0.40, 0.77) | <=0.001 |
| WHO 2-3 events | 38 | 2.02 | 80 | 4.36 | 0.47 (0.32, 0.68) | <=0.001 |
| Grade 2 Toxicity and above | 260 | 18.4 | 232 | 15.4 | 1.17 (0.98, 1.40) | 0.08 |
| Grade 3 and 4 Toxicity | 188 | 12.0 | 160 | 9.8 | 1.21 (0.98, 1.50) | 0.07 |

*[Study Endpoint Table]*

**Conclusions:** In the largest randomized trial to date evaluating postpartum ART, serious clinical events were rare among young women with high CD4 cell counts. Continued ART was safe and was associated with reductions in WHO 2/3 conditions. Virologic failure rates were high, underscoring the need to improve adherence in this population.

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## THAB0104

### SALIF TRIAL: SWITCHING SUPPRESSED FIRST-LINE PATIENTS TO TENOFOVIR/EMTRICITABINE/RILPIVIRINE (TDF/FTC/RPV) IS NON-INFERIOR TO TDF/FTC/EFAVIRENZ (TDF/FTC/EFV) AND COULD BE AN ALTERNATIVE TREATMENT OPTION IN LMICS

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**Background:** Current global antiretroviral therapy (ART) guidelines recommend immediate initiation of ART and thus an increasing number of HIV patients are becoming eligible for treatment. There is a pressing need for simple, efficacious, well tolerated, affordable ART regimens. Rilpivirine (RPV) has a good safety profile and is a well-tolerated NNRTI whose low recommended once-daily dosing makes it a good candidate component for an affordable fixed-dose-combination (FDC) in low- and middle income countries (LMIC).

**Methods: SALIF** *(**S**witching **A**t **L**ow HIV-1 RNA **I**nto **F**ixed Dose Combinations)* was a 48 week, multicenter, phase 3b, randomized, open-label clinical study, designed to demonstrate non-inferiority of TDF/FTC/RPV to TDF/FTC/EFV (both as FDC) in maintaining HIV-1 RNA suppression (VL< 400copies/mL) among adults currently on first-line NNRTI-based (EFV or nevirapine) ART with HIV-1 RNA < 50copies/mL. The study was conducted in Cameroon, Kenya, Senegal, South Africa, Thailand and Uganda from 08/2013 to 10/2015.

**Results:** 424 individuals were included in the ITT analysis (64.3% women, median age: 41 years, mean CD4: 547cells/mm$^3$, median time on ART: 5.2 years). Virological suppression (< 400copies/mL) after 48 weeks was maintained in 200/213 (93.9%) individuals switched to TDF/FTC/RPV and in 203/211 (96.2%) on TDF/FTC/EFV (FDA Snapshot difference -2.3%; 95% CI (-6.4%, 1.8%)); results were identical using a cut-off of < 50copies/mL. Virological Failure (≥ 400copies/mL) was observed in one individual in each arm, without the development of drug-resistance associated mutations. High adherence rates (>95% adherence based on tablet count) were documented in 95.8% (TDF/FTC/RPV) and 97.6% (TDF/FTC/EFV). In the TDF/FTC/RPV arm 17 individuals (8.0%) discontinued assigned treatment vs. 10 (4.7%) in the TDF/FTC/EFV arm. Most frequent reasons were: adverse events (3.8% vs. 0.5%), loss to follow-up (0.9% vs. 1.4%) and subject withdrawal (0.9% vs. 1.4%).

| Number of individuals, n (%) | TDF/FTC/RPV (n=213) | TDF/FTC/EFV (n=211) | All Subjects (n=424) |
|---|---|---|---|
| SAEs | 16 (7.5%) | 11 (5.2%) | 27 (6.4%) |
| At least one DAIDS grade 3 or 4 AE | 40 (18.8%) | 56 (26.5%) | 96 (22.6%) |
| Fatal AEs | 1 (myocardial infarction; unrelated to study medication) | 0 | 1 |
| Treatment limiting AEs | 8 (3.8%) | 1 (0.5%) | 9 (2.1%) |
| At least one diabetes / hyperglycemia event of interest | 10 (4.7%) | 4 (1.9%) | 14 (3.3%) |
| At least one neuropsychiatric event of interest | 60 (28.2%) | 63 (29.9%) | 123 (29.0%) |

*[Table 1 Safety Overview]*

**Conclusions:** In adults with suppressed viral load on first-line NNRTI-based ART in a LMIC setting, switching to a FDC of TDF/FTC/RPV was non-inferior to TDF/FTC/EFV in maintaining high rates of viral suppression with a comparable tolerability profile.

## THAB0105

### VIROLOGICAL OUTCOMES OF PATIENTS ON SECOND-LINE ART (BOOSTED ATAZANAVIR VERSUS BOOSTED LOPINAVIR)

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**Background:** Since 2010 the WHO guidelines recommend the use of boosted Atazanavir (ATV/r) as a preferred protease inhibitor (PI) alongside boosted Lopinavir (LPV/r) in patients who have failed first line antiretroviral therapy (ART) in sub-Saharan Africa. However, there are no RCTs or observational studies comparing virological outcomes of ATV/r to LPV/r in sub Saharan Africa.

**Methods:** This is a retrospective analysis of patients who were initiated on a standard second line therapy of 2NRTIs plus LPV/r or ATV/r between 01/Jan/2010 and 01/Dec/2014 in a large urban clinic in Uganda. Viral load (VL) monitoring has been made available in 2014; therefore most patients had a VL test done after this. We compared baseline characteristics of patients started on ATV/r and LPV/r and performed logistic regression analysis to determine factors associated with viral failure (VL>400 copies/ml).

**Results:** A total of 285 patients begun ATV/r regimen versus 215 on LPV/r .Baseline characteristics for the 2 groups as in the table were not significantly different except median duration on first line.

| Characteristic | ATV/r n=285 | LTV/r n=215 | P value |
|---|---|---|---|
| Age in years, Mean(SD) | 37(9.0) | 37(9.2) | 0.4979 |
| Sex, n (%) | | | |
| Female | 187(65.6) | 135(62.8) | 0.514 |
| Male | 98(34.4) | 80(37.2) | |
| BMI, Median(IQR) | 22.3(19.7-54.4) | 21.7(19.3-24.5) | 0.1554 |
| Time(months) on first line therapy, Median(IQR) | 39(22-65) | 40(14-64) | 0.0150 |
| CD4 count cell/µl, Median(IQR) | 109(53-202) | 114(60-206) | 0.5022 |
| Viral load copies/mm3, Median(IQR) | 4.8(4.3-5.2) | 4.9(4.3-5.4) | 0.2501 |

*[Baseline Characteristics of patients at time of switch to second line regimen]*

Viral loads (VL) were available for 230(80.7%) patients on ATV/r and 173(80.5%) patients on LPV/r. A total of 205(87.6%) patients on ATV/r and 136(80.5 %) patients on LPV/r had a VL< 400 copies/ml (p=0.050).Using logistic regression the following baseline characteristics at start of second line were not associated with the virological outcome: gender (OR=0.658, 95%CI:0.343,1.265), current second line regimen group (OR=0.475, 95%CI:0.204,1.104), BMI (OR=0.997, 95%CI:0.992,1.003), age (OR=0.999, 95%CI:0.97,1.04),CD4 cell count (OR=0.999, 95%CI:0.996,1.001), duration on second line ART (OR=1.001, 95%CI:0.985,1.029). However, there was trend towards likelihood of VL>400 copies/ml if duration on first line was shorter (OR=1.015, 95% CI: 1.003, 1.027).

**Conclusions:** This study showed a generally high level of viral suppression between patient on second line regimens containing ATV/r or LPV/r .We did not find statistical differences in virological outcome of patients started on LPV/r as compared to ATV/r.

## THAB0106LB

### LOW ACCEPTANCE OF EARLY ANTIRETROVIRAL THERAPY (ART) AMONG POST-PARTUM WOMEN ENROLLED IN IMPAACT PROMISE STUDIES ACROSS THE GLOBE

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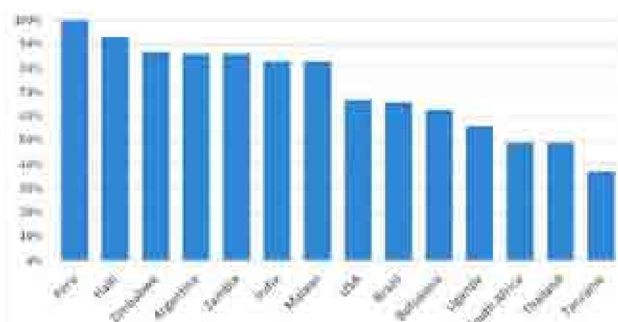
**Background:** The PROMISE trials enrolled 5398 asymptomatic HIV-infected pregnant women not eligible for antiretroviral treatment (ART) and randomly assigned different antiretroviral strategies to assess vertical transmission during pregnancy and post-delivery, infant safety, and maternal health. The START study subsequently demonstrated clear benefit in initiating ART regardless of CD4 count. The PROMISE study team informed active participants of these results and strongly recommended that women not receiving ART immediately initiate treatment to optimise their own health. We summarize PROMISE participants' responses to these recommendations and their reasons given to either accept or decline early ART.

**Methods:** A mixed methods approach was used to gather responses from participants receiving the START information. Staff actively contacted participants to return to the clinic and delivered START results, utilising a structured script and assessing comprehension. Women not on ART were advised to accept the offer to initiate ART, during a client-centred counselling session.

Women selected their primary reason for accepting or rejecting the offer of early ART from a set of closed options. We report the uptake of early ART and the primary reasons in support of their decisions.

**Results:** The 1483 women not on ART were advised to initiate ART. The offer was accepted by 984 women (66%) but 499 (34%) declined. Acceptance rates by country varied.



*[HIV-infected mothers accepting Early ART after single counseling session]*

Women declined ART as they wanted more time to consider (200/494-40%) and felt well and knew CD4 count was high (89/494-18%). The women accepting early ART did so for health concerns (444/792-56%) and because of the recommendation given by the protocol team (348/792-44%).

**Conclusions:** A substantial number of women were not willing to initiate early ART after a single counselling session. Over one third needed more time to consider the offer to start early ART for their own health. This finding is important to ART programme implementers scaling up test-and-treat strategies.

## THAB02 TREATMENT EVOLUTION: NEW DRUGS, NEW REALITY

## THAB0201

### WHO BENEFITED MOST FROM IMMEDIATE TREATMENT IN START? A SUBGROUP ANALYSIS

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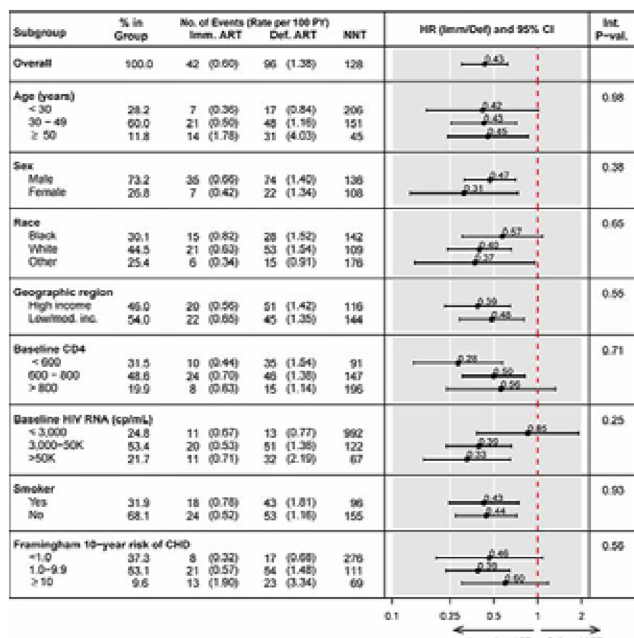
**Background:** The START trial showed that immediate antiretroviral therapy (ART) in asymptomatic adults with >500 CD4 cells/mm$^3$ reduces the risk of primary events (a composite of serious AIDS, serious non-AIDS conditions or death) by 57% vs. deferring ART until CD4 < 350. We investigated which subgroups benefitted most from immediate treatment.

**Methods:** Within subgroups defined by 8 predefined baseline characteristics (Figure), we estimated event rates for the START primary endpoint, and the number need to treat (NNT) immediately for one year to prevent one event compared with the deferral strategy. Using proportional hazards models, we estimated hazard ratios (HR) of immediate versus deferred ART within subgroups, and tested for interactions between treatment groups and subgroups to assess heterogeneity of the treatment effect across subgroups.

**Results:** Among the 4685 participants followed for a mean of 3.0 years, the event rates (absolute risk) for the primary endpoint in the immediate and deferred ART arms were 0.6 and 1.38 per 100 PY, respectively, NTT=128. Across all 8 subgroups, HRs consistently favored the immediate arm (Figure). While HRs were similar across subgroups (p≥0.25 for all interactions), the event rates and reductions in absolute risk were higher among older participants (NNT=50 for age >50 years), those with higher baseline HIV RNA level (NNT=67 for HIV RNA >50,000 copies/mL), higher Framingham risk score (NNT=69). There is a trend towards lower NNT among participants with lower baseline CD4 levels.



| Subgroup | % in Group | No. of Events (Rate per 100 PY) Imm. ART | Def. ART | NNT | HR (Imm/Def) and 95% CI | Int. P-val. |
|---|---|---|---|---|---|---|
| Overall | 100.0 | 42 (0.60) | 96 (1.38) | 128 | 0.43 | |
| Age (years) | | | | | | 0.98 |
| < 30 | 28.2 | 7 (0.36) | 17 (0.84) | 206 | 0.42 | |
| 30 – 49 | 60.0 | 21 (0.50) | 48 (1.16) | 151 | 0.43 | |
| ≥ 50 | 11.8 | 14 (1.78) | 31 (4.03) | 45 | 0.45 | |
| Sex | | | | | | 0.38 |
| Male | 73.2 | 35 (0.65) | 74 (1.40) | 136 | 0.47 | |
| Female | 26.8 | 7 (0.42) | 22 (1.34) | 108 | 0.31 | |
| Race | | | | | | 0.65 |
| Black | 30.1 | 15 (0.82) | 28 (1.52) | 142 | 0.57 | |
| White | 44.5 | 21 (0.63) | 53 (1.54) | 109 | 0.42 | |
| Other | 25.4 | 6 (0.34) | 15 (0.91) | 176 | 0.37 | |
| Geographic region | | | | | | 0.55 |
| High income | 46.0 | 20 (0.56) | 51 (1.42) | 116 | 0.39 | |
| Low/mod. inc. | 54.0 | 22 (0.65) | 45 (1.35) | 144 | 0.48 | |
| Baseline CD4 | | | | | | 0.71 |
| < 600 | 31.5 | 10 (0.44) | 35 (1.54) | 91 | 0.28 | |
| 600 – 800 | 48.6 | 24 (0.70) | 46 (1.38) | 147 | 0.50 | |
| > 800 | 19.9 | 8 (0.63) | 15 (1.14) | 196 | 0.56 | |
| Baseline HIV RNA (cp/mL) | | | | | | 0.25 |
| ≤ 3,000 | 24.8 | 11 (0.67) | 13 (0.77) | 992 | 0.85 | |
| 3,000–50K | 53.4 | 20 (0.53) | 51 (1.36) | 122 | 0.39 | |
| >50K | 21.7 | 11 (0.71) | 32 (2.19) | 67 | 0.33 | |
| Smoker | | | | | | 0.93 |
| Yes | 31.9 | 18 (0.78) | 43 (1.81) | 96 | 0.43 | |
| No | 68.1 | 24 (0.52) | 53 (1.16) | 155 | 0.44 | |
| Framingham 10–year risk of CHD | | | | | | 0.56 |
| <1.0 | 37.3 | 8 (0.32) | 17 (0.68) | 276 | 0.46 | |
| 1.0–9.9 | 53.1 | 21 (0.57) | 54 (1.48) | 111 | 0.39 | |
| ≥ 10 | 9.6 | 13 (1.90) | 23 (3.34) | 69 | 0.60 | |



*[Figure. Incidence of Serious AIDS or Serious non-AIDS Events and NNT by Subgroups]*

**Conclusions:** In asymptomatic ART-naïve adults with >500 CD4 cells/mm³, immediate ART was superior to deferral across all subgroups, with similar relative risk reduction. Due to higher absolute risk, older participants, those with higher plasma HIV RNA level, lower baseline CD4 count, and higher Framingham risk score will benefit more from immediate treatment. Immediate ART also reduces transmission risk, which is essential for cost-effectiveness considerations, but not reflected in NNT.

## THAB0202

### INCREASED RISK OF SUICIDAL BEHAVIOUR WITH USE OF EFAVIRENZ: RESULTS FROM THE START TRIAL

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**Background:** Randomized trials have shown increased risk of suicidality associated with efavirenz (EFV). The START trial randomized ART-naïve HIV-positive adults with high CD4 cell counts to immediate versus deferred ART (initiation at CD4 < 350 cells/mm³). EFV-based regimens were common.
**Methods:** We compared the rate of suicide or investigator reported suicidal and self-injurious behaviour ("suicidal behaviour") between the immediate versus deferred ART groups using Cox proportional hazards models. Before randomization, the initial ART regimen was pre-specified for each participant. We compared the treatment groups, overall, and separately for those with EFV-containing and EFV-free pre-specified regimens using intention to treat (ITT) analyses (all of follow-up and first year), and after censoring participants in the deferred arm at ART initiation.
**Results:** Of the 4685 participants, median age 36 years, 270 (5.8%) had prior psychiatric diagnoses. EFV was pre-specified for 3516 participants (75%); less often in those with psychiatric diagnosis (40%) than without (77%). While the overall ITT comparison shows no difference in suicidal behaviour between immediate and deferred ART (51 events, HR=1.07, p=0.80) (Table), subgroup analyses suggest that those who pre-specified EFV-containing regimens were at an increased risk of suicidal behaviour compared to those who did not. In the deferred group, 13 of 24 events occurred after ART start, median time 5.6 months. When censoring follow-up at ART start in the deferred group, the HR for EFV versus their ART-naïve controls was 4.16 (p=0.02) and the HR for non-EFV regimens versus their ART-naïve controls was 1.04 (p=0.93) (p=0.05 for difference in HRs). Excess risk associated with EFV was greater for those with a psychiatric diagnosis at baseline (table footnotes c-d).

| | | | No. pts with events (rate per 100 PY) | | | | | |
|---|---|---|---|---|---|---|---|---|
| Comparison | Pre-specified ART regimen | No. pts | Imm. ART | Def. ART | HR [a] (95% CI) | p-val. | HR Ratio | Int. p-val.[b] |
| By intent-to-treat (ITT) (mean follow-up 3.0 yrs) | Any regimen (all pts) | 4685 | 27 (0.39) | 24 (0.34) | 1.07 (0.6, 1.9) | 0.80 | NA | NA |
| ITT, subgroup analysis (mean follow-up 3.0 yrs) | EFV-based | 3516 | 18 (0.34) | 11 (0.21) | 1.42 (0.7, 3.0) | 0.37 | 1.92 | 0.23 |
| | No EFV | 1169 | 9 (0.51) | 13 (0.72) | 0.74 (0.3, 1.8) | 0.50 | | |
| ITT, 1st year only, subgroup analysis (mean follow-up 1.0 yrs) | EFV-based | 3516 | 9 (0.52) | 2 (0.11) | 3.75 (0.8, 17.5) | 0.09 | 3.68 | 0.15 |
| | No EFV | 1169 | 7 (1.25) | 7 (1.29) | 1.02 (0.4, 2.9) | 0.96 | | |
| Immediate: Follow-up from EFV/non-EFV ART start (mean 3.0 yrs); Deferred: Follow-up censored at ART start (mean follow-up 2.1 yrs) | EFV-based [c] | 3516 | 17 (0.35) | 3 (0.08) | 4.16 (1.2, 14.4) | 0.02 | 4.00 | 0.05 |
| | No EFV [d] | 1137 | 9 (0.59) | 8 (0.69) | 1.04 (0.4, 2.7) | 0.93 | | |

[a] Estimated in Cox proportional hazards models, stratified by psychiatric diagnosis.
[b] Interaction between indicators for treatment group and pre-specified regimen.
[c] Of these events, 6 and 0, in the immediate vs deferred arms, respectively, occurred among 108 participants with prior psychiatric diagnoses.
[d] Of these events, 5 and 2, in the immediate vs deferred arms respectively, occurred among 162 participants with prior psychiatric diagnoses. Of the 1169 participants without EFV in the pre-specified regimen, 32 were excluded (in the immediate group, 7 never started ART, and for 25, the first ART regimen contained EFV). Follow-up in the immediate group was censored at EFV start.

*[Table. Suicidal and self-injurious behaviour]*

**Conclusions:** These findings suggest that participants using EFV in the immediate ART group, particularly those with a prior psychiatric diagnosis, had an increased risk of suicidal behaviour compared to ART-naïve controls.

## THAB0203

### STRIIVING: SWITCHING TO ABACAVIR/DOLUTEGRAVIR/LAMIVUDINE FIXED DOSE COMBINATION (ABC/DTG/3TC FDC) FROM A PI, INI OR NNRTI BASED REGIMEN MAINTAINS HIV SUPPRESSION AT WEEK 48

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**Background:** STRIIVING is a phase 3b, randomized, open-label, North American, 48-week (W) study and is the first to evaluate the efficacy, safety, pharmacokinetics and health outcomes of switching from a protease inhibitor (PI), non-nucleoside reverse transcriptase inhibitor (NNRTI) or integrase inhibitor (INI) based regimen to ABC/DTG/3TC FDC in virologically-suppressed [HIV-1 RNA < 50 copies/mL (c/mL)] participants. Here we report the W48 efficacy and safety results.
**Methods:** Participants were randomized 1:1 to switch to ABC/DTG/3TC FDC at baseline [early switch, (ES)] or maintain current ART (cART) with a switch to ABC/DTG/3TC at W24 [late switch (LS)]. The primary endpoint was non-inferiority (-10% margin) of ABC/DTG/3TC relative to cART in maintaining plasma HIV-1 RNA < 50 c/mL at W24 by FDA snapshot. Plasma HIV-RNA < 50 c/mL was summarized as a secondary endpoint at W48 after all subjects switched to the DTG-based FDC.
**Results:** A total of 553 participants were randomized and treated (ABC/DTG/3TC 275, cART 278). Baseline characteristics were similar across treatment arms. The primary endpoint of non-inferiority at W24 was met (HIV-1 RNA < 50 c/mL; ABC/DTG/3TC 85% vs. cART 88%). At W48, 219/275 (80%) of ES subjects were virologically suppressed with HIV-1 RNA < 50 c/mL. The proportion of LS subjects (n=222/244) with HIV-1 RNA < 50 c/mL at W48 was comparable to the proportion at W24 for the ES arm (LS to ABC/DTG/3TC 91%; ES to ABC/DTG/3TC 85%). There were no protocol defined virologic failures or treatment emergent resistance in either arm. In the ES arm, 10 (4%) subjects withdrew due to AEs in the first 24 weeks of ABC/DTG/3TC; in the LS arm, 4 (2%) withdrew due to AEs following switch to ABC/DTG/3TC.
**Conclusions:** In virologically suppressed patients, switching to once daily ABC/DTG/3TC FDC was non-inferior to continuing cART with no evidence of virologic failure or treatment emergent resistance through 24 weeks. Early switch subjects also maintained virologic suppression from W24 through W48. There were fewer withdrawals due to AEs in the LS vs. ES arm. The safety profile of ABC/DTG/3TC in STRIIVING is consistent with current labeling for ABC/DTG/3TC.

## THAB0204

### EXPERIENCES WITH LONG-ACTING INJECTABLE ART: A QUALITATIVE STUDY AMONG PEOPLE LIVING WITH HIV PARTICIPATING IN A PHASE II STUDY OF CABOTEGRAVIR + RILPIVIRINE (LATTE-2) IN THE UNITED STATES AND SPAIN

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**Background:** Adherence to antiretroviral therapy (ART) among people living with HIV (PLHIV) is essential to improve individual outcomes and curb ongoing transmission. Challenges with daily oral medication have stimulated the development of long-acting injectable (LAI) ART as a means to address barriers.
**Methods:** We conducted 39 in-depth interviews including with 27 PLHIV (25 men, 2 women) and 12 clinical providers participating in a Phase IIb study (LATTE-2) evaluating a long-acting intramuscular ART regimen in the United States and Spain. Participants were treatment-naïve upon study entry and randomized to daily oral ART or LAI ART every 4 or 8 weeks. Interviews explored participant and provider attitudes and experiences with daily oral and LAI ART. Interviews were audiotaped, transcribed, coded and analyzed using thematic content analysis. All trial participants had completed a minimum of 32 weeks of LAI ART following 20 weeks of oral ART.

**Results:** Almost all participants experienced some level of side effects associated with LAI ART, mostly temporary soreness at the injection site. Yet, all reported being satisfied and interested in continuing LAI ART. Participants relayed practical and emotional benefits of LAI ART compared to oral ART. Practical benefits included convenience and logistical ease of receiving an injection every 4 or 8 weeks versus a daily pill. In many cases, participants reported LAI ART helped them manage stigma. LAI ART was seen as more discreet with less possibility of others discovering one's HIV status and it did not involve the "daily reminder of living with HIV". Most participants felt LAI ART could be beneficial to all PLHIV but particularly those with oral ART adherence challenges. While providers recognized the benefits of LAI ART, they expressed concerns LAI ART candidates would still need to be able to adhere to clinic visits for injections and concerns regarding the clinical management of LAI ART if it were necessary to stop the regimen given its long-acting nature.
**Conclusions:** LAI ART was preferable to a daily oral regimen among PLHIV participating in a Phase IIb trial given its practical and emotional benefits. Further research is needed regarding appropriate candidates for LAI ART including among women and "non-adherent" populations.

## THAB0205LB

### SUPERIOR EFFICACY OF DOLUTEGRAVIR/ABACAVIR/LAMIVUDINE (DTG/ABC/3TC) FIXED DOSE COMBINATION (FDC) COMPARED WITH RITONAVIR (RTV) BOOSTED ATAZANAVIR (ATV) PLUS TENOFOVIR DISOPROXIL FUMARATE/EMTRICITABINE (TDF/FTC) IN TREATMENT-NAÏVE WOMEN WITH HIV-1 INFECTION (ARIA STUDY)

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**Background:** The FDC of DTG/ABC/3TC is built upon an unboosted integrase-strand transfer inhibitor (INSTI), and may offer a simplified regimen for the treatment of HIV-1 infection. To gain additional data for women on this regimen, we conducted ARIA, an international, randomized, open-label study to evaluate the safety and efficacy of DTG/ABC/3TC versus ATV+RTV+FTC/TDF (ClinicalTrials.gov: NCT01910402).
**Methods:** Treatment-naïve adult women, with HIV-1 RNA ≥500 copies(c)/mL were randomized (1:1, stratified by plasma HIV-1 RNA and CD4+ count) to 48 weeks of treatment with DTG/ABC/3TC or ATV+RTV+FTC/TDF once daily. The primary endpoint was the proportion of women achieving an HIV1 RNA < 50 c/mL at Week 48 (Snapshot algorithm). Women who became pregnant were withdrawn, and where possible offered an option to enter a DTG/ABC/3TC pregnancy study.
**Results:** 495 women were randomized and treated. Median age was 37 years. Subjects were well matched for demographic and baseline (BL) characteristics. DTG/ABC/3TC was superior to ATV+RTV+FTC/TDF, with 82% and 71%, respectively, achieving HIV-1 RNA < 50 c/mL at Week 48 (adjusted difference 10.5%, 95% CI: 3.1% to 17.8%, p=0.005). Differences were driven by lower rates of both discontinuations due to adverse events (AEs) and Snapshot virologic failures in the DTG/ABC/3TC group. Increases in CD4+ count were similar between treatment groups. The safety profile of DTG/ABC/3TC was favorable compared to ATV+RTV+FTC/TDF, with fewer drug-related AEs reported in the DTG/ABC/3TC group. Of six DTG/ABC/3TC subjects who met protocol-defined virologic withdrawal criteria, none had treatment-emergent primary INSTI or ABC/3TC resistance mutations, compared with four ATV+RTV+TDF/FTC subjects who met virologic withdrawal criteria of which one had an emergent NRTI mutation, M184M/I/V.

| | DTG/ABC/3TC, N=248 | ATV+RTV+TDF/FTC, N=247 |
|---|---|---|
| Race: White (%), African heritage (%) | 46, 41 | 43, 44 |
| Median BL CD4+ (cells/mm³) | 340 | 350 |
| Median BL HIV-1 RNA ($log_{10}$ c/mL) | 4.41 | 4.43 |
| Week 48 HIV-1 RNA <50 c/mL (Snapshot, %) | 82 | 71 |
| Median change in CD4+ at Week 48 (cells/mm³) | 234 | 200 |
| Virologic failure (Snapshot, %) | 6 | 14 |
| Discontinuations due to AEs (%) | 4 | 7 |
| Pregnancies (%) | 2 | 3 |
| Drug-related AEs (%) | 33 | 49 |

*[Table 1]*

**Conclusions:** DTG/ABC/3TC demonstrated superior efficacy and a favorable safety profile compared with ATV+RTV+FTC/TDF in treatment-naïve women after 48 weeks of treatment. The study provides important information to help guide treatment decisions for women.

## THAB0206LB

### CABOTEGRAVIR + RILPIVIRINE AS LONG-ACTING MAINTENANCE THERAPY: LATTE2 WEEK 48 RESULTS

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**Background:** Cabotegravir (CAB) and rilpivirine (RPV) are under development as long-acting (LA) injectable nanosuspensions. LATTE-2 was designed to select an intramuscular (IM) regimen of CAB LA + RPV LA and to evaluate safety and efficacy of 2-drug IM ART, relative to 3-drug oral ART (CAB + ABC/3TC) to maintain viral suppression of HIV-1.
**Methods:** Phase 2b, multicentre, parallel group, open-label study in ART-naïve HIV infected adults. Enrolled patients with plasma HIV-1 RNA < 50 c/mL during the 20-week Induction Period on daily oral CAB 30 mg + ABC/3TC were randomized 2:2:1 to IM CAB LA + RPV LA every 4 weeks (Q4W), every 8 weeks (Q8W), or oral CAB + ABC/3TC (PO) in the Maintenance Period (MP). Dosing regimens were evaluated according to antiviral activity, protocol defined virologic failure (PDVF), and safety at the pre-specified Week 48 endpoint in MP (ITT Maintenance Exposed (ME)).

| Week 48 Snapshot Study Outcomes (ITT-ME) | CAB LA + RPV LA Q8W (n=115) | CAB LA + RPV LA Q4W (n=115) | Oral CAB 30 mg + ABC/3TC (n=56) |
|---|---|---|---|
| %HIV-1 RNA <50 c/mL at W48:<br>Diff in Proportions (95%CI)++ | 92%**<br>(2.9: -6.6, 12.4) | 91%**<br>(2.0: -7.6, 11.6) | 89% |
| **Snapshot Virologic Non-response** | **8 (7%)** | **1 (<1%)** | **1 (2%)** |
| Data in window not <50 c/mL | 6 (5%) | 1 (<1%) | 0 |
| Discontinued due to lack of efficacy (PDVF) | 1 (<1%) | 0 | 1 (2%) |
| Discontinued due to Other+ Reasons while Not Suppressed | 1 (<1%)+ | 0 | 0 |
| **Snapshot No Virologic Data** | **1 (<1%)** | **9 (8%)** | **5 (9%)** |
| Discontinued due to AE or Death | 0 | 6 (5%)*‡ | 2 (4%)* |
| Discontinued due to Other Reasons while Suppressed | 1 (<1%)+ | 3 (3%) | 3 (5%) |
| **Other Results** | | | |
| Number of injections<br>Number of ISR events<br>Grade 1 – mild (%)<br>Grade 2 – moderate (%)<br>ISR Duration ≤7 days | 2126<br>1275<br>1017 (80%)<br>245 (19%)<br>1135 (89%) | 3585<br>1568<br>1321 (84%)<br>234 (15%)<br>1414 (90%) | NA |
| Median CD4+ cells/mm³<br>Baseline<br>Change from Baseline at W48 (IQR) ‡ | 449<br>+248 (152, 347) | 499<br>+258 (133, 355) | 518<br>+307 (199, 566) |

Intent to Treat- Maintenance Exposed (ITT-ME)
BL = baseline (last value prior to first Induction Period dose at Week -20)
IQR = Interquartile range
++W48 represents 68 weeks on study (20 Week Induction Period followed by a 48 Week two drug Maintenance Period)
**Met pre-specified threshold for concluding IM regimen is comparable to oral regimen (Bayesian Posterior Probability >90% that true IM response rate is no worse than -10% compared to the oral regimen )
‡ Based on observed values at Week 48 (Q8W: n=112; Q4W: n=104; Oral: n=50)
+Withdrew consent due to intolerability of injections
*Acute HCV (n=2), rash (n=1), depressive reaction (n=1), psychotic state (n=1), DILI (n=1), Churg Strauss vasculitis (n=1), epilepsy (death‡) (n=1)

*[Week 48 Outcomes]*

Tuesday 19 July
Wednesday 20 July
Thursday 21 July Oral Abstract Sessions
Friday 22 July
Late Breaker Posters
Author Index

**Results:** 309 patients were enrolled (ITT-Exposed): 91% male, 20% non-white, and 19%>100,000 c/mL HIV-1 RNA. 286 pts were randomized into the MP. At Week 48, 92% (Q8W), 91% (Q4W), and 89% (PO) remained suppressed (ITT-ME). More patients on Q8W (5%), relative to Q4W (< 1%) and PO (0%) had HIV-1 RNA >50 c/mL at Week 48; 5/6 Q8W patients subsequently achieved HIV-1 RNA < 50 c/mL. Three ME patients had PDVF during MP (PO [W8]; Q8W [W4, W48]); one with NNRTI/INI mutations (Q8W[W48]). Grade 1/2 injection site pain occurred commonly, median duration 3 days, < 1% ISR withdrawals. MP SAEs occurred in IM (7%) and PO (5%), none drug-related.
**Conclusions:** Both Q8W and Q4W IM dosing demonstrated good virologic response rates and were generally well tolerated through 48 weeks. Q4W dosing resulted in modestly lower rates of virologic non-response than Q8W. Q4W dosing was chosen for progression into phase 3 studies while Q8W and Q4W remain under evaluation within LATTE-2.

## THAC01 MSM: Diverse realities require nuanced programmes

## THAC0101

### A small proportion of acts of anal intercourse within homosexual male serodiscordant couples in three countries are high-risk for HIV transmission

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**Background:** There are few data about the range of strategies used to prevent sexual HIV transmission within homosexual male serodiscordant couples (HM-SDC).
**Methods:** Opposites Attract is an ongoing cohort study of HM-SDC. At baseline, HIV-positive partners (HPP) had viral load (VL) tested; HIV-negative partners (HNP) reported the previous three months' sexual behaviour and perception of the HPP's last VL test. Each act of condomless anal intercourse (CLAI) within couples was categorised by HIV prevention strategy.
**Results:** By February 2016, 331 couples were enrolled (Australia=151, Brazil=91, Thailand=89). At baseline, 78.8% of HPPs had undetectable VL (UVL); however, only 55.9% of HNPs perceived their partners to have UVL (96.4% of HPPs who were perceived to have UVL actually did). In the previous three months, 53.2% of couples had CLAI: 46.5%, 28.1%, and 15.7% of HNPs reported insertive CLAI, receptive CLAI with withdrawal, and receptive CLAI with ejaculation respectively. Eighteen HNPs (5.4%) took daily pre-exposure prophylaxis (PrEP). Over the previous three months, HNPs reported a total of 8,439 acts of anal intercourse with their HPP (mean per couple=25.5). Of these, 4,627 (54.8%) were protected by condoms, while there were 3,812 (45.2%) acts of CLAI. Of the CLAI acts, 2,488 (65.3%) were when the HNP perceived his HPP to have UVL; 94 (2.5%) were protected by PrEP in the HNP; and 244 (6.4%) were protected by perceived UVL in the HPP and PrEP in the HNP. Of the remaining 986 CLAI acts where the perceived VL was detectable or unknown and were not protected by PrEP, 484 were when the HNP was insertive (strategic positioning) and 428 were when the HNP was receptive (277 with withdrawal and 151 with ejaculation). Overall, 53.9% of all anal intercourse acts reported by HNPs were protected by condom use, 33.6% by perceived UVL, 4.2% by PrEP, and 6.0% by strategic positioning; while 3.4% were receptive with withdrawal, and 1.9% were receptive with ejaculation.
**Conclusions:** Couples used condoms, PrEP or perceived UVL for prevention in the vast majority of anal intercourse acts. Only a very small proportion of events were not protected, and the majority of receptive CLAI acts involved withdrawal.

## THAC0102

### Is pre-exposure prophylaxis needed for men who have sex with men in West Africa? HIV incidence data from a prospective multi-country cohort study (CohMSM ANRS 12280)

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**Background:** The World Health Organization (WHO) recommends from September 2015 to use pre-exposure prophylaxis (PrEP) as part of a comprehensive HIV prevention package for people at substantial risk of HIV infection (incidence greater than 3 per 100 person-years in the absence of PrEP). Men who have sex with men (MSM) are one of the most vulnerable populations and may be eligible to PrEP. However, few data are available among this population in Africa. We therefore estimated the incidence of HIV infection among MSM in four West African countries.
**Methods:** A prospective cohort study was conducted in 2013-2014 in Bamako (Mali), Abidjan (Côte d'Ivoire), Dakar (Senegal) and Bobo-Dioulasso (Burkina Faso). Men over 18 years, reporting at least one sexual relationship with another man within the last three months, and HIV-negative (status confirmed at inclusion in the study) were eligible. A 6-month follow-up was offered to them including a quarterly HIV screening (M3 and M6) along with pre- and post-screening counseling and free condoms. If necessary, treatment for sexually transmitted infections was provided.
**Results:** A total of 440 HIV-negative MSM were recruited. Of them, 316 (71.8%) had at least one screening test during follow-up: 168 (53.2%) in Mali, 73 (23.1%) in Côte d'Ivoire, 54 (17.1%) in Senegal and 21 (6.6%) in Burkina Faso. The median age was 23.7 years (interquartile range [IQR]: 20.8-28.0). These men were followed up for a total period of 167.9 person-years. During follow-up, HIV screening tests were performed after a median time from inclusion of 3.2 months (IQR: 3.0-3.6) and 6.3 months (IQR: 6.0-6.6). Eight seroconversions were observed (six at the first screening test and two at the second test), giving an incidence rate of 4.8 per 100 person-years (95% confidence interval: 2.4-9.5).
**Conclusions:** Based on HIV incidence observed in this study, MSM leaving in West African countries are eligible for PrEP according to the WHO-recommended criteria. Operational research is now needed to guide the implementation of specific programs for prevention and comprehensive care including PrEP in this context.

## THAC0103

### Reaching the unreachable: MSM recruitment strategy using social networks to HIV prevention services in Guatemala City

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**Background:** MSM report a 9% HIV prevalence in Guatemala, and only 45% of them had an HIV test done in the last 12 months. Evaluation of preventions programs report that these interventions target the same MSM with the same messages repeatedly; and the coverage of HIV prevention interventions represent less than 10% of MSM estimation. The need to improve access to HIV testing is an urgency in Guatemala.
**Description:** Colectivo Amigos contra el Sida (CAS) is a mostly gay association that work in HIV prevention. Several strategies were developed to increase HIV tested and diagnosed MSM in Guatemala city in 2014 and 2015. First, a strong group of volunteers were conformed and trained, a result of the implementation of HIV prevention model Mpowerment. An intense work of "snowball" outreach by social networks was performed. Facebook, Twitter, Grindr and Whatsapp were used to promote HIV testing services, by direct message for promotion. Each promoter started with their own social network, and the inclusion of new volunteers, that shared their networks, helped to continue the recruitment. Also, the inclusion in sex encounters groups in Whatsapp or Facebook also provided an interesting platform to find MSM. The MSM "social stars" also represented a good way to reach more MSM networks.
**Lessons learned:** 7,244 gay men and other MSM were recruited between July 2014 and December 2015, with nearly 50% getting tested for HIV. Nearly 200 HIV cases were diagnosed, making a twist in male/female ratio in national HIV statistics, from

1.4 in 2013 to 2.1 in 2015. Compared to MSM estimations, 23% of MSM in Guatemala city were tested for HIV, and 22% of the HIV estimated cases in MSM for these city were diagnosed and linked to an HIV service. These new strategies to outreach MSM seems to be promising in a low income country.

**Conclusions/Next steps:** Expansion to other cities in Guatemala is needed to increase access to MSM for HIV services. More intense work with other community based organization (CBO), to use these model is also a major challenge. Training of other CBOs in Central America will also help to improve current strategies for these population.

## THAC0104

### Trends in internet use to meet sex partners among men who have sex with men

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**Background:** Internet-based platforms are increasingly prominent interfaces for sexual networking among men who have sex with men (MSM). We used data among MSM participating in the National HIV Behavioral Surveillance to evaluate changes from 2008 to 2014 in using the internet to meet sex partners and in having met the last sex partner online. We also investigated the association of internet use and partner seeking and testing behavior in 2014.

**Methods:** MSM were recruited through venue-based sampling in 2008, 2011, and 2014 in 20 U.S. cities. Among men reporting ≥ 1 male partner in the past 12 months, we used log-linked Poisson regression with GEE to calculate adjusted prevalence ratios (APR) and 95% confidence intervals (CI) to compare internet use (IU) to meet sex partners and meeting the last sex partner online by year. Models were adjusted for age, race, and education. We used the Wilcoxon rank sum and chi-square tests to compare factors associated with increased IU. IU was categorized as ≤once a month, >once a month but < once a week, and ≥once a week.

**Results:** IU at least once a week increased from 20% in 2008 to 44% in 2014 (APR=2.2, 95% CI: 2.1-1.3). Similarly, having met the last partner online increased from 19% in 2008 to 32% in 2014 (APR=1.7, 95% CI: 1.6-1.8). Median number of partners in the past 12 months increased with increasing IU (≤ once a month: median of 2 partners, interquartile range [IQR]: 1-5; >once a month: 4, IQR: 2-9; ≥ once a week: 5, IQR: 3-12, P< .0001). HIV testing in the past 12 months also increased with increasing IU (59%, 68%, and 71%, respectively, P< .0001). While the percent HIV-positive and aware of their status was similar by frequency of IU (16%), the percent HIV-positive but unaware decreased as IU increased (6%, 5%, and 4%, P< .0001).

**Conclusions:** Both internet use to meet sex partners and meeting the last partner online have increased since 2008. Although men who used the internet more frequently reported more partners, they were also more likely to report testing and were less likely to be HIV-positive but unaware.

## THAC0105LB

### Incidence and correlates of STIs among Black men who have sex with men participating in a US PrEP study

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**Background:** HPTN 073 assessed the feasibility, acceptability, and safety of pre-exposure prophylaxis (PrEP) for Black men who have sex with men (BMSM). Understanding the relationship between PrEP uptake, and sexually transmitted infection (STI) acquisition is critical to informing best practices in PrEP delivery for BMSM, a population most highly affected by HIV in the US.

**Methods:** From August 2013 - September 2014, we enrolled 226 HIV-uninfected BMSM in three cities (Los Angeles, CA; Washington, DC; and Chapel Hill, NC). All participants received client-centered care coordination and were offered daily oral PrEP with emtricitabine/tenofovir. Men were followed for 12 months with scheduled clinical visits and STI testing (rectal and urine NAAT for gonorrhea and chlamydia, RPR for syphilis) at weeks 26 and 52. Logistic regression was used to examine the association between STI prevalence and baseline factors. Person-years (PY) follow-up time was calculated to the first STI event or last STI date from either the PrEP acceptance date or enrollment date depending if BMSM accepted PrEP.

**Results:** Baseline STI prevalence was 14%; no differences were noted among study sites. Men < 25 were more likely to have a baseline STI (25.3% vs. 6.7%; OR 4.39, 95% CI: 1.91, 10.11**)**. Sixty participants (26.5%) acquired ≥1 STI during follow-up, 9 participants had an STI at both follow-up visits. Higher rates of STIs were seen during follow-up among those with STIs at baseline (Table 1). STI rate was 32.8/100 PY (24.3, 43.2) among those who accepted PrEP compared to those who declined 26.8/100 PY (12.9, 49.3).

| | Week 26 PrEP Accept % (n/N) | Week 26 PrEP Not Accept % (n/N) | Week 52 PrEP Accept % (n/N | Week 52 PrEP Not Accept% (n/N) |
|---|---|---|---|---|
| Site | | | | |
| GWU CRS | 20.0% (11/55) | 18.2% (2/11) | 21.8% (12/55) | 18.2% (2/11) |
| UCLA CRS | 14.9% (7/47) | 10.5% (2/19) | 25.0% (12/48) | 22.2% (4/18) |
| UNC AIDS CRS | 16.7% (10/60) | 0.0% (0/6) | 10.9% (7/64) | 0.0% (0/6) |
| Age | | | | |
| <25 | 25.4% (18/71) | 30.0% (3/10) | 22.9% (16/70) | 16.7% (2/12) |
| >=25 | 11.0% (10/91) | 3.8% (1/26) | 15.5% (15/97) | 17.4% (4/23) |
| Baseline Any STI diagnosis | | | | |
| No | 12.7% (17/134) | 12.1% (4/33) | 15.6% (22/141) | 18.8% (6/32) |
| Yes | **39.3% (11/28)** | 0.0% (0/3) | **34.6% (9/26)** | 0.0% (0/3) |
| Any condomless sex | | | | |
| No | 14.7% (10/68) | 17.4% (4/23) | 17.9% (15/84) | 12.0% (3/25) |
| Yes | 19.8% (16/81) | 0.0% (0/11) | 17.8% (13/73) | 37.5% (3/8) |
| Any condomless receptive Sex | | | | |
| No | 16.2% (16/99) | 14.8% (4/27) | 16.1% (19/118) | 11.1% (3/27) |
| Yes | 20.0% (10/50) | 0.0% (0/7) | 23.1% (9/39) | 50.0% (3/6) |
| Any condomless insertive Sex | | | | |
| No | 19.5% (17/87) | 15.4% (4/26) | 15.8% (16/101) | 11.1% (3/27) |
| Yes | 14.5% (9/62) | 0.0% (0/8) | 21.4% (12/56) | 50.0% (3/6) |
| Any alcohol/drug 2 hrs. before or during Sex | | | | |
| No | 15.8% (15/95) | 8.3% (2/24) | 15.7% (16/102) | 18.5% (5/27) |
| Yes | 20.4% (11/54) | 20.0% (2/10) | 21.8% (12/55) | 16.7% (1/6) |
| Self-Report adherence <=50pct | | | | |
| No | 16.2% (18/111) | 0.0% (0/0) | 14.8% (13/88) | 0.0% (0/0) |
| Yes | 25.9% (7/27) | 0.0% (0/0) | 35.7% (5/14) | 0.0% (0/0) |
| Self-Report adherence >= 90pct | | | | |
| No | 20.8% (11/53) | 0.0% (0/0) | 18.2% (6/33) | 0.0% (0/0) |
| Yes | 16.5% (14/85) | 0.0% (0/0) | 17.4% (12/69) | 0.0% (0/0) |
| Average C4 sessions | | | | |
| Mean (SD) | 30 (10.2) | 28 (13.4) | 28 (13.4) | 28 (13.4) |
| Min, Max | 15, 45 | 10, 65 | 10, 65 | 10, 65 |
| 25th, 75th %tile | 23, 40 | 19, 33 | 19, 33 | 19, 33 |

*[Table 1. Characteristics of Incident STIs by PrEP Acceptance and Visit]*

**Conclusions:** While we found higher rates of STIs in younger BMSM, the overall rates of STI in this trial were lower than in prior PrEP trials with no increase over time. BMSM with STIs at PrEP initiation may require additional counseling on STI acquisition risk and more frequent STI testing during follow-up.

# THAD01 BARRIERS MUST FALL: COMMUNITY-LED DELIVERY

## THAD0101

### HEALTHCARE SUPPLY-RELATED BARRIERS TO ADHERENCE AMONG HIV-POSITIVE PATIENTS FOLLOWED WITHIN THE CAMEROONIAN ANTIRETROVIRAL TREATMENT PROGRAM: THE DELETERIOUS EFFECT OF STOCK OUTS (EVOLCAM - ANRS 12288)

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**Background:** Adherence to antiretroviral treatment (ART) is the main driver of virological success, an essential issue in the fight against HIV. As international financial resources are decreasing while number of ART-treated patients is increasing, healthcare supply barriers may play an important role in ART adherence. This study aimed to investigate individual and healthcare supply-related factors of non-adherence and >2 days treatment interruption (TI) among HIV-positive patients followed within the Cameroonian antiretroviral treatment program.
**Methods:** Present analyses included 1875 ART-treated patients in 19 HIV services in the Centre and Littoral regions of Cameroon. Data on adherence were collected using a face-to-face questionnaire. Adherence was evaluated using a validated algorithm measuring respect of the dosing schedule during the last four weeks. Two-level hierarchical logistic models were used to investigate correlates of non-adherence and >2 days TI.
**Results:** Among study patients, 29.3% were highly adherent, 49.7% were non-adherent and 21.0% reported TI. Common factors associated with a lower risk of non-adherence and TI were current or recent tuberculosis treatment at the individual level and medium-sized hospitals at the healthcare supply level, whereas binge drinking at the individual level and occurrence of ART stock outs at the healthcare supply level were risk factors of those two outcomes. Lower educational level and having benefited from an interview with a counselor during the past year were additional individual factors associated with a lower risk of non-adherence while people feeling stigma and taking multi-tablets ART regimen were more likely to be non-adherent. Regarding individual factors of TI, we found that older patients and those living as a couple or being single were less likely to report TI. Conversely, patients dissatisfied with their doctor's listening or having consulted a traditional healer were more likely to report TI. Furthermore, patients followed-up in decentralized hospitals in the Littoral region were at lower risk of non-adherence.
**Conclusions:** Our study highlights suboptimal adherence outcome of the Cameroonian ART program, and a deleterious effect of ART stock outs on both adherence and TI. Unless effective ART supply management measures are urgently implemented to secure ART access, progress in the fight against HIV may be jeopardized.

## THAD0102

### OUTCOMES OF A PSYCHOSOCIAL SUPPORT PROGRAMME FOR HIV-INFECTED YOUNG MOTHERS AT AN ANTIRETROVIRAL ACCESS CLINIC

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**Background:** Through the maturation of antiretroviral rollout programmes several challenges have been observed in young women accessing care. These young women are reaching sexual maturity and are now having children of their own. There is a risk of these infants becoming vertically infected unless optimal adherence is maintained. Newlands Clinic runs a support group for such young women who have either become married or have children. The young mother's support group has been established to provide psychosocial support and improve the quality of life of HIV infected young women.
**Description:** The young mothers' support group is a support group for women less than 25 years who are in relationships, those that have been married, staying with partners with or without children. The group is structured as a monthly focused group discussion in which participants receive training and counselling concurrently in vocational skills, health issues including adherence, legal matters and continued life skill training. This training is provided for by a qualified nurse counsellor equipped to deal with both medical and psychosocial issues.
**Lessons learned:** Through the support group, 26 young mothers with a mean age of 21.5 (SD = 2.10) have been retained in care from 2012 to 2015. All of the young mothers are on antiretroviral therapy with a median duration of 196 weeks (IQR= 97-332) and 15 of them have maintained undetectable viral load (< 20 copies per ml). The programme has seen 18 of the young mothers maintained on first line and 8 receiving second line antiretroviral therapy. We could ascertain post weaning HIV status for 17 of their children, 16 were negative and 1 was positive. Eleven of the young mothers have been treated for sexually transmitted infections from 2012 through to 2015.
**Conclusions/Next steps:** Perinatally infected young girls are attaining sexual maturity and having children of their own. The prevalence of STIs among this group is very high and is a cause of concern. Creation of support groups to partner with the medical programmes helps in retaining patients in care and improving treatment outcomes which has an overall benefit to quality of life.

## THAD0103

### APPROACHES TO CARE FOR THE HIV-INFECTED ADOLESCENTS ACROSS NATIONAL HIV/AIDS PROGRAMS PARTICIPATING IN THE NEW HORIZONS ADVANCING PAEDIATRIC HIV CARE COLLABORATIVE

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**Background:** *New Horizons* (NH) *Advancing Pediatric HIV Care* is a multi-sector collaborative to advance a holistic integrated approach, promote best practice sharing and research, and leverage resources for improved management of treatment-experienced pediatric patients on second- and third-line antiretroviral treatment. The NH collaborative also aims to create a framework of support for HIV-infected adolescents and their care providers. The objective of this analysis is to describe the national approaches for adolescent disclosure of HIV status and transition to adult HIV care in country programs currently participating in the NH collaborative.
**Methods:** Data were collected from four national HIV/AIDS programs (Kenya, Zambia, Swaziland, and Lesotho) during a NH technical support workshop in South Africa (November 2015). Data were extracted from country presentations on national approaches and guidelines for disclosure of HIV status and transition to adult care.
**Results:** All four countries reported initiating partial disclosure (discussing infection without specific naming of HIV) starting at age 4-8 years. Three countries reported full disclosure of HIV status by age 10 years, and three countries require full disclosure before initiating ART and transition to adult care. Among the four countries, only Kenya's National Adolescent Package of Care included standardized national tools for the transition to adult care. There are no national guidelines for the age of transition, but the reported standard practice ranges are all ≥15 years. All countries have national health strategies for adolescents; however, the focus on adolescents in the national pediatric, adult and consolidated (pediatric and adult) HIV guidelines varies greatly (Table).

| Country | National Adolescent Health Strategy | Adolescent Focus in National HIV Strategy/Guidelines | Disclosure: Partial (PD) Full (FD) | Transition to adult care |
|---|---|---|---|---|
| Kenya | National Adolescent Package of Care, 2014 | Integrated in adult guidelines as a separate chapter Referred to as "special population" | PD from 6 years FD by 13-16 years | By 19 years National transition algorithm and evaluation tools |
| Zambia | Adolescent Health Strategic Plan, 2011-2015; Adolescent Health Communication Strategy, 2013-2015 | Included in consolidated pediatric and adult guidelines as Separate Population | PD from 5 years FD by 10 years | From 15 years |
| Swaziland | National Adolescent Strategic Plan, 2014-2018 | Integrated in both pediatric and adult guidelines Separate section in pediatric guidelines "Special Considerations for Adolescents" to address consent, disclosure and psychosocial support | PD at 4-8 years FD at 8-10 years | By 21 years (19-21 years range) |
| Lesotho | National Adolescent Health Policy, 2012; Draft Adolescent Health Strategy, 2015 | Included in consolidated pediatric and adult guidelines as Special Population | PD from 5 years FD from 10 years | By 20 years (15-18 years range) |

*[National HIV Strategy and Guidelines by Country]*

**Conclusions:** A standardized approach based on the best available evidence is needed to guide adolescent HIV care on a national level in resource-limited settings. Informed by this analysis, the NH collaborative is developing capacity building tools on disclosure and transition to adult care to be shared among national programs participating in NH activities, and globally.

## THAD0104

### A COMPARATIVE STUDY OF POLICY AND PRACTICE FACTORS INFLUENCING PROGRESSION THROUGH THE HIV CARE CONTINUUM IN KISUMU AND NAIROBI IN KENYA

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**Background:** The extent to which national HIV policies are implemented in health facilities in Africa has rarely been described. We describe HIV policy formulation with regards to HIV testing, and access to and retention in HIV care, and investigate the extent to which national HIV policies are implemented in health facilities serving the populations of two health and demographic surveillance sites (HDSSs) in Kenya (Nairobi and Kisumu).
**Methods:** Twenty national HIV policy documents published between 2003-2013 were reviewed, with policy indicators extracted relating to HIV testing and counselling (HTC), prevention of mother-to-child transmission (PMTCT) and HIV care and treatment. Additionally, facility surveys were conducted in 44 HIV clinics (10 in Nairobi, 34 in Kisumu) serving the HDSS populations. Policy implementation across the HIV care continuum was assessed by comparing reported practices from health facility surveys with findings from the HIV policy review across pre-defined indicators that covered service coverage, quality of care, coordination of care, medical management and patient support.
**Results:** Explicit policies existed for most aspects of HIV service delivery, and were widely implemented across all facilities, particularly indicators relating to access to treatment and retention in care. There were policy implementation gaps in relation to testing: national guidelines stated that key populations should have tailored access to HTC, but only 16/44 (36%) facilities offered HTC targeted at high-risk groups. In addition, frequent stock-outs of HIV test-kits were reported at 50% (5/10) of facilities in Nairobi and 70% (24/34) of facilities in Kisumu. Formulation and implementation of policy relating to Option B+ was weak, with only 20% of facilities in Nairobi (2/10) and 6% (2/34) of facilities in Kisumu offering this as the standard of care for HIV-positive pregnant women.
**Conclusions:** Levels of policy implementation were similar in the two HDSS, and service performance in relation to ART access and retention in care was strong. However, weaknesses in relation to quality of care exist along the HIV care continuum, and service access problems were noted in relation to HIV testing. Health facilities are likely to require additional support to ensure delivery of future policies such as "test and treat".

## THAD0105

### BARRIERS IN ACCESS TO HEALTH SERVICES FOR PEOPLE LIVING WITH HIV IN MOLDOVA

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**Background:** The purpose: to establish levels of access to health services of people living with HIV (PLHIV) through Tanahashi dimensions of access: availability, accessibility, acceptability, contact and effective coverage with services and compare them to general population (where available). Findings will be used to inform specific interventions to reduce barriers in access to services.
**Methods:** Study design: quantitative cross-sectional study based on face-to-face interviews. Study population: 450 PLWH over 18 years, recruited through community groups and service provision points, sampling based on quotas regarding geographic distribution, age, gender.
**Results:** The study included 45% women 55% men; mean age 36 years, 63% urban, 37% rural, 41% employed, 36% unemployed, and 23% economically inactive respondents. Geographic accessibility was high: 96% had access to a primary care doctor in their locality, lower in rural residents (44%). Financial accessibility was lower than in general population: 55% had health insurance versus 83% in the general population, main reason being unemployment (84%) and 56% had to renounce seeking health services due to anticipated costs, almost twice higher than in the general population (30%), with higher shares among women (61%), age over 40 years (62%) and urban residents (62%). General acceptability of general health services was high: positive attitudes at 86%, but only 30% of PLWH disclosed their HIV status to their last general health provider. Compared to general population, respondents seek health services more often, as 50% saw a health provider compared to 21% in the general population. Of them, 65% were prescribed medicines and 44% women and 52% did not buy prescribed medicines due to costs. Coverage with HIV-related treatment was high, as 97% saw an HIV provider and 74% were on ART.
**Conclusions:** While access to HIV care and treatment was high, the study identified specific systemic barriers in access to general health services of PLWH compared to general population, such as higher economic barriers. These call for structural solutions, such as increasing access to health insurance and decreasing private expenditures for medicines, in order to increase effective coverage with health services overall.

## THAD0106LB

### ENGAGING COMMUNITY STAKEHOLDERS IN PREPARATION FOR HIV VACCINE TRIALS NETWORK (HVTN) 703/HIV PREVENTION TRIALS NETWORK (HPTN) 081, AN ANTIBODY MEDIATED BIOMEDICAL HIV PREVENTION TRIAL IN SUB-SAHARAN AFRICA (SSA)

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**Background:** HIV prevalence among heterosexual women in SSA continues to be highest in the world, with acquisition rates in some locations as high as 6-8% per year. Effective long-acting biomedical HIV prevention options, such as broadly neutralizing antibodies (bnAbs), could significantly reduce HIV incidence. HVTN 703/HPTN 081 is a phase 2b study evaluating safety, tolerability, and HIV prevention efficacy of VRC01 (a monoclonal bnAb developed by the National Institutes of Health Vaccine Research Center) among heterosexual women in SSA. Engaging community stakeholders prior to study initiation fosters researcher-stakeholder partnerships and is essential to facilitate community awareness, understanding, and support particularly for complex experimental biomedical studies.
**Description:** : In March 2016, the South African Medical Research Council (SAMRC), HPTN, and HVTN convened a stakeholder meeting with 85 attendees from seven SSA countries and the United States, including representatives from IRBs, community/research health clinics, traditional healing communities, governmental and non-governmental organizations, advocacy organizations, and community advisory boards. The consultation facilitated diverse audience dialogue, detailed explanation of intricate biomedical concepts such as bnAbs and monoclonal antibody infusions, and stakeholder questions and recommendations about HVTN 703/HPTN 081 implementation prior to initiation.
**Lessons learned:** Based on experience and knowledge of community norms, attendees discussed facilitators and barriers to study participation, including understanding the complex concept of monoclonal antibodies. Interactive, participatory processes enabled stakeholders to express considerations regarding the women-only trial design and the evolving role of PrEP in HIV prevention efficacy trials in SSA. Researchers were encouraged to consider the feasibility of intravenous (IV) administration of VRC01. While HVTN 703/HPTN 081 is a proof of concept study, participants felt strongly that if VRC01 was found efficacious it should move to licensure while more efficient bnAb delivery systems (e.g. subcutaneous injections) and vaccines are explored.
**Conclusions/Next steps:** The SAMRC, HPTN, and HVTN recognize that trial success requires local implementers, potential participants, and advocates as partners with trial designers. These partnerships facilitate early ownership of the research by key decision-makers and policy makers. This inclusion enables generous local insight into successful implementation of complex biomedical HIV prevention interventions and adds value of transparent, authentic dialogue about a wide range of trial considerations.

# THAD02 Cash and care: Economic empowerment for HIV prevention

## THAD0201

### A randomized study of short-term conditional cash and food assistance to improve adherence to antiretroviral therapy among food insecure adults with HIV infection in Tanzania

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**Background:** Food insecurity is a barrier to antiretroviral therapy adherence and retention in care among people living with HIV infection (PLHIV). We evaluated the effectiveness of short-term cash and food assistance to mitigate food insecurity and improve adherence and retention among PLHIV in Shinyanga, Tanzania.
**Methods:** At three HIV care and treatment facilities, 805 participants were randomized into one of three arms in a 3:3:1 ratio, stratified by site: nutrition assessment and counseling (NAC) plus cash transfers (~$11/month), NAC plus food basket, and NAC only. Eligible participants were: 1) ≥18 years; 2) PLHIV; 3) initiated antiretroviral therapy ≤90 days before enrollment; and 4) food insecure, ascertained by the validated Household Hunger Scale. Cash or food transfers were provided for ≤6 months, conditional on visit attendance. Participants were followed for 6 months to determine treatment adherence measured by the medication possession ratio (MPR) and scheduled appointment adherence.
**Results:** At enrollment, 64% of participants were female, average age was 37 years, mean CD4 count was 213 cells/mL, and mean body mass index was 21.4 kg/m$^2$. Food security increased significantly among all participants at 6 months and was non-significantly higher among NAC+food (40%) and NAC+cash groups (41%) compared to NAC only (31%, p=0.41). Six-month adherence data were available for 789 participants (98% of study cohort). In an intent-to-treat analysis adjusted for site and multiple comparisons, MPR was significantly higher among those randomized to NAC+cash (n=347, MPR=83%) compared to NAC+food (n=338, MPR=78%, p=0.01) and NAC only (n=104, MPR=71%, p< 0.01). Achievement of MPR≥95% was non-significantly higher in the NAC+cash group (57%) compared to the NAC+food group (50%, p=0.13) and NAC only group (46%, p=0.13). Appointment adherence was 81% overall and significantly higher among those randomized to NAC+cash (83%) compared to those in the NAC+food (75%, p< 0.01) and NAC only (71%, p< 0.01) groups.
**Conclusions:** Preliminary data indicate that short-term conditional cash assistance may improve medication possession and appointment adherence better than food assistance and NAC alone among food-insecure PLHIV initiating treatment in Tanzania. Future studies are needed to investigate the optimal size and conditions of financial incentives, cost effectiveness, and whether benefits are sustained.

## THAD0202

### Economic empowerment of sex workers to improve their health, safety and wellbeing: Innovative interventions and lessons learned from the Stepping Up, Stepping Out program

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**Background:** Worldwide countless women and men earn money through sex work. They are twelve times more likely to be living with HIV compared to the general population. However, sex workers who are more empowered to access additional sources of income and have more control over their financial resources, are better able to negotiate safe sex, extricate themselves from violent clients and access health and support services. It also improves their financial security and livelihood during times they cannot work.
**Description:** As part of Aids Fonds' Stepping Up, Stepping Out (SUSO) program, a variety of innovative economic empowerment interventions were developed by sex worker-led organizations in eleven countries in Africa, Asia and Latin-America, reaching over 2,500 sex workers. One of the interventions is a savings and credit cooperation, giving sex workers the opportunity to save up and take loans for investments. The concept was implemented in Kenya by HOYMAS (Health Options for Young Men on HIV, Aids and STIs) and in Indonesia by OPSI (Organisasi Perubahan Sosial Indonesia).
**Lessons learned:** In both countries the cooperative is run by sex workers. Funds can be accessed by sex workers who have 1) completed a financial skills training and 2) made regular savings in their account. The experience in Kenya showed that for sustainable results, developing the habit of saving proved more important than the amount saved. In Indonesia we learned that repayment schemes of loans will vary as not all types of investment become profitable equally fast. Not taking this reality into account could lead people into further debt. While in both countries the cooperation required focus and determination of the people involved, it provided them with an opportunity to turn their dreams into reality.
**Conclusions/Next steps:** Economic empowerment is a powerful strategy to reduce sex workers' vulnerability to HIV. The following elements are essential (confirmed by the Dutch Radboud University that evaluated SUSO):
- Alternative sources of income outside the sex industry are not necessarily required. Earning more from sex work in better working conditions is also economic empowerment.
- Economic empowerment increases sex workers' self-esteem.
- Basic financial skills are a pre-condition for the success of other economic empowerment interventions.

## THAD0203

### Exploring the consequences of cash transfers for adolescent boys and girls in inner city Johannesburg

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**Background:** Cash transfers (CTs) are increasingly being explored as a structural approach for HIV prevention. While there is much interest in expanding CT programmes to leverage health-related (including HIV) outcomes, there are few available data on the potential social consequences of offering CTs to adolescent boys and girls. This paper explores the consequences of CTs on adolescent recipients.
**Methods:** Using qualitative data collected during a pilot randomized controlled trial of three different cash transfer strategies (monthly payments unconditioned vs. conditioned on school attendance vs. a single direct payment conditioned on a clinic visit) conducted in 120 consenting adolescents aged ≥16 years in the inner-city of Johannesburg. In-depth interviews were conducted with a sub-sample of 41 participants (18 girls and 23 boys), 6 months after receiving CT and up to 12 months after the cash was withdrawn. Interviews were conducted in English/ isiZulu, transcribed and translated by two trained fieldworkers. Codes were generated using an inductive approach; initial transcripts were coded based on emerging issues, and subsequently transcripts coded deductively. Atlas-ti 7.5 was used to organize and code data.
**Results:** Overall, CTs were highly acceptable to recipients, they were used for personal items and reduced household stress. This was interpreted by recipients as a sign of maturity and independence. There were, however, distinctive gender differences in the meaning adolescents placed on the CTs. Boys' spending and saving patterns reflected a concern with maintaining their public social status, through which they asserted an image of the responsible adult. In contrast, girls' spending and saving reflected domestic concerns. Some girls mentioning CTs as protective against transactional sexual relationships. Although generally regarded positively, adolescents reported some negative consequences of CTs, such as easier access to alcohol, cigarettes, recreational narcotics, and vulnerability to predatory money-lenders. While this was a concern raised by participants, it did not come out in the trials' quantitative data.
**Conclusions:** These data suggest that CTs benefit individuals as well as households in dense, urban environments, and may instill responsibility in young adults. However, negative consequences of CTs need to be monitored and interventions that address alcohol and drug use could be included in CT programmes.

## THAD0204

### SUPERVISION, SCHOOL AND ADOLESCENT-SENSITIVE CLINIC CARE: REDUCING UNPROTECTED SEX AMONG HIV-POSITIVE ADOLESCENTS THROUGH COMBINATION SOCIAL PROTECTION INTERVENTIONS

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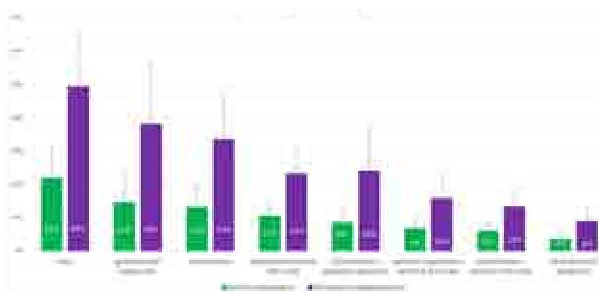
**Background:** Each day, 440 new adolescent HIV-infections happen in sub-Saharan Africa: preventing onward transmission presents a powerful challenge to HIV-positive adolescents. There is very limited evidence on interventions that reduce sexual risk-taking among HIV-positive adolescents.

**Methods:** ART-initiated adolescents (10-19 years old) from 53 government facilities in South Africa: 1,059 were interviewed (90.1% of eligible sample, 4.1% refused, the rest excluded due to: severe cognitive delays (0.9%), other reasons (1.2%) and could not be traced (3.7%)). Voluntary informed consent from adolescents and caregivers was obtained. Potential social protection included nine “cash/ cash-in-kind” and “care” provisions. Analyses used multivariate logistic regression, controlling for adolescent age, gender, location, informal housing, vertical/horizontal infection, and caregiving arrangement. Potential interactive and additive effects of combinations were tested in logistic regressions and marginal effects models.

**Results:** Adolescents reported high rates of unprotected sex: 18% in the full sample, and 28% among girls. In the final model, adolescents reported lower rates of unprotected sex if they received strong parental supervision (OR.61 CI.38-.98 p=0.041), had access to school (OR.53 CI.35-.81 p=0.003), and received adolescent-sensitive care when accessing sexual health services (OR.42 CI.25-.71 p=0.001). There were no interactive effects. In marginal effect models, receiving more than one social protection provision had an additive effect on predicted probabilities of unprotected sex rates, controlling for covariates (chart). This effect was even stronger among adolescent girls: without any interventions 49% were likely to report unprotected sex; with 1-2 of the interventions 14-38%; and with all interventions only 9%.

**Conclusions:** These findings provide exciting new evidence that combinations of social protection intervention can increase safe sex among HIV-positive adolescents, particularly among HIV-positive adolescent girls. Single interventions may not suffice to address the sexual health needs of this highly vulnerable population as they transition from adolescence to adulthood.



*[Figure. % predicted probabilities of unprotected sex among HIV-positive adolescents by access to social protection interventions (controlling for socio-demographic co-factors)]*

## THAD0205

### EQUITY IN ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG ECONOMICALLY-VULNERABLE ADOLESCENTS LIVING WITH HIV IN UGANDA

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**Background:** Studies from sub-Saharan Africa indicate that children made vulnerable by poverty have been disproportionately affected by HIV with many exposed via mother-to-child transmission. Yet, for youth living with HIV, adherence to life saving treatment regimens are likely to be affected by a complex set of economic and social circumstances that challenge their families and exacerbate health problems.

**Methods:** Using baseline data from the National Institute of Child and Human Development (NICHD) funded Suubi+Adherence study, bivariate and multivariate regression analyses were employed to examine the extent to which measures of economic and social equity were associated with self-reported adherence among Ugandan adolescents aged 10-16 (n = 702) living with HIV.

**Results:** Greater asset ownership, specifically familial possession of seven or more tangible assets, was associated with greater odds of self-reported adherence (OR 1.69, 95% CI: 1.00-2.85). Our analyses also indicated that distance to the nearest health clinic impacts youth’s adherence to an ARV regimen. Youth who reported living nearest to a clinic were significantly more likely to report optimal adherence (OR 1.49, 95% CI: 0.92-2.40). Moreover, applying the composite equity scores, we found that adolescents with greater economic advantage in ownership of household assets, financial savings, and caregiver employment had higher odds of adherence by a factor of 1.70 (95% CI: 1.07-2.70).

**Conclusions:** These findings suggest that economic and social determinants of adherence be given due priority in the design and development of programs affecting youth with HIV in sub-Saharan Africa. Specifically, interventions that aim to improve financial assets, enable participation in formal financial institutions; and provide geographically closer HIV treatment services such as through mobile clinics may offer promising returns for greater equity in ARV uptake and adherence among adolescent populations living in low resource environments.

## THAE01 FINANCING THE RESPONSE TO HIV: SHOW US THE MONEY

## THAE0102

### THE IMPLICATIONS OF MACROECONOMIC STABILITY ON ACHIEVING SUSTAINABLE, DOMESTIC FINANCING FOR HIV IN ZAMBIA

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**Background:** Zambia’s reclassification as a lower-middle-income country in 2011 underscored its need to begin transitioning to more sustainable, domestic sources of HIV financing. Nonetheless, at US$366 in 2015, donor contribution per PLHIV remains among the highest in Sub-Saharan Africa. Donor funding for HIV in Zambia declined for the first time in 2015, a trend likely to continue as the Zambian government (GRZ) is asked to take greater ownership of the country’s HIV response.

**Methods:** The USAID- and PEPFAR-funded Health Policy Project performed detailed secondary analysis of GRZ’s budgets for 2012-2015. Two types of line items were allocated to the total budget for HIV: HIV-specific items, including anti-retroviral (ARV) procurement, HIV mainstreaming and awareness, and the National AIDS Council, all allocated at 100%; and health systems line items, including salaries for health workers, administrative costs, and development activities, all allocated at approximately 22% based on Clinton Health Access Initiative’s estimates of the human resource requirement of current treatment targets.

**Results:** Between 2012 and 2015, GRZ’s contribution to Zambia’s HIV response increased nominally from ZMW488 million to ZMW965 million. The budget for ARV procurement increased from ZMW50 million to ZMW226 million, while salaries for the proportion of health worker time (22%) allocated to HIV care and treatment grew from ZMW223 million to ZMW501 million. However, during this period, the kwacha (ZMW) depreciated by 60 percent against the US dollar from 5.14 ZMW/US$ to 8.62 ZMW/US$. In real terms, GRZ’s HIV budget grew by just 5.6% annually

from 2012 to 2015 and in fact declined by 26% between 2014 and 2015.
**Conclusions:** Zambia's macroeconomic instability, driven largely by falling global prices for copper, which accounts for 10% of the country's GDP and 70% of export earnings, threatens the sustainability of domestic sources for HIV financing. Although total donor funding has plateaued since 2012, the resource requirement to reach the 90-90-90 targets is expected to grow from US$8 million in 2016 to US$144 million in 2020. Therefore, preserving the value of existing streams of financing and identifying new sources of domestic funding has never been more important to maintain and build upon the gains already made.

## THAE0103

### AN HIV/AIDS INVESTMENT CASE FOR NAMIBIA: HEALTH IMPACTS AND RESOURCE NEEDS FOR ALTERNATIVE PROGRAM SCALE UP PACKAGES OVER 2016-2030

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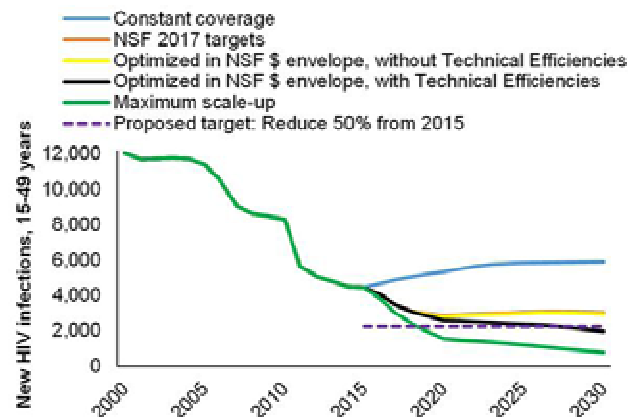
**Background:** As ART coverage and cost grow while donor funding falls, Namibia must strategize its intervention package, to ensure sustainability and maximize impact. We projected impacts and costs over 2016-2030 for scenarios: Constant coverage at 2015 levels; National Strategic Framework (NSF) 2017 targets; Maximum scale-up aligned with UNAIDS *Fast Track* targets; and Resource-constrained optimization with and without technical efficiencies.
**Methods:** The dynamic Spectrum-Goals model was fitted to surveillance, survey and programmatic data. Scenarios varied in coverage of FSW and MSM outreach, workplace intervention, ART (82% of CD4< 500/uL from 2017 in NSF and Optimized scenarios, to 90% of all PLWH by 2030 in Maximum). Voluntary male medical circumcision, community mobilization, mass media, condom promotion, youth outreach, PMTCT and post-exposure prophylaxis were scaled-up without variations across scenarios. Unit costs for HIV prevention and treatment services varied over time with economic context; program support costs increased less-than-linearly with service costs. Maximum and Technical efficiency scenarios assumed that viral suppression and infectivity reduction during ART improved from 75% at 2015 to 95% by 2030. Optimization followed intervention-specific cost per infection averted over 2015-2030.
**Results:** Maximum and Optimized scenarios with technical efficiency could reduce annual new infections by 50% over 2015–2030. Only Maximum scale-up reduced annual HIV/AIDS deaths by almost 50% by 2030. Optimization with technical efficiencies, by prioritizing FSW and ART for lower-CD4 patients while rationalizing HIV testing and workforce prevention, reduced new infections by 35% at 2030, compared to NSF. Annual resource need increased from US$ 190 million in 2015, to US$ 231-252 million for NSF and Optimized, and US$ 257 million for Maximum by 2020.



*[Namibia HIV infections impact from program scale-up scenarios_03Feb2016]*

**Conclusions:** By optimizing the NSF, Namibia could considerably enhance health impacts while containing cost within expected budgets. Reaching *Fast Track* targets will require increasing (domestic) financing.

## THAE0104

### POTENTIAL DOMESTIC SOURCE FINANCING FOR SCALED UP ANTIRETROVIRAL THERAPY IN 97 COUNTRIES FROM 2015 TO 2020

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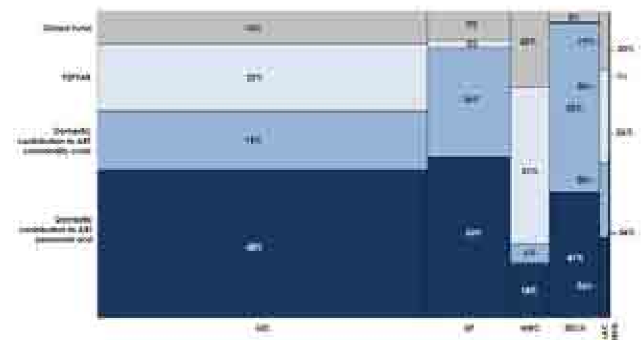
**Background:** Recent global initiatives such as 90-90-90 focus on rapidly scaling up antiretroviral therapy (ART). Substantial additional resources will be needed, and there is increased emphasis on shared responsibility and mobilizing domestic resources. Few studies have projected domestic resources available for ART specifically and the potential funding gap.
**Methods:** In a study by the USAID-and-PEPFAR-funded Health Policy Project, we estimated financial resources available to meet facility-level ART service delivery costs in 97 non-OECD countries with significant HIV epidemics based on country-specific funding trends from the Global Fund, PEPFAR and domestic contributions (DCs). DCs were based on publicly known country-reported procurement estimates, Global Fund's counterpart financing thresholds, and proportional contributions to HIV responses as reported to UNAIDS. Separately, we modeled uncertainty in the annual resource requirements for antiretroviral drugs, laboratory tests, and facility-level personnel and overhead, and compared the financial requirements to all sources of estimated funding.
**Results:** We estimated that these countries can contribute US$6.2 billion in domestic resources to ART commodity procurement and US$13.5 billion for site-level overhead and personnel from 2015 to 2020 if ART eligibility is expanded to all people living with HIV, ART coverage increases in line with recent trends, and current funding obligations remain constant. Under optimistic assumptions, DCs could account for the majority of site-level resources available for ART in Eastern and Southern Africa (68%), Asia and the Pacific (88%), Eastern Europe and Central Asia (96%), Latin America and the Caribbean (51%), and the Middle East and North Africa (80%).West and Central Africa would see only 24% from these sources. The six-year funding gap for reaching 90-90-90 is estimated to be US$24.2 to US$25 billion, depending on PEPFAR contributions, and the estimated commodity gap alone is US$16.8 billion.


*[Six-year ART financing by funding source and region]*

**Conclusions:** Additional resource mobilization from domestic or innovative financing sources or efficiency gain is needed to meet global ART targets.

## THAE0105

### COUNTRIES WITH CONCENTRATED EPIDEMICS AMONG KEY POPULATIONS STILL RECEIVE DISPROPORTIONALLY LOWER PEPFAR COP FUNDING THAN GENERALIZED EPIDEMICS

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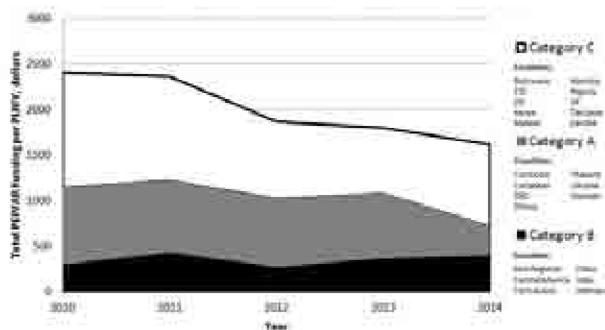
**Background:** Men who have sex with men (MSM) and people who inject drugs (PWID) continue to be disproportionately affected by HIV. Previous work (Grosso et al., 2012) demonstrated that in 2009-2010, PEPFAR countries with concentrated epidemics in MSM and PWID received significantly less funding than countries with generalized epidemics. This analysis assesses changes in PEPFAR allocations from 2010-2014.
**Methods:** Utilizing a previously published algorithm, countries (n=19) and regions (n=4) with available MSM and PWID HIV data that received PEPFAR funding within 2010-2014 were categorized epidemiologically; Category A: transmission primarily in MSM or PWID; Category B: transmission primarily in MSM, PWID, and hetero-

sexuals; Category C: generalized epidemic. PEPFAR funding data came from amfAR's Country Operational Plans (COPs) database. The sample comprises 67% of all COP funding. Multivariate regression analysis of overall funding by epidemic type was conducted, controlling for population, number of people living with HIV (PLHIV), and gross domestic product per capita.
**Results:** From 2010-2014, relative funding to countries with mixed/concentrated epidemics increased from 2009-10 baseline by 38% in Category A countries and 29% in Category B countries. However, Category A countries received $146 million less and Category B countries received $160 million less COP funding than Category C countries after adjusting for other factors. Category A and B countries received 9.9% of total COP funding to the sample despite comprising 26.4% of PLHIV among the sample. In 2014, Category C countries received 2.2 times more funding per PLHIV than Category A countries, and 4.4 times more than Category B countries.




*[Figure. Total PEPFAR Funding per Person Living with HIV (PLHIV) by Epidemic Category]*

**Conclusions:** While PEPFAR COP processes have made measurable improvements since 2010 to earmark key population (KP)-specific funds, allocations to countries with concentrated/mixed epidemics continue to be disproportionately lower. Greater transparency in funding decisions and increased proportionality of resource allocation, based on epidemiological evidence, will improve KP service delivery, accelerating progress towards HIV eradication.

## THAE0106

### HIV PREVENTION RESEARCH & DEVELOPMENT FUNDING TRENDS 2000-2015: TRACKING INVESTMENT FLOWS FROM RESEARCH TO ROLLOUT OF NEW PREVENTION TECHNOLOGIES

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**Background:** The HIV Vaccine & Microbicides Resource Tracking Working Group tracked year-to-year and long-term trends in research and development (R&D) investments and expenditures for biomedical HIV prevention, including HIV vaccines, microbicides, pre-exposure prophylaxis (PrEP), treatment as prevention and medical male circumcision from 2000 to 2015.
**Methods:** R&D data were collected via annual surveys and direct outreach on disbursements by public, private and philanthropic funders for product development, clinical trials, trial preparation, community education and policy advocacy efforts to estimate annual investment in HIV prevention R&D. Investment trends were assessed and compared by year, prevention type, research phase, funder category and geographic location.
**Results:** The Working Group collated and analyzed 2015 data for all areas of HIV prevention R&D. The Group found that in 2015 overall investment in HIV prevention research reflected slight increases in US and private sector funding. With two phase II vaccine trials starting in 2015 funding for vaccines increased marginally, while funding towards microbicides decreased as ongoing efficacy trials began to wind down. In 2014, the Working Group began collecting data on PrEP implementation research and funding increased from 2014 to 2015 with several demonstration projects beginning in 2015.
**Conclusions:** Overall, fewer individual funders supported HIV prevention research than in previous years, with the US public sector and the Bill & Melinda Gates Foundation accounting for over 80 percent of all funding. Expanding and diversifying the investment base could provide a critical range of perspectives, human capacity and innovative concepts to the HIV prevention research agenda. With a shift in the funding formula for AIDS at the US NIH and adoption of Sustainable Development Goals focused on ending AIDS as part of a public health approach, it is critical to ensure continued prioritization of HIV prevention R&D on the US and global development agenda by evaluating research in the context of public, private and philanthropic funding. Mapping of funding trends is critical as HIV prevention R&D progresses through the pipeline from research to rollout to identify investment needs, prioritize research areas, assess impact of public policies that affect spending levels and provide the fact base for advocacy to sustain investments.

# THAE02 CONNECTING THE DOTS: TOWARD SEAMLESS SERVICE INTEGRATION

## THAE0202

### SYSTEM-LEVEL BARRIERS TO FP-HIV INTEGRATION IN MALAWI

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**Background:** Malawi has several policies for integrating family planning (FP) and HIV services. The 2011 national HIV clinical management guidelines recommended provider-initiated FP counseling (PIFP) and provision of condoms and injectables at ART settings. The USAID- and PEPFAR-funded Health Policy Project's 2015 study assessed the extent of integration occurring at the facility level, with special attention to identifying systems-level barriers.
**Methods:** Data were collected from a purposive sample of 41 public and private facilities across nine districts of Malawi. Facilities ranged from large high-volume hospitals to small health posts. Data collectors conducted 41 facility audits, 41 interviews with facility in-charges, 122 interviews with providers, and 425 client exit interviews.
**Results:** While 85% of ART clinics had condoms available, only 31% had injectables on hand; only 20% had a range of four or more types of contraceptives available. Fewer than half of the ART registers were tracking FP provision; the rest either kept separate registers or had no mechanism for documenting FP provision. About one-fifth of providers working at these facilities had no FP training, and only one-quarter had received any training on FP-HIV integration specifically. Although 93% of providers said they had time to counsel ART clients on FP, only 14% of clients reported being asked about their fertility intentions or FP on that day's visit. Even though providers reported referring out for FP, few knew detailed information about where and when those other services could be accessed. Clinic hours and provider availability were also identified as hindering FP service provision for ART clients. Almost half (44%) of the facilities reported stockouts or expirations of FP commodities in the past three months; one-third reported stockouts of HCT kits and one-quarter reported ARV stockouts.
**Conclusions:** Although national policies support FP-HIV integration, systems at facility level are not yet adequate to fully implement integration. The study and analysis offer recommendations for how facilities can improve their organization of services, strengthen both internal and external referral processes, increase training of providers on PIFP, improve patient registers and other M&E systems to better capture data, and address both FP and HIV commodity and supply stockouts.

## THAE0203

### EVALUATING THE COSTS AND EFFICIENCY OF INTEGRATING FAMILY PLANNING SERVICES INTO HIV AND AIDS TREATMENT SERVICES IN ZAMBIA

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**Background:** Integrating HIV and AIDS services with other health services is a key strategy to achieving an AIDS-free generation. In particular, integrating family planning (FP) and HIV services can improve health outcomes and continuity of care, and make service delivery more sustainable by supporting the efficient utilization of resources. At the request of USAID's Office of HIV/AIDS and the USAID Zambia mission, the Health Finance and Governance project used quantitative indicators to assess the costs and efficiencies of two models of FP and ART service integration in Zambia.
**Methods:** We conducted a cross-sectional, non-randomized comparison of two integration models - "internal referral" (IR), where patients can be counselled on FP within the ART clinic but are referred to the FP clinic onsite for further services, and "one-stop-shop" (OSS), where patients can be counseled and receive an FP method within the ART clinic. The models were compared using three indicators of efficiency: percentage of missed FP opportunities at ART clinics, time spent coun-

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seling ART patients on FP, and unit cost per ART patient counseled on FP and given an FP method. Data were collected from health management information systems, patient files, and exit interviews at ten sites in Zambia for the period from October 2013 to September 2014.

**Results:** The study found no statistically significant difference in efficiency between OSS and IR models for any of the proposed indicators, including cost. Additional costs of FP provision were US$3 on average per patient using OSS, and USD$8 on average per patient using IR. FP counseling added an average of 3 minutes to ART consultation time (p=0.03), but there was no statistically significant difference in that added time between the two models (p=0.65). There was widespread variation in the practice of integration among sites and models. Weak referral systems and poor client tracking limited potential integration gains.

**Conclusions:** Providing a comprehensive package of ART and FP services to HIV-positive women costs relatively little regardless of the integration model used. However, improved referral and client tracking systems could increase efficiency. Additional time and effort is required for facilities to consistently collect data on efficiency, referrals, and client tracking.

## THAE0204

### SCREENING FOR HYPERTENSION AND DIABETES AT THE TIME OF HIV TESTING IN UMLAZI TOWNSHIP, DURBAN, SOUTH AFRICA

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**Background:** The South African HIV treatment guidelines recommend screening for hypertension and diabetes before initiation of antiretroviral therapy. Our objective was to assess the prevalence and risk factors for hypertension and diabetes at HIV testing in Durban.

**Methods:** We enrolled adults (≥18 years) presenting for voluntary HIV testing at a high-volume clinic in Umlazi Township. We asked about mode of transport to clinic (walk, public bus/taxi, car), and measured a seated blood pressure before rapid HIV testing. Among those HIV-infected, we measured height, weight and random glucose by point-of-care glucometer. We defined hypertension as systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg. We defined likely diabetes as random blood glucose ≥11.1 mmol/L and likely impaired glucose tolerance (IGT) or prediabetes as ≥7.8 to < 11.1 mmol/L (based on International Diabetes Federation definition 2 hours post a 75g oral glucose load). We defined obesity as body mass index ≥30kg/m$^2$. We used separate multivariate logistic regression models to determine risk factors for hypertension and IGT/diabetes among HIV-infected participants.

**Results:** Among 3,082 enrollees, 1,572 (51%) were female and 1,170 (38%) were HIV-infected, with median CD4 count 299/µl (IQR 154-459). The majority (78%) walked to clinic; 22% took a public bus/taxi and < 1% arrived by car. HIV-uninfected participants were less likely to have hypertension (6%, 118/1799) compared to HIV-infected participants (13%, 157/1,153, p< 0.001). Among HIV-infected participants, 4% (21/492) met criteria for likely IGT or diabetes and 20% (100/492) were obese. Adjusting for gender, age ≥35 (OR 2.5, 95% CI 1.4-4.4, compared age < 25) and BMI ≥30 (OR 2.1, 95% CI 1.4-3.1) were associated with hypertension. Adjusting for obesity, not walking to clinic (OR 2.9, 95% CI 1.2-7.1, as compared to walking) and hypertension (OR 2.8, 95% CI 1.0-7.5) were associated with IGT/diabetes.

**Conclusions:** Screening for hypertension and diabetes was high-yield in a Durban HIV clinic. Traveling to clinic by public bus/taxi or car instead of walking, which may be a marker for low physical activity, was associated with nearly triple the odds of IGT/diabetes. Screening for chronic non-communicable diseases can be successfully performed at the time of HIV testing in resource-limited settings.

## THAE0205

### ONE-STOP SHOPPING FOR TB AND HIV SERVICES IMPROVED INITIATION OF ANTIRETROVIRAL THERAPY FOR PATIENTS WHO ARE CO-INFECTED IN EASTERN UGANDA

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**Background:** Initiation of antiretroviral therapy (ART) for patients co-infected with HIV and TB is low in certain districts of Eastern Uganda. One way to improve this is a one-stop shop where TB and HIV co-infected patients access a full package of services at one location.

**Description:** Strengthening TB and HIV & AIDS Responses in Eastern Uganda (STAR-E), a USAID project funded by PEPFAR and implemented by Management Sciences for Health, supported a health facility-based intervention in TB treatment sites in Kapchorwa District between January-September 2015.

The project provided on-site mentorship to 15 health workers at 5 health facilities on implementing a "one-stop shop" model for treating TB/HIV co-infected patients. Health workers from the TB clinic, ART clinic, and mother-baby care point were mentored on the Uganda national guidelines for treating TB/HIV co-infection, and given job aids, guidelines, and diagnostic charts. The health workers then mentored others. Data was collected at baseline and during implementation.

**Lessons learned:** Following establishment of the one-stop shop approach, the percent of TB/HIV co-infected patients started on ART increased from 42% to 100% (see Table).

| Quarter | Total cases detected | Tested for HIV | % who tested | HIV+ | % HIV+ | CPT | % on CPT | ARV | % on ART |
|---|---|---|---|---|---|---|---|---|---|
| Oct-Dec 2014 | 30 | 28 | 93% | 19 | 67.9% | 19 | 100% | 8 | 42% |
| Jan-Mar 2015 | 32 | 32 | 100% | 16 | 50.0% | 16 | 100% | 14 | 88% |
| Apr-Jun 2015 | 23 | 23 | 100% | 15 | 65.2% | 15 | 100% | 13 | 87% |
| Jul-Sep 2015 | 29 | 29 | 100% | 13 | 44.8% | 13 | 100% | 13 | 100% |

*[TB/HIV Treatment - Oct 2014 to Sep 2015]*

Provision of TB/HIV co-infected treatment services with the one-stop shop approach increased co-infected patients' initiation of ART.

**Conclusions/Next steps:** Continued implementation of vertical HIV/AIDS and TB programs that treat each disease separately is inadequate and should be replaced by new models of care that integrate services and maximize efficient use of already-limited resources. This intervention indicates integration may be effective for timely initiation of ART amongst TB patients in a low resource rural African setting. Scale up of this approach to health facilities providing TB/HIV services should be considered.

## THAE0206

### PROMISING PRACTICE: INTEGRATING GENDER AND GENDER-BASED VIOLENCE INTO COMMUNITY-BASED ORGANIZATIONS CAPACITY BUILDING, HIV PREVENTION, COUNSELLING AND TESTING PROGRAMS

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**Background:** In Mozambique, HIV prevalence is 13.1% for women, 9.2% for men, 1 in 3 women experience physical violence; 12% of women over 15 experience sexual violence. Risk factors include early marriage, transactional sex, and male dominance in decision making. Under the PEPFAR Gender-based Violence Initiative, USAID/Mozambique supported the Capable Partners Program (CAP) to scale up GBV prevention within their capacity building program. CAP and the Health Policy Project provided training and technical assistance to help six CBOs design and implement social and behavioural change communication activities that address gender norms/GBV and HIV together.

CBOs organized series of 8-12 small group debates addressing gender-based risk factors and barriers to HIV prevention and testing. CAP developed videos to spur meaningful debates and ensured quality activities. Interventions aimed at preventing sexual transmission of HIV and promoting HIV testing reached 70,892 women and men ages 15-49 in four provinces during 2012-2015.

**Methods:** A 2014 quantitative cross-sectional endline population survey interviewed 1531 men and women aged 15-49 about gender norms and testing. Propensity score matching compared people exposed to CAP to those not exposed.
**Results:** Among the exposed group, 21% agreed it is acceptable for men to make all decisions for the family without including the wife, versus 33% among the unexposed. The exposed were less likely to think it acceptable for teachers to request sex from their students (12% vs 24%) and to think that men can have sex with girls younger than 14 (16% vs 26%). Furthermore, 32% of the exposed indicated that they tested with their sexual partner compared to 5% of the unexposed (p< 0.01). Qualitative results indicate a strong, but not yet pervasive, effect on awareness about the legal framework and GBV reporting.
**Conclusions:** Community-based interventions that integrate GBV with HIV prevention are positively associated with more balanced community gender norms and lead to increased preventive behaviors.

## THAE03 BANG FOR THE BUCK: COST-EFFECTIVENESS AND MODELLING

### THAE0301

### ESTIMATING COUNTRY COST IMPLICATIONS ASSOCIATED WITH NEW WHO HIV TREATMENT GUIDELINE REVISIONS: FORECASTING CAMBODIA'S 5-YEAR PROGRAMME COSTS FOR ADULTS

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**Background:** HIV treatment coverage rates in Cambodia are high. Cambodia's National Centre for HIV/AIDS, Dermatology, and STD (NCHADS) wanted to understand the cost and feasibility of expanding the national HIV treatment program to include eligibility for all HIV-positive patients regardless of CD4 count and expanding access to viral load (VL) monitoring. In order to optimize both available resources and treatment quality, the financial impact of adopting the 2015 World Health Organization HIV treatment guidelines must be considered. They also wanted to explore the impact of new technologies and antiretroviral drugs (ARVs) on HIV treatment program costs and drug transitions.
**Methods:** We used a five-year forecast Excel-based morbidity model, to run five comparison scenarios side-by-side evaluating different treatment policy decisions:
1) baseline of the current treatment eligibility at CD4< =350copies/mL and accounting for key populations;
2) increased treatment eligibility to CD4< =500copies/mL;
3) increased treatment eligibility to treat-all;
4) treat-all and reduced CD4 monitoring;
5) treat-all, reduced CD4 monitoring, and initiating and gradually transition eligible efavirenz (EFV) patients to low-dose EFV.
All scenarios had an increase in VL coverage. Cambodian HIV epidemic and program data were used to estimate patient numbers and costs for first-line and second-line ARVs and buffer stocks, labs, and human resources. Patient years were disaggregated by patient types and assigning different treatment statuses such as pre-ART, PMTCT, newly initiating patients, stable patients, and non-stable patients.
**Results:** Estimated patient-years on treatment increased by 8% when adopting treat-all, with a large jump in the first year with additional pre-ART patients initiating treatment. This surge resulted in approximately $5million cost increase over five years. Savings were found in reducing CD4 monitoring ($2.6million) and further savings with transitions to low-dose EFV ($2.4million), netting lower five-year costs with these shifts compared to the baseline scenario. By year five, 45% of first-line patients are on low-dose EFV regimens, the cost per patient year decreases from $260 to $233 in scenario-five compared to scenario-three.
**Conclusions:** NCHADS used these results in consideration for their new guideline revisions. They decided that treat-all was feasible and would be adopted, and low-dose EFV would be incorporated into the program in lieu of EFV for eligible patients.

### THAE0302

### ANTICIPATED REDUCTIONS IN LONG-TERM TUBERCULOSIS INCIDENCE AND ASSOCIATED COST SAVINGS WITH ADOPTION OF THE TREAT ALL PEOPLE LIVING WITH HIV POLICY IN BOTSWANA, 2016-2035

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**Background:** Botswana is a high tuberculosis (TB)/HIV burden country with the second highest HIV prevalence in the world of 18.5% in the general population, an estimated TB incidence of 385 cases per 100,000 population and TB/HIV co-infection rate of 60% in 2014. In 2012, Botswana expanded ART eligibility to include all people living with HIV (PLHIV) with a CD4 count of < 350 cells/µl$^3$ or WHO clinical Stage 3/4 disease. To inform the national decision to increase coverage by providing ART to all PLHIV (Treat All policy), we modeled the expected reductions in TB incidence and resulting TB-related cost savings from 2016-2035 comparing 1) a baseline scenario with current ART eligibility and HIV prevention coverage levels to 2) a Treat All scenario for PLHIV.
**Methods:** The HIV Spectrum Model was used to generate annual estimates of the number of PLHIV on ART and not on ART for each scenario from 2016-2035. TB and multidrug-resistant TB (MDR-TB) incidence and differential TB risk was modeled for each scenario; annual numbers of expected TB and MDR-TB cases among PLHIV were calculated. Base costs per TB and MDR-TB case were estimated from the cost of anti-TB treatment drugs and laboratory tests for diagnosis and clinical monitoring per national TB guidelines.
**Results:** Under the baseline scenario the annual number of TB cases among PLHIV would increase through 2035. Adopting a Treat All policy in Botswana would potentially prevent 71,862 TB/HIV cases, including 2,605 MDR-TB/HIV cases, resulting in cumulative TB cost savings of over $40 million from 2016-2035. By 2035, we predict Treat All could reduce TB incidence from an estimated 1,321/100,000 among PLHIV (baseline) in Botswana to 568/100,000 (Treat All) and contribute a 36% reduction in overall TB incidence between 2015 and 2035.
**Conclusions:** While our projection is subject to several limitations, sensitivity analysis suggests that a marked reduction in TB incidence is robust. Immediate adoption of a Treat All policy in Botswana would be an important, effective TB prevention and control intervention. Additional TB control strategies will be needed to meet the End TB milestone of reducing TB incidence by 95% by 2035.

### THAE0303

### ASSESSING PROGRESS, IMPACT, AND NEXT STEPS IN ROLLING OUT VOLUNTARY MEDICAL MALE CIRCUMCISION FOR HIV PREVENTION IN FOURTEEN PRIORITY COUNTRIES IN EASTERN AND SOUTHERN AFRICA AS OF 2015

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**Background:** In 2007, the World Health Organization and the Joint United Nations Programme on HIV/AIDS (UNAIDS) identified 14 priority countries across eastern and southern Africa for scaling up voluntary medical male circumcision (VMMC) services. Several years into this scale-up effort, we reflect on progress made thus far.
**Methods:** Using the Decision-Makers' Program Planning Tool (DMPPT) 2.1, we assessed the age-specific impact, cost-effectiveness, and coverage attributable to circumcisions performed through end 2014. The analysis also compared impact of actual progress to that of achieving 80% coverage among men ages 15-49 in 12 VMMC priority countries and Nyanza Province, Kenya. The models were populated with age-disaggregated VMMC service statistics, and with population, mortality, and HIV incidence and prevalence projections exported from country-specific

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Spectrum/Goals files, assuming achievement in each country of the new 90-90-90 treatment targets.
**Results:** Over 9 million VMMCs had been conducted through 2014: 43% of the estimated 20.9 million VMMCs required to reach 80% coverage by end 2015. Assuming each country reaches the 90-90-90 HIV treatment targets, the modelling analysis projected that VMMCs conducted through 2014 will avert a total of 240,000 infections by 2025, compared to 1.1 million if each country had reached 80% coverage by 2015. The median estimated cost per HIV infection averted was $4,400. Nyanza province in Kenya, the 11 priority regions in Tanzania, and Uganda have reached or are approaching MC coverage targets among males ages 15-24, while coverage in other age groups is lower. Across all countries modelled, over 50% of the projected HIV infections averted were attributable to circumcising the 10- to 19-year-olds.
**Conclusions:** The priority countries have made considerable progress in VMMC scale-up, and VMMC remains a cost-effective strategy for epidemic impact, even assuming near-universal HIV diagnosis, treatment coverage, and viral suppression. Examining circumcision coverage by 5-year age groups will provide countries with better insights into the progress of their VMMC programs and help them to make more informed decisions about next steps.

## THAE0304

### COST EFFECTIVENESS OF ON DEMAND PREP IN MEN WHO HAVE SEX WITH MEN (MSM) IN THE ANRS IPERGAY STUDY

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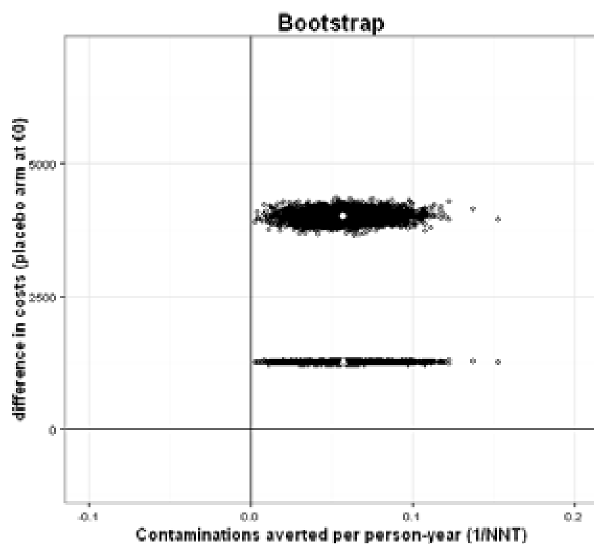
**Background:** ANRS IPERGAY showed the efficacy of on demand PrEP with TDF/FTC in preventing HIV acquisition among MSM.
**Methods:** A prospective economic evaluation was performed during the trial from the healthcare system perspective to determine the cost of PrEP per HIV-infection averted in the TDF/FTC arm. Both hospital and non-hospital resources were considered. Costs for counseling were added. Drugs (TDF/FTC and drugs for STIs), tests (for HIV and STIs), visits and hospital admissions were valued with the national tariff and based on their mean use during the trial (15 tablets of TDF/FTC per month). Robustness of results was tested by sensitivity analyses. The incremental cost-effectiveness ratio (ICER) of PrEP per HIV-infection averted was calculated for one year and compared to the yearly and lifetime cost of one HIV-infection in France (€20,170 and € 535,000 respectively).
**Results:** The trial enrolled 400 participants and found that the number needed to treat for one year to prevent one HIV-infection was 17.6. The cost of counseling was 690 € per person-year. The total one-year costs of PrEP were €4,004 per participant, of which 78% were drug costs (€500 for 30 tablets of TDF/FTC). PrEP ICER was €70,470 per infection averted. Using TDF/FTC costs of €60 for 30 tablets, the one-year cost was €1,253 per patient and the ICER was €22,052 per infection averted, similar to the yearly cost of treating HIV-infection. Sensitivity analyses in figure 1 show the contribution of drug costs and NNT results on the ICER.




*[Figure 1. Sensitivity analysis of the ICER at current and low drug prices]*

**Conclusions:** In France, the ICER of on demand PrEP in MSM with TDF/FTC at the current price is higher than the cost of treating a patient with HIV-infection for one year but much lower than the lifetime cost of HIV-infection. Using the lower cost of TDF/FTC however, PrEP becomes cost-neutral on a yearly basis.

## THAE0305

### THE COST-EFFECTIVENESS OF HIV PRE-EXPOSURE PROPHYLAXIS (PREP) IN HIGH-RISK MEN WHO HAVE SEX WITH MEN (MSM) AND TRANSGENDERED WOMEN (TGW) IN BRAZIL

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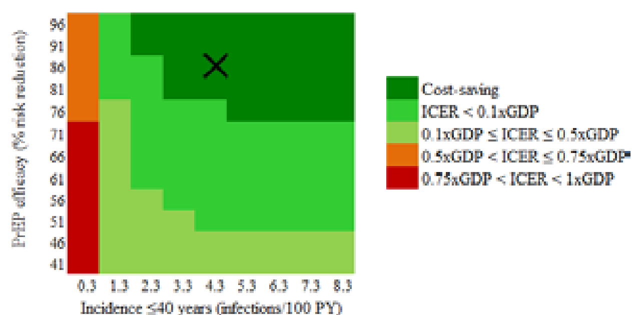
**Background:** The effectiveness of tenofovir-based oral PrEP for preventing HIV infection has ranged from 44-96% in clinical trials. We examined the cost-effectiveness of PrEP in MSM and TGW in Brazil.
**Methods:** We used the CEPAC-International model of HIV prevention and treatment to simulate clinical outcomes, costs, and cost-effectiveness of daily TDF-FTC PrEP among high-risk MSM and TGW in Brazil. Our comparator, *no PrEP*, featured guideline-concordant care, including universal ART access. In the *PrEP* strategy, high-risk HIV-negative adults age < 40y received daily PrEP, HIV testing every 4m, and annual creatinine. Base case parameters, derived from Brazil-specific sources, included mean age (31y), annual HIV incidence (age≤40y: 4.3/100PY; age≥40y: 1.0/100PY), PrEP efficacy (86%), PrEP drug costs ($12.50/m), and PrEP program costs ($0.99/m). We varied key parameters in sensitivity analyses.
**Results:** Compared to *no PrEP*, *PrEP* decreased lifetime HIV infection risk by 37%. *PrEP* increased per person discounted (undiscounted) survival from 20.7 (36.9) to 22.4 (41.1) years and decreased lifetime medical costs from $4,090 ($10,910) to $3,470 ($7,660); *PrEP* was therefore cost-saving (Figure 1). *PrEP* remained cost-saving under key parameter variation, including PrEP cost, initial cohort age, and HIV testing frequency on/off PrEP. When PrEP was only used until age 30, PrEP ceased to be cost-saving, but its incremental cost-effectiveness ratio (ICER) remained < 1x Brazil's per capita GDP. The ICER of *PrEP* also remained cost-saving or < 1xGDP when PrEP efficacy and HIV incidence varied widely (Figure 1), but exceeded 1xGDP when HIV incidence was ≤ 0.24 infections/100PY at base case PrEP efficacy (86%).
**Conclusions:** PrEP is cost-saving for MSM and TGW in Brazil. Our results strengthen local PrEP demonstration project results and offer justification for a future national PrEP program for MSM/TGW in Brazil.

| Strategy | Total cohort cost/patient | Total cohort LE/patient | HIV+ cases (% of cohort) | % reduction in lifetime HIV infection risk | Average years to infection (SD) |
|---|---|---|---|---|---|
| No PrEP | $4,090 | 20.7 | 50.07% | - | 13.7 (13.7) |
| PrEP | $3,470 | 22.4 | 31.57% | 37% | 24.2 (15.8) |
| All costs discounted at 3%/year; PrEP: pre-exposure prophylaxis; LE: life expectancy; HIV+: HIV-positive; SD: standard deviation | | | | | |

*[Table 1. Base case results of an analysis of PrEP cost-effectiveness in Brazil]*




**PrEP:** pre-exposure prophylaxis; **PY:** person-year; **ICER:** incremental cost-effectiveness ratio; **GDP:** gross domestic product per capita

**Notes:** Incidence >40 years in each scenario was 0.233x incidence ≤40 years, thereby retaining the base case incidence ratio for >40 year olds versus ≤40 year olds (1.0 per 100PY/4.3 per 100 PY=0.233). 'X' denotes base case value.

*[Figure 1. Two-way sensitivity analysis of PrEP efficacy and incidence]*

## THAX01 PHYLODYNAMICS: TRACKING TRANSMISSION IN VULNERABLE POPULATIONS

### THAX0101

### IDENTIFYING PATTERNS OF HIV-1 TRANSMISSION AMONG MSM COMMUNITIES IN JAPAN FOR TARGET SELECTION OF AN ACTIVE PREVENTION PROGRAM

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**Background:** Understanding the transmission dynamics of HIV-1 among a risk population can provide clues for developing an efficient prevention strategy. In order to characterize the transmission dynamics of HIV-1 spread among men who have sex with men (MSM) in Japan, we conducted sequence-based transmission clustering using advanced phylogenetic inferences followed by a network analysis.
**Methods:** Protease-reverse transcriptase sequences from 4,386 subtype B-infected individuals registered in the Japanese Drug Resistance HIV-1 Surveillance Network between 2003 and 2012 were included in the analysis. The number of patients infected within 6 months was estimated using a BED assay for plasma samples. Phylogenetic relationships of these sequences were inferred using three different methods, and depth-first searches of monophyletic groups with >95% in interior branch test, >95% in Bayesian posterior probability, and < 10% diversity were identified as a transmission cluster (TC). Time of the most recent common ancestor (tMRCA) and basic reproduction number (R0) of the TC were estimated with Bayesian inference. Transmission networks were estimated by linking two individuals in a TC whenever their sequences showed less than 1.5% genetic distance. Correlation between some network coefficients and demographic parameters in each TC were analyzed.
**Results:** We identified 312 TCs that included 3,708 individuals. The majority of TCs involved men (3,625 cases) and MSMs (2,656 cases). Orientation towards clustering was significantly associated with sex, risk behavior, and recent seroconversion of the individual. Number of individuals, tMRCA, median age, and R0 of TCs did not vary within the major geographic region of a TC. Network analysis of the 44 largest TCs showed that density as well as degree centralization indices was correlated with tMRCA, suggesting a consistent developing pattern of transmission clusters in the Japanese MSM population from a dense and local transmission network to a sparse and widely distributed one.
**Conclusions:** Our results suggest that HIV-1 spreads through MSM communities with a consistent pattern in Japan. Since patients in the cluster may have good awareness of HIV testing, the network information of the MSM community estimated from viral sequence may help to select a target for the active prevention program, i.e. PrEP, in Japan.

### THAX0102

### A STUDY OF POTENTIAL HIV TRANSMISSION HOTSPOTS AMONG MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN IN LIMA, PERU

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**Background:** Innovative prevention strategies for MSM and transgender women (TGW) that effectively reduce incidence are critically needed; building these strategies will require identifying transmission networks and associated drivers of ongoing HIV transmission. The objective of this study was to identify key drivers and geographic sources of transmission among MSM/TGW in Lima, Peru through two aims: 1) To recognize geographic transmission hotspots through mapping locations of venues at which participants reported having sexual encounters and their residences; 2) To identify clusters of related incident infections through phylogenetic analysis and link these clusters to real-time data on sexual encounters, high-risk behaviors, and attendance at social venues (bars, clubs, saunas, etc.).
**Methods:** Between September 2013 and October 2015, MSM and TGW (n=3,191) were screened for participation in a 24-month follow-up study (HIV prevalence=20.5%). HIV-uninfected individuals (n=2,078) agreed to monthly HIV testing and completing surveys covering drug and alcohol use, sexual activity, and attendance at social venues. Cohort HIV incidence was 8.6 per 1000 person-years (n=303). Locations of HIV-infected participants' residence and social venues where participants reported a sexual encounter were mapped and analyzed using the Getis-Ord-Gi* method to identify HIV hotspots. Putative transmission networks were identified by phylogenetic analysis of partial *pol* sequences obtained from incident HIV infections. Phylogenetic clusters were linked with individuals' data on venue attendance and sexual partners.
**Results:** In the geographic analysis, 7 of the 20 social venues were identified as transmission hotspots (99% confidence); no neighborhoods were identified as hotspots. Phylogenetic analysis indicated 13 clusters of highly-related infections (bootstrap values >90%). Within clusters with sufficient behavioral data covering the time of infection (n=7), all or most members reported sexual encounters in the 60 days prior to HIV diagnosis with partners they met at specific venues that had been identified as transmission hotspots in the geographic analysis.
**Conclusions:** Both the phylogenetic and geographic cluster analyses identified related HIV incident cases associated with specific venues. These results support offering HIV prevention services, testing, and linkage-to-care efforts at high-risk social venues rather than in neighborhoods.

### THAX0103

### USING PHYLOGENETICS OF HIV TO INFORM PREVENTION AMONG YOUNG BLACK MEN WHO HAVE SEX WITH MEN IN CHICAGO

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**Background:** Phylogenetic analysis of HIV sequence data has potential to guide public health efforts and to clarify transmission network dynamics. Young black MSM (YBMSM) are now at greatest risk for HIV infection and a driver of continuing spread of HIV in Chicago. We identified characteristics associated with membership in phylogenetic clusters of HIV sequences and degree of connectivity among a cohort of YBMSM in Chicago.
**Methods:** uConnect is the largest cohort study of YBMSM (aged 16-29) in Chicago (n=618). Survey data were collected using respondent-driven sampling. We analyzed HIV-1 genetic sequences from dried blood spots. We determined pairwise genetic distance, inferred transmission events between persons whose *pol* sequences were ≤1.5% genetically distant, and constructed clusters of HIV that connected persons (≥1 tie to another sequence). We determined demographic and risk attributes associated with both membership in a phylogenetic cluster and degree of connectivity within each cluster.
**Results:** Our sample contained 214 (34.6%) HIV-diagnosed persons, from whom we analyzed 77 (36.0%) HIV *pol* sequences. Of 77 HIV sequences, 42 (54.5%) had a tie to genomes from ≥1 other person.
In adjusted zero-inflated Poisson regression analyses, we determined that self-identity as either straight (Relative Risk [RR] = 9.12; 95% CI: 3.47—23.96) or bisexual (RR = 5.94; 95% CI: 3.75—9.41), depressive symptoms (RR = 1.91; 95% CI: 1.36—2.68),

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and recreational use of both marijuana (RR = 12.14; 95% CI: 6.91—21.32) and cocaine/crack (RR = 5.22; 95% CI: 2.81—9.72) were associated with greater connectivity within a phylogenetic cluster. We also found being currently insured (RR = 0.61; 95% CI: 0.42—0.88), being in a relationship (RR = 0.40; 95% CI: 0.27—0.59, and a greater number of confidants (RR = 0.78; 95% CI = 0.67—0.92) to be associated with a lower degree of connectivity. We found no significant predictors of membership in a cluster.
**Conclusions:** We determined that self-reported sexual identity, depressive symptoms, and recreational drug use are associated with a high degree of connectivity within potential HIV transmission networks. Increasing access to mental health services and youth-focused drug use prevention programs may reduce HIV transmission among YBMSM.

## THAX0104

### HIV PHYLOGENETIC ANALYSIS SHEDS LIGHT ON TRANSMISSION LINKAGES IN YOUNG WOMEN IN HIGH HIV BURDEN DISTRICTS IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Strategies to reduce HIV transmission would benefit greatly from a better understanding of the sexual networks that drive HIV transmission in young women. Phylogenetic analysis has recently emerged as a powerful tool to examine the underlying dynamics of HIV-1 transmission.
**Methods:** Samples were obtained from the HIV Incidence Provincial Surveillance System (HIPPS), a household-based study designed to monitor HIV prevalence and incidence trends in Vulindlela and Greater Edendale in rural KwaZulu-Natal. HIV genotyping of the pol region (1250bp) was performed for 999 samples with viral load of >1,000 c/ml. The best fitting evolutionary model (GTR+G+I) was calculated and a maximum likelihood tree constructed with 100 bootstrap replicates. Clusters of linked infections were identified (i.e. >=2 sequences with bootstrap support ≥90 and diversity ≤4%). Statistical analysis was performed using Stata 10.0/SE
**Results:** We identified 27 phylogenetic clusters (average bootstrap= 99.2% and diversity= 1.7%). Of these, 10 were mixed gender clusters; 9 dyads and a cluster with 4 individuals (1 male and 3 females). In total, 12 females were linked to 10 males. All of the males were not on ART and had high viral load (Mean: 187,423 c/ml; Median: 106,165 c/ml). The mean age of males was 32.1 years and 27.7 years for the females. Six of the women were aged ≤ 24 years (Mean age: 20.3 years) and were linked to 5 men with a mean age of 28.4 years (p=0.014). The mean age difference in the remaining mixed clusters was 1.7 years. The age difference between linked women and men decreases as the woman age
**Conclusions:** Our results show that all the men linked to woman were not on ARVs and had a high viral load. Furthermore, the age disparity between young women (≤ 24 years) and linked men was on average less than 10 years. While we need to increase our sample coverage to test this results further, this study indicates that phylogenetics can provide key insight into the underlying dynamics of HIV-1 transmission in South Africa. In conclusion, breaking the HIV transmission cycle from older men to young women is crucial to control the epidemic

## THAX0105

### STREAMLINED QUASISPECIES AND SUBTYPE ANALYSIS OF HIV-1 SEQUENCES GENERATED BY HIGH-THROUGHPUT SEQUENCING USING THE HIGH-PERFORMANCE INTEGRATED VIRTUAL ENVIRONMENT (HIVE)

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**Background:** High-throughput sequencing (HTS) has recently been used to characterize HIV-1 genome sequences. While sequences of HIV-1 from each sample can be easily analyzed with small gene fragments, it has been challenging to analyze half or whole genome sequences due to short HTS reads. To reliably identify diverse quasispecies populations and determine subtype of HTS sequences generated from long HIV-1 genome sequences, we have developed a new pipeline that defines distinct virus populations in each sample and determines subtypes or recombination breakpoints of the sequences using the High-performance Integrated Virtual Environment (HIVE).
**Methods:** Viral RNA was extracted from 70 plasma samples from two chronic infection cohorts; External Quality Assurance Program Oversight Laboratory (EQAPOL) and the Center for HIV/AIDS Vaccine Immunology (CHAVI). The 3' half genome was amplified by RT-PCR and PCR amplicons were then sequenced by HTS on MiSeq. Raw reads were assembled and analyzed with the Geneious software and the HTS analysis tools in HIVE.
**Results:** Final consensus sequences of 3'-half genomes were first generated for all viruses using Geneious. Genetic analysis of these sequences identified 17 A1s, 4 Bs, 30 Cs, 1 D, 6 CRF02_AG and 12 unique recombinant forms (URFs). Sequences from 41 viruses (58.6%) contained 1-178 ambiguous bases each, suggesting the presence of quasispecies viral populations in each sample and the single consensus generated by Geneious could not fully represent the viral population in these samples. We then analyzed the same raw reads using HIVE and found one species in 5 samples (7.1%), 2-10 species in 45 samples (64.3%), 11-20 species in 13 samples (18.6%), 21-30 species in 5 (7.1%), and 31-37 species in 2 samples (2.9%). Three samples contained two predominant populations which were not identified by Geneious. The subtyping and recombinant analysis results of the main species consensus sequences were the same as those determined by Geneious.
**Conclusions:** HIVE provides a useful platform with specialized tools to analyze HTS data generated for the half HIV-1 genome by identifying multiple distinct quasispecies populations and determining subtypes or recombination patterns of each species consensus sequences in the same samples.

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# POSTER DISCUSSIONS

## THPDA01 HIV PERSISTENCE AND ERADICATION

### THPDA0101

**IMMUNO-PET/CT IMAGING REVEALS DIFFERENCES IN VIRUS AND CD4+ CELL LOCALIZATION IN SIV INFECTED RHESUS MACAQUES TREATED WITH AN ANTI-α4β7 MAB**

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**Background:** Integrin α4β7 mediates the trafficking of leukocytes including $CD4^+$ T cells to lymphoid tissues in the gut, which are principal sites of HIV and SIV replication during acute infection.
**Methods:** We evaluated the impact of an anti-integrin α4β7 mAb, which acts as an α4β7 antagonist, on the distribution of both SIV infected cells and $CD4^+$ cells in rhesus macaques infected with highly pathogenic SIV on live animals using a PET/CT imaging technique. Probes for both the gp120 envelope protein and the CD4 receptor were employed.
**Results:** We determined that the anti α4β7 mAb reduces viral replication in gut associated lymphoid tissues, but also in other tissues including lung, spleen and axillary and inguinal lymph nodes that are not linked to α4β7 mediated homing. The reduction in viral replication in gut tissues occurred despite the fact that α4β7 mAb treatment did not deplete gut tissues of $CD4^+$ cells. Treatment with anti α4β7 during the acute phase of infection appeared to facilitate $CD4^+$ cell reconstitution at a later stage of infection.
**Conclusions:** These results demonstrate that an α4β7 antagonist can reduce viral replication in gut tissues without depleting those tissues of $CD4^+$ cells. Because damage to the gut is believed to play a central role HIV pathogenesis, these results support further evaluation of α4β7 antagonists in the study and treatment of HIV disease.

### THPDA0102

**HIV PERSISTS IN COLON AND BLOOD CCR6+CD4+ T CELLS DURING ART**

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**Background:** Peripheral blood CD4+ T-cells expressing the Th17 marker CCR6 are highly permissive to HIV. Retinoic acid (RA), a gut-homing inducer, increases HIV integration/replication only in CCR6+ T-cells; this further supports the role of the gut in HIV disease progression. Herein, we investigated the contribution of CCR6+ T-cells from the colon and blood to viral persistence during antiretroviral therapy (ART) and tested the ability of RA to reactivate latent HIV in these cells.
**Methods:** Experiments were performed on matched blood/colon biopsy samples (n=7)
and PBMC collected by leukapheresis (n=14) from chronically HIV-infected subjects aviremics under ART. Cells were extracted from colon biopsies by enzymatic digestion; then, memory CCR6+/CCR6- CD4+ T-cell subsets were sorted by flow cytometry (BD AriaIII). Blood total ($T_M$, CD45RA-), effector ($T_{EM}$, CD45RA-CCR7-) and central memory ($T_{CM}$, CD45RA-CCR7+) CD4+ T-cells expressing or not CCR6 and producing cytokines (IL-17A or IFN-g) were also sorted by flow cytometry. Integrated HIV genomes were quantified by real-time PCR. HIV reactivation was induced by stimulation with CD3/CD28 Abs in the presence or absence of RA (10 nM) and/or ART for 9 days. Levels of HIV-RNA in cell-culture supernatants were quantified by real-time RT-PCR.
**Results:** Memory CCR6+ compared to CCR6- T-cells isolated from the blood and colon biopsies were highly enriched in integrated HIV-DNA (median blood: 2,298 *vs.* 830, p=0.0041; median colon: 2,484 *vs.* 1,463 HIV-DNA copies/$10^6$ cells; p=0.01). Among the $T_M$ pool in the blood, CCR6+ $T_{CM}$ showed the highest levels of integrated HIV-DNA. Upon TCR triggering, HIV reactivation was preferentially observed in blood CCR6+ compared to CCR6- $T_M$, $T_{CM}$, and $T_{EM}$; exposure to RA further induced HIV reactivation in CCR6+ T-cells, including cells producing IL-17A.
**Conclusions:** We identified CCR6 as a marker for CD4+ T-cells enriched in HIV reservoirs in the blood and the colon of ART-treated subjects and demonstrated that HIV-DNA persists in IL-17-producing cells. The finding that RA promotes HIV latency reversal in a TCR-dependent manner indicates an important contribution of the intestinal environment to viral persistence and reactivation. Understanding molecular mechanisms of HIV persistence in Th17 cells will be critical for the design of therapeutic strategies aimed at viral eradication.

### THPDA0103

**$CD8^+$ CYTOTOXIC T LYMPHOCYTES EXERT A STRONG CYTOLYTIC EFFECT ON VIRALLY-INFECTED CELLS PRIOR TO VIRAL INTEGRATION IN SIVMAC251-INFECTED RHESUS MACAQUES**

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**Background:** The mechanism of action of $CD8^+$ T cells in controlling virus during HIV infection is not completely elucidated. Previous experiments using NRTIs in CD8-depleted SIV-infected macaques indicate that this mechanism is non-cytolytic. However, it is uncertain if $CD8^+$ T cells have the ability to eliminate infected cells prior to virus integration. To answer this question, we analyzed the effects of integrase inhibitor raltegravir (RAL) monotherapy on infection outcome in SIV-infected rhesus macaques (RMs) either with or without $CD8^+$ T cells.
**Methods:** Eleven SIVmac251-infected RMs were given either RAL, the CD8-depleting antibody M-T807R1, or a combination of both and were followed for 23 days, at which point RAL was interrupted. Plasma viral loads (VLs) were monitored with conventional qRT-PCR. Changes in T cell counts and immune activation were monitored by flow cytometry.
**Results:** The CD8 depletion only group exhibited a plasma VL increase of ~1 log. RMs receiving RAL exhibited a decline in VL, with the CD8 depletion plus RAL group showing both a smaller decay in plasma virus compared to the RAL only group and a slower secondary VL decline. We fitted a heuristic model with double exponential decay to the first 10 days of VL decline, during complete CD8 depletion. The results showed that the very early phase of decay (< 3 days) occurred at the same rate in the CD8-depleted and non-depleted groups (rate ~1/day). However, the next phase of decay was much slower in the CD8 depleted group (~0.015/day) than in the non-depleted group (~0.12/day). Moreover, this model fitted the data significantly better (p=0.045) than a model with the same second phase rate for both groups of RMs. These results are consistent with a dynamical model in which the first rate of decay corresponds to the death of productively infected cells and the second rate of decay corresponds to the loss rate of infected cells prior to provirus integration.
**Conclusions:** Use of RAL monotherapy revealed a potential cytolytic effect of $CD8^+$ T cells in SIV infection. Our results indicate that almost 90% of the death/loss rate of infected cells prior to proviral integration is due to $CD8^+$ T cells.

### THPDA0104

**UNDERSTANDING THE EFFECTS OF LATENCY REVERSING AGENTS ON HIV RNA SPLICING: IMPLICATIONS FOR LATENCY REVERSAL**

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**Background:** Latency reversing agents (LRAs) are currently under investigation as part of a strategy for an HIV cure. Histone deacetylase inhibitors (HDACi) increase transcription of unspliced (US) HIV RNA but have limited potency in vivo. We investigated whether this may arise from impaired splicing of HIV RNA. We determined the effect of LRAs on HIV RNA splicing in the presence and absence of HIV Tat protein, which impacts splicing alongside transcription.
**Methods:** We employed an LTR-driven splicing reporter construct where HIV Envelope gp140 is fused to eGFP and is expressed if the RNA transcribed from the reporter remains unspliced. If the RNA is spliced across the naturally occurring splice

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donor-4 and acceptor-7 within *env*, then a Rev mutant fused to dsRed is expressed instead. This system therefore allows the detection of unspliced and spliced RNA products through the measurement of eGFP or dsRed via flow cytometry. HEK293T-cells were transfected with the reporter construct with or without a Tat expression plasmid and treated with a panel of LRAs. Fluorescence was assessed and Paired T-tests were performed.

**Results:** In cells transfected with the splicing reporter, treatment with romidepsin, panobinostat, JQ1 and PMA/ionomycin significantly increased the expression of unspliced product compared to DMSO in the absence of Tat (4.3, 1.6, 2.9, 6.8 fold change (FC) respectively, all p< 0.05) and in the presence of Tat (1.5, 1.7, 1.5, 1.2, 1.7 FC respectively, all p< 0.05). Interestingly, without Tat only JQ1 and PMA/ionomycin significantly increased the expression and proportion of spliced product (dsRed/(dsRed+eGFP)) (4.9, 4.6 FC respectively, both p< 0.05). Conversely, although HDACi had no effect on the level of spliced product without Tat, when Tat was added, a significant reduction in the proportion of spliced product was observed following treatment with vorinostat, romidepsin and panobinostat compared to DMSO (0.54, 0.62, 0.76 FC respectively, all p< 0.05).

**Conclusions:** HDACi reduce the efficiency of HIV RNA splicing in the absence or presence of Tat. This was not seen with other LRAs including JQ1 and mitogen. In addition to the effect of LRAs on HIV transcription, we propose that an assessment of RNA splicing should also be evaluated.

## THPDA0105

### REAL TIME IMAGING OF HIV UNCOATING IN LIVING CELLS

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**Background:** Following the viral fusion of HIV with the cell membrane, the HIV genome is delivered into the cytoplasm within a fullerene cone-like structure known as the capsid. The capsid is composed of the viral proteins p24CA, and at some point, is separated from the reverse transcribing HIV genome in a process known as uncoating. The timing of the uncoating event remains controversial with some models proposing that the conical capsid structure is lost early while other models suggest that the intact capsid structure docks at the nuclear pore. The lack data for kinetics and localization of uncoating has led to intense discussions over recent years.

**Methods:** To develop a cell biology approach to visualize dynamic changes in capsid integrity and composition, we utilized GFP as a fluid phase marker intravirion marker. With this technique, the loss of the fluid phase GFP occurs in two steps, with fusion and upon the loss of the capsid core integrity. Live-cell microscopy of dual labeled virions allows for the moment of fusion and capsid integrity loss to be timed, thereby revealing the kinetics, localization and composition of HIV-1 early steps of infection.

**Results:** Direct observation of individual virions reveals that the time between fusion and uncoating for both HIV envelope and VSVg mediated fusion in tissue culture and primary cells (macrophages and T cells), is approximately 30 minutes. Uncoating occurs entirely in the cytoplasm. Inhibition of reverse transcription or RNAseH activity delays uncoating. Quantification of p24CA reveals that the majority of p24CA is lost when the capsid integrity is disrupted revealing uncoating happens on a minute time scale. Long term imaging experiments at less that one particle per cell reveals that the early uncoating particles are associated with productive infection.

**Conclusions:** Our observations demonstrate that uncoating occurs approximately 30 minutes after fusion in primary cells and transformed tissue culture cells. The newly developed ability to follow HIV at the single particle level and demonstrate that specific virion behavior is associated with productive infection opens up many opportunities to define and characterize the earliest steps of the HIV lifecycle and how the virus interacts with innate host defenses.

# THPDB01 HIV EXPOSURE: HOW DOES IT AFFECT CHILDREN?

## THPDB0101

### COMPARISON OF NEURODEVELOPMENTAL OUTCOMES BETWEEN HIV-EXPOSED UNINFECTED INFANTS VS. HIV-UNEXPOSED INFANTS

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**Background:** The effect of perinatal HIV- and antiretroviral exposure on neurodevelopment in HIV-exposed uninfected (HEU) children remains unclear. We prospectively compared neurodevelopmental outcomes in HEU vs. HIV-unexposed (HU) children at 24 months of age.

**Methods:** We enrolled HIV-infected and HIV-uninfected mothers (during pregnancy or 1 week post-partum) and their babies in the prospective observational Tshipidi study in 2 sites in Botswana (1 urban and 1 rural) from May 2010-July 2012. LIveborn infants and their mothers were followed for 24 months postpartum, with socio-demographics and health data collected at entry and at 6 month intervals. Neurodevelopmental outcomes were assessed at 24 months of age with an adapted version of Bayley Scales of Infant and Toddler Development-Third Edition (Bayley-III), a comprehensive child assessment, and the Developmental Milestones Checklist (DMC), a parent-report of general development designed for the African context.

**Results:** Among the 910 (453 HEU, 457 HU) infants, 670 (313 HEU, 357 HU) had at least 1 valid domain on the Bayley-III prior to 30 months of age (>90% completed all five domains), and 731 (342 HEU, 349 HU) children had a parent-completed DMC. Among HEU infants, 116 (37%) were exposed *in utero* to 3-drug antiretroviral combinations, and 196 (62.6%) to zidovudine; 355 (99%) of HU infants vs. 27 (9%) of HEU infants ever breastfed. In adjusted analyses of Bayley-III scores, only mean cognitive scores differed significantly (slightly higher in HEU than HU, see Table 1). All Bayley-III outcomes were associated with at least one SES factor, such as home electricity, food security, or toilet facilities. In adjusted models, there were no significant differences between HEU and HU in DMC scores across the four domains evaluated (Table 1).

| | Mean (SD) Scores | | Unadjusted Differences | | Adjusted Differences | |
|---|---|---|---|---|---|---|
| Bayley-III Domain | HEU (N=313) | HU (N=357) | Mean Difference | P-value | Mean Difference | P-value |
| Cognitive | 53.75 (3.37) | 53.07 (3.25) | 0.68 | 0.01 | 0.60 | 0.02 |
| Gross Motor | 52.66 (2.77) | 52.91 (2.67) | -0.25 | 0.25 | -0.14 | 0.51 |
| Fine Motor | 37.25 (1.80) | 37.35 (1.80) | -0.10 | 0.46 | -0.07 | 0.63 |
| Expressive Language | 25.02 (4.36) | 25.85 (3.98) | -0.83 | 0.01 | -0.49 | 0.14 |
| Receptive Language | 21.07 (3.54) | 20.76 (3.21) | 0.31 | 0.24 | 0.14 | 0.61 |

*[Table 1: Crude and Adjusted Differences in Mean Bayley-III Scores]*

**Conclusions:** HIV exposed uninfected children performed equally well to HIV unexposed children on 2 assessments of neurodevelopment at 24 months of age, easing the concern that HIV exposure and/or related neonatal ARV exposure negatively impact neurodevelopment.

## THPDB0102

### NEURODEVELOPMENT OF UGANDAN AND MALAWIAN PROMISE HIV UNEXPOSED UNINFECTED CHILDREN

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**Background:** HIV exposed uninfected (HEU) in Africa are developmentally at-risk both from the effects of HIV disease on the mother and fetus during gestation, and from pre- and postnatal (breast feeding) exposure to anti-retroviral treatments (ARTs). This NIH/NICHD-sponsored study compares neurodevelopmental outcomes of co-enrolled PROMISE Malawian and Ugandan children, to age and gender-matched HIV uninfected unexposed (HUU) community controls.
**Methods:** 125 Malawian (Blantyre) and 125 Ugandan (Kampala) HEU infants completed neurodevelopmental assessment at both age 12 and 24 months of age, along with 139 Malawian and 125 Ugandan age- and gender-matched HUU children. Children were tested with the Mullen Scales of Early Learning (MSEL). Data from 60% of total enrolled sample are presented here since 24-month MSEL testing is still going on. Overall loss to follow-up so far is 8%, mostly in the Malawian control cohort perhaps due to displacement from severe flooding in Blantyre January 2015. Least-squared means for standardized scores were compared by exposure group (HUU, HEU) and by country site (Uganda, Malawi) for 12 and 24 months using the linear mixed models with interaction effects of time, site and HIV exposure status.
**Results:** In a repeated-measure (12 & 24 months) mixed models, HUU children had higher composite MSEL composite cognitive ability scores than the HEU cohort for the Malawi children at 12 months and for the Ugandan children at 24 months. This composite difference of ~1/2 *SD* (normative) was clinically meaningful in terms of developmental delay. Significant MSEL differences favoring HUU were obtained for Visual Reception, Fine Motor, and Expressive Language scales. Gross Motor and Receptive Language between-cohort differences were not significant. MSEL scores were significantly higher for the Malawian children differences for all scales ($p< 0.002$) except for Fine Motor.
**Conclusions:** HEU breastfed children on NVP prophylaxis or with maternal ART exposure are at greater overall neurodevelopmental risk than a matched cohort of HUU children, even though they receive monthly medical and nutritional monitoring and support through their enrollment in the IMPAACT PROMISE study. However, these preliminary findings suggest that most developmental domains are more at risk for the HEU children.

## THPDB0103

### EVALUATION OF THE GROWTH OF YOUNG CHILDREN BORN TO HIV-INFECTED MOTHERS IN WESTERN KENYA

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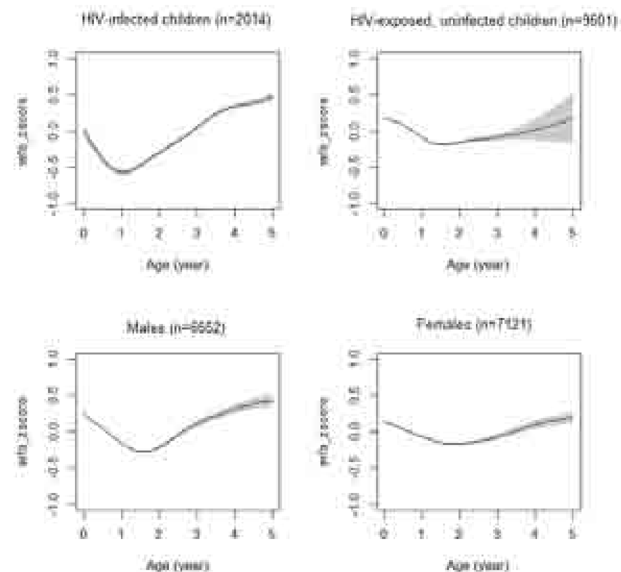
**Background:** Understanding growth patterns and associated factors for children born to HIV-infected mothers is critical for reducing morbidity and mortality. This study evaluated anthropometrics and factors associated with underweight status for children born to HIV-infected mother in western Kenya.
**Methods:** Retrospective chart review was performed using data collected prospectively and stored in the electronic medical record system of Academic Model Providing Access to Healthcare (AMPATH). Data were obtained from children under the age of 5 years between January 2011-September 2014. Descriptive statistics and logistic regression analysis were performed.
**Results:** Data from 13,925 children born to HIV-infected mothers were included. 51.7% (n=7197) female, 2.67% (n=3731) double orphans, 69.2% (n=9639) HIV-exposed, uninfected (HEU), 14.75% (n=2054) HIV-infected, and 16.0% (n=2232) without confirmatory HIV testing during study period. Mean age at HIV diagnosis was 2.04±1.53years. Mean weight-for-age Z score (WFAZ) was -0.68 ±1.45. 32.8% (n=4561) WFAZ -2 to -3 (moderately underweight) and 14.4% (n=2014) WFAZ < -3 (severely underweight) during the study period. Mean height-for-age Z score (HFAZ) was -1.38±1.92. 46.7% (n=6506) HFAZ -2 to -3 (moderately stunted) and 25.0% (n=3488) HFAZ < -3 (severely stunted). WFAZ changes over time differed between males/females and HIV/HEU (Figure 1). For those with a HIV-infected sibling, HIV-infected were more likely to have WFAZ< -2 (OR: 1.167; 95%CI:1.042-1.307), while HEU were less likely(OR:0.932;95%CI:0.970-0998). HEU were more likely to have WFAZ< -2 if they were orphaned (OR 1.189; 95%CI1.001-1.413) and enrolled in clinic at a later age (OR 3.212; 95%CI:3.012-3.425), with each year of delayed enrollment increasing risk of WFAZ< -2 by 17% (OR:1.167;p-value< 0.001).




*[Figure 1: Weight-for-age Z scores over time: comparisons]*

**Conclusions:** Children born to HIV-infected mothers in western Kenya have greater degrees of underweight and stunting than the general Kenyan population. There appears to be a difference in the overall WFAZ trend over time between males and females, as well as between HIV-infected and HEU children.

## THPDB0104

### DRIVERS, BARRIERS AND CONSEQUENCES OF HIV DISCLOSURE TO HIV-INFECTED CHILDREN AGE 9-14 YEARS: A QUALITATIVE STUDY AMONG CHILDREN AND THEIR CAREGIVERS IN THIKA, KENYA

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**Background:** HIV disclosure to adolescents is associated with increased adherence to antiretroviral drugs and reduced anxiety. However, disclosure rates remain low with recent studies estimating that only 3-37% of HIV infected children under 15 years old in Sub-Saharan Africa are aware of their HIV status. We sought to understand the motivation, process and impact of HIV disclosure to HIV-infected children in Thika, Kenya.
**Methods:** We conducted semi-structured interviews between May-December 2014 through focus group discussions (FGDs) and in-depth interviews (IDIs) among HIV-infected children 9-14 years old enrolled in a human papilloma virus vaccine study and their caregivers (parents/guardians). IDIs were conducted among child-caregiver dyads while children's FGDs were stratified by age and sex with caregivers interviewed separately. Transcripts were analysed thematically to identify concepts related to HIV disclosure patterns and practices.
**Results:** We conducted 20 IDIs with child-caregiver dyads (median age of children=12 years, adults = 42 years) and 9 FGDs (3 with HIV infected boys, 4 with HIV infected girls and 2 with adult caregivers). Both children and caregivers reported disclosure as a one-time event with some HIV-infected caregivers choosing to disclose their own status at the same time. Disclosure was mainly as a consequence of persistent questioning by children concerning use of chronic medication or frequent hospital visits. Caregivers reported disclosing when they felt a child was 'mature enough' to maintain confidentiality of HIV status. Caregivers typically described an older age group as ideal for disclosure when compared to children's preference. Most children expressed emotional distress following the disclosure event. Many caregivers described support and encouragement by healthcare workers as a key

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enabler for disclosure. Stigma and feeling of inadequacy were identified as the main reasons for not disclosing their child's status earlier. Negative community perceptions concerning HIV were identified as hindering disclosure by both children and their caregivers.
**Conclusions:** Disclosure of HIV status continues to be a challenge for most caregivers resulting in abrupt disclosure with subsequent negative emotional outcomes for HIV-infected children. Structured disclosure interventional tools and techniques for parents and healthcare providers should be incorporated as part of healthcare management of HIV-infected children.

## THPDB0105

### RIGHT HEART ABNORMALITIES IN HIV-INFECTED CHILDREN IN HARARE, ZIMBABWE

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**Background:** Cardiac abnormalities are a cause of chronic morbidity in HIV infected children. Left ventricular (LV) hypertrophy and systolic and diastolic dysfunction are well described in HIV-infected children. In contrast, the right side of the heart is rarely studied. HIV infected individuals are at an increased risk of pulmonary hypertension (PHT) and this may affect right ventricular (RV) function. This study aimed to determine the prevalence and risk factors of echocardiographically determined right heart abnormalities in HIV-infected children on ART.
**Methods:** HIV-infected children aged 6-16 years on ART were enrolled from the Paediatric HIV clinic at Harare Central Hospital. Assessment included clinical history, New York Heart Association (NYHA) class, incremental shuttle walk testing, spirometry, viral load, CD4 count and transthoracic 2D, M-mode, pulsed wave and continuous wave Doppler echocardiography.
**Results:** 201 children, median age 11 (IQR 9-12) and 48% females were enrolled. The median CD4 count was 726.5 (IQR 473-935) and 68% had a viral load of < 50 copies/ml. Chest pain on exertion was reported in 11% and chronic cough in 15%. Two children (1%), were hypoxic at rest and 11% post-exercise; 18% were symptomatic in NYHA score 2 and 3. Abnormal spirometry was found in 24%. The prevalence of right heart abnormalities was 30% (N=59). Right ventricular dilatation (RVD) was most common in 28% (N=56) and of these, 63% (N=37) had concomitant left heart abnormalities. There was biventricular dilatation in 3 patients and 45% (N=25) had RVD with LV systolic and/or diastolic dysfunction. PHT was found in 2% (N=3) and they had normal right ventricle size. Right heart abnormalities were not associated with any of the reported symptoms including chest pains, chronic cough or abnormal lung function.
**Conclusions:** Our findings show a high prevalence of abnormalities of the right heart in HIV-infected older children and adolescents. Strikingly was the substantial proportion of patients with RV dilatation not associated with PHT. This could be secondary to left heart abnormalities or primary RV abnormality due to lack of association with lung function abnormality. Furthermore, inappropriate normative data may have over diagnosed RV dilatation.

## THPDB0106

### TREATMENT CASCADE OF HIV-INFECTED INFANTS IN THE THAILAND NATIONAL PROGRAMME: HOW CLOSE ARE WE TO THE 90-90-90 TARGET?

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**Background:** UNAIDS has set 90-90-90 targets for diagnosis, treatment and viral suppression in HIV-infected children by 2020. The Thailand Global AIDS Response Program estimated 4,869 HIV-infected pregnant women and 102 new perinatal HIV-infected children in 2014. We describe the coverage of early infant diagnosis and treatment cascades of perinatally HIV-infected infants in the National Program.
**Methods:** The national AIDS program provides HIV DNA PCR testing for all HIV-exposed infants and antiretroviral therapy (ART) is provided, free of charge, regardless of CD4 count. Viral load testing is performed at 6 and 12 months after ART initiation. We analyzed national data collected on HIV-infected infants by the Active Case Management Network and the HIV DNA PCR database of 15 laboratories. The coverage of infant diagnosis will be calculated against estimated data from 2014.
**Results:** From August 2014-December 2015, 21,415 HIV DNA PCR tests were performed. Of these, 101 HIV-infected infants were identified, accounting for 70% of the estimated number of newly infected infants per year. ART was initiated in 83 infants (82%);74 (89%) received the lopinavir/r-based regimen. The median age at ART initiation was 2.5 months (IQR 1.2-4.2). In 55% of infants, ART was initiated the same day that blood was drawn for confirmatory HIV DNA PCR. The median (IQR) CD4 cell count was 2251(1554-3057) cell/mm$^3$and the HIV-RNA prior to ART was 5.5(3.6-6.4) $\log_{10}$ copies/ml. The overall mortality rate was 14% (9 infants died prior to and 5 infants died after ART initiation) and median age at death was 4.4 months (IQR 2.4-6.2), with pneumonia being the commonest cause of death. Of these 15 deaths, 11 (73%) did not receive neonatal antiretroviral prophylaxis. The proportion of infants on ART with HIV RNA < 400 copies/ml were (23/47) 49% (95% CI: 34-64) at 6 months and (11/18) 61% (95% CI: 36-83) at 12 months.
**Conclusions:** 70% of HIV-infected infants diagnosed, 82% began treatment, and 61% achieved virological suppression. A high mortality rate was noted, particularly among HIV-infected infants not included in the cascade care. Additional work is needed to prevent HIV-associated infant mortality and improve virological suppression among infants on ART.

# THPDB02 OPTIMIZING LABORATORY DIAGNOSTICS

## THPDB0201

### POINT-OF-CARE CRYPTOCOCCAL ANTIGEN SCREENING A CASE-CONTROL DIAGNOSTIC ACCURACY STUDY OF THE IMMUNO-MYCOLOGICS CRYPTOCOCCAL ANTIGEN LATERAL FLOW ASSAY FOR SCREENING FINGER-PRICK BLOOD AND URINE AMONG ASYMPTOMATIC HIV-INFECTED ADULTS

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**Background:** Reflex laboratory screening of blood samples with CD4 counts of less than 100 cells/µl for cryptococcal antigen (CrAg) is being introduced nationally in South Africa. This enables identification of patients with sub-clinical cryptococcal infection and administration of pre-emptive fluconazole therapy to prevent life-threatening meningitis. However, access to laboratories may be limited in rural

areas. The CrAg lateral flow assay (LFA) is ideally formatted for point-of-care (POC) use. Therefore, the accuracy of the CrAg LFA on finger-prick blood and urine samples performed in clinic settings by front-line health workers was determined.
**Methods:** Patients with asymptomatic cryptococcal antigenaemia detected by reflex laboratory-based CrAg screening, were identified from HIV clinics in Johannesburg, along with CrAg-negative controls. A CrAg LFA was performed on finger-prick blood and urine samples by a nurse and repeated in a laboratory. Results of POC and laboratory-performed LFA tests were compared to the reference laboratory-based CrAg LFA test performed on plasma during the previous month. Testing was repeated on positive urine samples following centrifugation at 2000rpm for ten minutes.
**Results:** Fifty-three patients with known CrAg status (19 CrAg-positive: 34 CrAG-negative) were tested using POC and laboratory-based CrAg LFA. POC CrAg LFA on blood had a sensitivity of 89.5% (95%CI 66.7-98.7%) and specificity of 100% (89.7-100%). Both CrAg positive patients who were tested as POC-LFA negative had very low CrAg titres. Sensitivity improved to 100% using laboratory-based testing. POC CrAg LFA on urine had a sensitivity of 84.2% (60.42-96.62%) and a specificity of 44.1% (27.2-62.1%), with no improvement using laboratory-based testing, or after centrifugation.

| | n, (Sensitivity, 95% CI) | n, (Specificity, 95% CI) |
|---|---|---|
| POC finger-prick blood | 17/19 (89.47%, 66.86% - 98.7%) | 34/34 (100%, 89.72% - 100%) |
| Lab pipetted blood | 19/19 (100%, 82.35% - 100%) | 34/34 (100%, 89.72% - 100%) |
| POC dipped urine | 16/19 (84.2%, 60.4% - 96.6%) | 19/34 (44.1%, 27.2% - 62.1%) |
| Lab pipetted urine | 15/19 (79.0%, 54.4% - 94.0%) | 17/34 (50.0%, 32.4% - 67.6%) |
| Lab centrifuged urine | N/A | 10/18 (55.6%, 30.7%-78.5%) |

*[Table 1. Sensitivity and specificity of the CrAg LFA used on blood/urine at the POC and in a laboratory, compared to laboratory LFA on plasma]*

**Conclusions:** CrAg LFA on finger-prick blood is an appropriate POC method for screening HIV-infected adults commencing ART. This could reduce turn-around time and loss to follow up, particularly where laboratory access is limited. Urine samples should not be used due to a high rate of false positive results.

## THPDB0202

### UTILITY OF GENEXPERT MTB/RIF ASSAY IN THE DIAGNOSIS OF EXTRAPULMONARY TUBERCULOSIS

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**Background:** South Africa has high rates of both HIV and tuberculosis. HIV infection is linked with an increased risk of extrapulmonary tuberculosis (EPTB), and the risk increases as the CD4+ lymphocyte count declines. EPTB is difficult to diagnose due to its paucibacillary nature and culture takes up to 6 weeks. The GeneXpert MTB/RIF Assay (GXP) is a fully automated system developed by Cepheid that is easy to use with results available in 2 hours. There have been many studies on its use in pulmonary tuberculosis but few studies have focused on its utility with EPTB.
**Methods:** The study was performed from June to October 2014 at King Edward VIII Hospital in Durban, Kwa-Zulu Natal. 50 Extrapulmonary specimens were processed at the National Health Laboratory Services facility. Specimens were incubated with sample reagent buffer and then GXP was performed according to manufacturer's instructions.
**Results:** Specimens analyzed included 11 biopsy specimens, 15 pus specimens, 7 Body fluids (1 pericardial fluid, 3 peritoneal fluids, and 3 ascitic fluids), 9 pleural fluids and 8 cerebrospinal fluids. Of the 50 extrapulmonary specimens processed, 12(24%) were GeneXpert positive and 8(16%) were culture positive. Of a total of 8 culture positive specimens, 6 were GXP positive, and 2 were GXP negative giving a pooled sensitivity of 75 % (using culture as the gold standard). Of a total of 42 culture negative specimens, 36 were GXP negative resulting in a specificity of 85.7%. There were 6 specimens that were GXP positive but culture negative. 90% (45/50) of the extrapulmonary specimens were smear microscopy negative.
**Conclusions:** The GXP assay provides rapid results that would aid in diagnosing extrapulmonary tuberculosis earlier than culture. This study showed similar results to Hilleman et al 2011, who found that the sensitivity of the GXP was 77.3 %. The 6 specimens that were GXP positive and culture negative could represent patients with tuberculosis that culture missed or they could be false positive results.

## THPDB0203

### STABILITY OF HIV SEROLOGICAL MARKERS COLLECTED BY HEMASPOT OR DRIED BLOOD SPOTS

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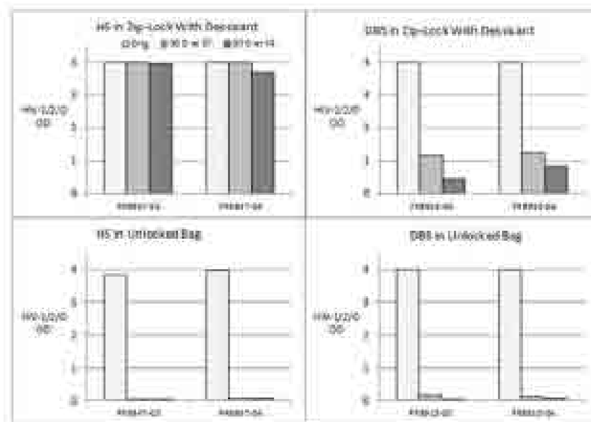
**Background:** Dried blood spot (DBS) technology is increasingly being used to acquire clinical specimens for biosurveillance, clinical trials, epidemiology, diagnosis and monitoring of vulnerable populations in remote areas. Problems with analyte recovery after prolonged storage at high temperature and humidity in addition to cumbersome processing procedures have hindered widespread acceptance of these methods. In this study, we compared the performance of the HemaSpot™(Spot On Sciences) Blood Collection Device to DBS for collection and testing of HIV positive specimens.
**Methods:** The HemaSpot™ Blood Collection Device and standard Whatman 903 DBS were evaluated on clinical specimens including HIV seroconversion panels known to be positive for HIV markers. Serum or plasma samples were reconstituted with an equal volume of whole blood from HIV negative donors; 100ul was applied to the DBS or HemaSpot and placed into unsealed or sealed zip-lock bags containing desiccant. Specimens were stored at room temperature or in high humidity (95%) at 37°C or 45°C for 30 days. Blood was eluted in 200ul PBS-0.2% Tween, and tested by HIV-1/2/O, HIV Combo Ag/Ab EIA (EIA), HIV-1 Western Blot (WB), and MultiSpot HIV-1/HIV-2 Rapid Tests (MS), (Bio-Rad, Hercules, CA).
**Results:** All HIV infected samples tested positive in the HIV-1/2/O, MultiSpot, and WB assays following up to 1 month storage at room temperature. A marked loss in reactivity was observed in samples stored at 37° or 45°C under high humidity conditions (Fig 1). Samples placed in a sealed bag with desiccant were protected from degradation. The HIV-1/2 Combo assay could not be used for screening with either device due to excessive background signal.




*[Fig. 1. Performance of HIV-1/2/O EIA on reconstituted seroconversion panel members (PRB947 and PRB910, SeraCare) eluted from HemaSpot (HS) or DBS]*

**Conclusions:** Dried blood spot samples are suitable for collection, transport, and HIV testing by HIV 1/2/O Combo, MultiSpot, and WB, provided they are protected from humidity. The HemaSpot device was easier to use than standard DBS methods.

## THPDB0204

### EVALUATION OF ABBOTT REALTIME HIV-1 DBS ASSAY

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**Background:** HIV RNA suppression is a key indicator for monitoring of antiretroviral therapy. Viral load (VL) testing using Dried Blood Spots (DBS) is a promising alternative to plasma based VL testing in resource-limited settings. The analytical and clinical performance of the Abbott RealTime HIV-1 assay using DBS from venous blood and finger prick blood was evaluated.
**Methods:** Limit of detection (LOD) was determined using dilution of HIV-1 Virology Quality Assurance stock in venous blood. 316 HIV-1 positive adult clinical samples collected from Ivory Coast, Uganda and South Africa were tested. For each participant sample, plasma, DBS-venous and DBS-finger were collected. Samples collected

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from Ivory Coast and Uganda were tested at Abbott Molecular and samples collected in South Africa were tested at Lancet Laboratories. For each HIV-1 participant, DBS-venous, DBS-finger and plasma sample results were compared. Correlation and mean bias values were obtained. The sensitivity and specificity were analyzed based on DBS misclassification at a threshold of 1000 HIV RNA copies/mL in plasma.
**Results:** The LOD of the Abbott HIV VL assay on DBS was found to be 839 copies / mL. Participant samples included 195 (62.3%) ≥ LOD, 95 (30.35%) "Not detected", 23 (7.35%) "<LOD detected" based on plasma results. Within the linear range of 839 copies/ml to 1x10$^7$ copies/mL, the correlation coefficient for DBS-finger versus plasma (n=150) was 0.887, for DBS-venous versus plasma (n=150) was 0.902, for DBS-finger versus DBS-venous (n=146) was 0.947. The mean bias was -0.13 log copies for DBS-finger versus plasma, -0.10 log copies for DBS-venous versus plasma and -0.05 for DBS-finger versus DBS-venous. Using a misclassification threshold of 1,000 copies/ml: For DBS-finger,13/152 samples had an HIV VL ≥1000 with plasma and <1000 with DBS-finger giving a sensitivity of 91.4%; For DBS-Venous, 9/152 samples had an HIV VL≥1000 with plasma and <1000 with DBS-venous giving a sensitivity of 94.1%. The specificity was 96% (155/161) for both DBS-finger and DBS-venous (6/161 samples misclassified with a VL<1000 for plasma and ≥1000 for DBS).
**Conclusions:** The HIV-1 VL quantitated between DBS-finger, DBS-venous and plasma correlates well. The mean bias between the sample types were all < 0.2 log copies/ mL.

## THPDB0205

### GENEXPERT HIV-1 QUANT: A TOOL FOR MONITORING THE SUCCESS OF ART PROGRAMME IN DEVELOPING COUNTRIES

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**Background:** Recent guidelines re-identify virologic monitoring as the gold standard practice for diagnosing and confirming ART failure. In support to the national ART programme to scale up HIV-1 viral load testing with the point-of-care (POC) technologies, GeneXpert HIV-1 Quant assay was validated at NARI, Pune, India.
**Methods:** 314 HIV positive individuals (pre ART n=151, on ART n=129, suspected ART failures n=34) were screened by the Abbott m2000rt Real Time HIV-1 viral load assay. 219 plasma specimens falling in different viral load ranges (< 40 to > 5L cp/ml) were selected and tested by the GeneXpert HIV-1 Quant assay. Additionally, 20 seronegative, 16 stored specimens (1, 2, 3 months storage) and 10 spiked copy controls (40 to 40L cp/ml) were tested. Statistical analysis was carried out for determining the coefficient of variation (Inter and intra assay), linear regression, Bland-Altman plots, sensitivity, specificity, NPV, PPV. The percent misclassifications were calculated for international and national cut-offs used for classifying the treatment failures (DHSs/AISs-200 cp/ml; WHO-400 cp/ml and NACO-1000 cp/ml).
**Results:** Correlation between two assays (r = 0.938) was statistically significant (p < 0.01) and linear regression showed a good fit ($R^2$= 0.878). The GeneXpert HIV-1 Quant assay compared well with the gold standard with a higher sensitivity (91-95%), specificity (99-100%) and reproducibility on the spiked copy controls. The LLD and ULD of the GeneXpert HIV-1 Quant were 1.94 $\log_{10}$ and 6.98 $\log_{10}$ cp/ml. The misclassification rates for the three viral load cut offs were not statistically different when compared by proportion test (p = 0.830). Bland-Altman analysis showed almost all differences were within limits of agreement. All seronegative samples were negative and viral loads of the stored samples showed a good fit in the linear regression ($R^2$= 0.896 to 0.982).
**Conclusions:** With the ease of performance and rapidity, the POC GeneXpert platform that is ued for detection of *M. tuberculosis* DNA can be used for HIV-1 quantification for better management of ART therapy. This will facilitate an integrated management of patients with HIV and TB and can be an important tool for scaling up the UNAIDS 90:90:90 initiative in resource limited settings.

## THPDB0206

### LYNX P24 ANTIGEN POINT-OF-CARE TEST CAN IMPROVE INFANT HIV DIAGNOSIS IN RURAL ZAMBIA

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**Background:** An affordable and effective point-of-care test would increase access to testing for HIV-1 exposed infants and linkage to care for HIV-infected infants. The LYNX p24 antigen point-of-care test, developed by CIGHT at Northwestern University and Northwestern Global Health Foundation, was shown to be valid in laboratory and clinical studies and has the potential to reduce the time to diagnosis and treatment in rural sub-Saharan Africa.
**Methods:** From July 2014-June 2015, LYNX testing machines were evaluated at the Macha Hospital HIV clinic in rural Southern Province, Zambia. HIV-exposed infants requiring early infant diagnosis were enrolled. At the study visit, a dried blood spot card was collected for HIV DNA testing in Lusaka and a blood sample was collected for the LYNX test. The LYNX test was performed immediately by clinic counselors under observation by study staff. All steps in performing the LYNX test were assessed; HIV DNA test results were recorded.
**Results:** 156 infants (median age: 5.0 months; 48% male; 88% received PMTCT) were tested. 97% of tests were performed according to protocol. Among these, test results were available in a median of 55 minutes (IQR: 54, 58). Electricity was not available at the health care facility for 11% of tests (testing machines were operated using battery power). Eight infants tested positive and 137 tested negative by HIV DNA PCR (6 results yet to be returned). Of the 8 positive infants, 6 were also positive by the LYNX test (sensitivity: 75%; 95% CI: 35, 97). Of the 137 HIV DNA negative infants, 1 LYNX test was invalid and 136 were negative (specificity: 100%; 95% CI: 97, 100). The median time from sample collection to returning the HIV DNA PCR results to the mother was 90 days (IQR: 84, 141). Three mothers defaulted and 1 infant died while waiting for test results.
**Conclusions:** The LYNX test was successfully performed by counselors in rural health facilities and identified the majority of HIV-infected infants, without misdiagnosing any children. The LYNX test would significantly decrease the turnaround time for diagnosis in this setting, enabling HIV-infected infants to initiate antiretroviral therapy at an earlier age.

# THPDC01 SAFER CONTRACEPTION CHOICES FOR HIV-AFFECTED COUPLES

## THPDC0101

### DIFFICULT DECISIONS: INDIVIDUAL AND COUPLE FERTILITY DESIRES AND HIV ACQUISITION AMONG HIV SERODISCORDANT COUPLES IN ZAMBIA

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**Background:** Previous research on the determinants of fertility desires in HIV-infected women, and serodiscordant couples has yielded mixed results. Despite the risk of HIV acquisition, transmission and mortality associated with conception, safer conception interventions for serodiscordant couples are not readily available in sub-Saharan Africa. This study evaluated determinants of fertility desires and effect of fertility desire on HIV acquisition among HIV serodiscordant couples in an open cohort in Lusaka, Zambia.
**Methods:** We collected demographic, behavioral, clinical exposures, and data on fertility desires in a prospective cohort of HIV serodiscordant couples from 1995 to 2012. Factors associated with fertility desires by gender were evaluated using multivariable logistic regression. To estimate the overall effect of fertility desire on risk of HIV infection, we developed inverse-probability-of-treatment-weighted estimation of a marginal structural model to adjust for time-varying confounders affected by prior exposure.
**Results:** Among 1,029 serodiscordant couples, 311 agreed that they wanted a child in the future (30.4%), 368 agreed they did not want a child (36.0%), and 344 couples disagreed about having more children (33.6%). Women's fertility desire was associated with younger age (aOR=0.95; 95% CI=0.91, 0.99), not being pregnant at baseline (aOR=0.21; 95% CI=0.12, 0.37), fewer living children (aOR=0.75; 95%

CI=0.62, 0.90), fewer previous pregnancies (aOR=0.87; 95% CI=0.61, 0.98), and partner wanting a child (aOR=2.79; 95%CI=1.97-3.95). Men's fertility desire was associated with younger age (aOR=0.88; 95%CI=0.80-0.97), fewer years cohabiting (aOR=0.95;95%CI=0.90-1.00), fewer living children (aOR=0.84; 95% CI=0.70-1.01), and partner wanting a child (aOR=2.83; 95% CI=2.00, 4.01). The adjusted risk ratio for woman's HIV acquisition was 2.06 (95% CI=1.40, 3.03) among women wanting a child, 1.75 (95% CI=1.07, 2.87) for men wanting a child, and highest at 2.55 (95% CI=1.32, 4.93) when the couple agreed on wanting a child compared to couples who agreed they didn't want a child. Male seroconversion was not associated with fertility desire.
**Conclusions:** Women had increased risk of seroconverting if they or their partner wanted a child. Safer conception interventions are needed to protect serodiscordant couples who want children.

## THPDC0102

### PREP AND ART REDUCE HIV TRANSMISSION BETWEEN MEMBERS OF HIV SERODISCORDANT COUPLES DURING PREGNANCY AND PREGNANCY ATTEMPTS

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**Background:** HIV-negative members of HIV serodiscordant couples are extremely vulnerable to HIV acquisition during pregnancy attempts because it is necessary to forgo condom use. Antiretroviral treatment (ART) and pre-exposure prophylaxis (PrEP) are powerful HIV prevention strategies and can be leveraged to reduce HIV transmission risk during pregnancy attempts.
**Methods:** Among 1013 Kenyan and Ugandan high risk HIV serodiscordant couples, we implemented an integrated ART and PrEP strategy for HIV prevention and followed couples for 2 years. Following quarterly HIV testing, PrEP was provided to HIV-negative partners until HIV-positive partners used ART for ≥6 months. Contraception was available at all study sites. Pregnancy testing was conducted when clinically indicated and self-reported data on fertility desires and sexual behavior were collected through standardized interviewer administered questionnaires on a quarterly basis.
**Results:** In 67% of couples, the woman was the HIV-positive partner. At enrollment, 37% of HIV-positive and 39% of HIV-negative women reported intentions to have a child within 3 years and 77% of HIV-positive and 66% of HIV-negative women were not using effective contraception, proportions that remained fairly constant throughout follow up. Among HIV-positive and negative women, there were 154 incident pregnancies (incidence rate = 18.6/ 100 person years) and 87 incident pregnancies (incidence=20.3/ 100 person years), respectively. There were no HIV transmissions to male partners during incident pregnancies or in the 6 months preceding those pregnancies. One woman seroconverted and became pregnant during the same 3-month interval; behavioral reports and biological testing confirm that she was not using PrEP prior to seroconversion. During the three months prior to pregnancy diagnosis, 62% of couples were using PrEP or ART; 30% were using both. Of 34 women who were using PrEP when they became pregnant, 88% elected to continue using PrEP during pregnancy.
**Conclusions:** Fertility intentions were common and most couples chose to use PrEP and/or ART, which nearly eliminated HIV transmission during pregnancy and preconception periods in this large cohort with high pregnancy rates. ART and PrEP are important elements to promote within safer conception programs for HIV serodiscordant couples.

## THPDC0103

### UNDIAGNOSED HIV-INFECTED PARTNERS ARE THE MAJOR GAP IN THE CASCADE FOR SERODISCORDANT COUPLES IN TWO HIGH PREVALENCE SETTINGS

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**Background:** Discordant couples are a major source of HIV transmission. We quantified the prevalence of HIV discordant couples and, among HIV infected individuals, evaluated each step of the cascade of care in two high prevalence settings in sub-Saharan Africa.
**Methods:** Two population-based surveys of persons age 15 to 59 were conducted in Ndhiwa (Nyanza, Kenya) and Chiradzulu (Malawi) between September 2012 and May 2013, to assess HIV incidence and cascade of care. Each individual who agreed to participate was interviewed and tested for HIV at home. All HIV-positive were tested for VL and CD4, regardless of their ART status. A couple consisted of two persons who were legally married or who were living together in a consensual union.
**Results:** In total 7,425 houses were visited and among 15,104 individuals eligible, 13,345 (88.4%) were included and tested for HIV. Among 2,970 identified as couples, HIV discordancy was found in 15.8% (95%CI 13.9-17.9) in Kenya and 10.0% (95%CI 7.9-12.7) in Malawi. Among couples with at least one HIV-infected partner, the proportion of HIV-discordancy was 45.8% in Kenya, 40.9% in Malawi. Men were the HIV-positive partner in 63.6% (95%CI 56.7-70.0) of the discordant couples in Kenya, higher than in Malawi (47.9%; 95%CI 40.4-55.5).
HIV status awareness among HIV-positive partner of discordant couples was 42.2% in Kenya and 64.4% in Malawi. VL suppression was 34.6% in Kenya and 54.5% in Malawi, lower than in the general population (40.0% in Kenya, 61.9% in Malawi). VL suppression was higher in women compared to men, in Kenya (39.5% vs 26.8%, p=0.1) and in Malawi (61.2% vs 46.5, p< 0.01).
**Conclusions:** Discordant couples were frequent and VL suppression ranged between 35 and 55% among HIV-positive partners. The high rate of unawareness of status among HIV-positive partners must be addressed in order to promote timely initiation of ART and/or PREP to reduce transmission within this high-risk group.

## THPDC0104

### CLINICAL OUTCOMES AND LESSONS LEARNED FROM A SAFER CONCEPTION CLINIC FOR HIV-AFFECTED COUPLES TRYING TO CONCEIVE

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**Background:** Many couples affected by HIV express the desire to conceive despite the risk of horizontal and vertical HIV transmission. *Sakh'umndeni* is one of the first safer conception services integrated within a primary care clinic in Sub-Saharan Africa.
**Methods:** Since July 2013, Witkoppen Health and Welfare Centre in Johannesburg, South Africa, offers safer conception services to individuals in relationships who wish to conceive in the next three months if one or both partners are living with HIV. The safer conception clinic, *Sakh'umndeni,* offers patients a range of services and choices for HIV prevention including antiretroviral therapy (ART) initiation for HIV-positive partners independent of CD4 count, pre-exposure prophylaxis (PrEP) for HIV-negative partners, STI screening and treatment, viral load monitoring, counseling around peak fertility identification, self-insemination, and referral to on-site male medical circumcision. Participants are followed prospectively from enrollment until HIV testing at age 6 weeks of the infant.
**Results:** Overall, 406 individuals participated in *Sakh'umndeni*, including 144 couples and 118 unaccompanied women. About half (46%) of all couples were serodiscordant (n=66/144). The majority (341/406, 84%) of participants were HIV-positive. Most men (90%) and women (60%) already had one or more children. Median age was 34 years [IQR30-38] among women and 37 years [IQR34-43] among men. At enrolment, almost half (45%) of participants had engaged in condomless sex with their partner in the past 30 days. At first visit, 81% of HIV-positive women and 70% of HIV-positive men were already on ART. During follow-up, 51/52 HIV-positive ART-naïve individuals initiated ART. Only 14 of 66 (21%) HIV-negative participants chose PrEP:

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13/30 HIV-negative women and 1/36 HIV-negative men. To-date, 57 pregnancies among 52 women (52/262=20%) have been documented, of which 9 (16%) resulted in a miscarriage. All 29 women failing to conceive with 6 months of attempted conception were referred to a fertility clinic with their partners. No horizontal transmissions have been observed; all 24 live-born babies ≥6 weeks tested HIV-negative.
**Conclusions:** Results from over two years of *Sakh'umndeni* suggest that safer conception services can be effective at primary care in high burden settings, with low risks of horizontal and vertical HIV transmission.

## THPDC0105

### UPTAKE AND CLINICAL OUTCOMES FROM A PRIMARY HEALTHCARE BASED SAFER CONCEPTION SERVICE IN JOHANNESBURG, SOUTH AFRICA: FINDINGS AT 7 MONTHS

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**Background:** Safer-conception services (SCS) for HIV-seroconcordant, serodiscordant or sero-unknown couples support HIV counselling and testing (HCT), ART initiation, viral load (VL) suppression and HIV prevention. The South African Contraception and Fertility Planning Policy includes SCS provision yet primary healthcare (PHC)-based SCS remain rare. This study aimed to develop, implement and evaluate a PHC-based SCS, in Johannesburg, South Africa. Here, we report early uptake and clinical outcomes.
**Methods:** Individuals and couples in HIV-seroconcordant, serodiscordant and sero-unknown relationships desiring pregnancy enrolled at the new SCS from existing PHC services. Safer-conception strategies offered included: HCT, ART initiation, VL monitoring, STI screening/management, and periovulatory condomless sex or self-insemination. Data were collected using standardised clinical record forms.
**Results:** Of 218 participants enrolled, 141 (65%) were female (average 33.5years; range 19-45) and 77 male (average 37.4years, range 24-57). Overall, 134/141 (95%) women and 62/77 (81%) men were HIV-positive, including five newly diagnosed. No seroconversions have occurred amongst 22 HIV-negative clients.
Among SCS-users, 74 enrolled as couples (51 seroconcordant; 23 serodiscordant) and 70 as unaccompanied individuals (27 reporting seroconcordant relationships, 16 serodiscordant and 27 with unknown partner status). Among unaccompanied females, 7/18 disclosed to their partners post-enrolment, resulting in two more male HIV diagnoses and one ART initiation. Tailored safer-conception strategies were offered based on initial assessment. Twenty-one ARV-naïve clients initiated treatment. Out of eleven on ART for ≥3 months, 9 had VL< 200 copies. Nine of 172 (5%) ART-experienced clients had VL>200 copies. All received adherence support. Four with confirmed virological failure switched to second-line therapy.
Fourteen pregnancies have been confirmed, two via self-insemination. Eight couples/individuals (57%) utilised optimal SC strategies, four attended only one consultation, two partners were not on ART. Thirteen (93%) of the women were virally suppressed with CD4 counts >350 cells at pregnancy confirmation. All attended antenatal care (ANC) ≤7 weeks' gestation.
**Conclusions:** Implementing a PHC-based safer-conception service is acceptable and feasible, impacting HCT, ART initiations, viral suppression and PMTCT targets including earlier ANC access. High demand for the service creates opportunities for HIV prevention and improved HIV treatment outcomes. However, challenges include partner non-disclosure, difficulties engaging men and pregnancies occurring before SC strategies are optimised.

## THPDC0106

### HIGH PLANNED PARTNER PREGNANCY INCIDENCE AMONG HIV-POSITIVE MEN IN RURAL UGANDA: IMPLICATIONS FOR COMPREHENSIVE SAFER CONCEPTION SERVICES FOR MEN

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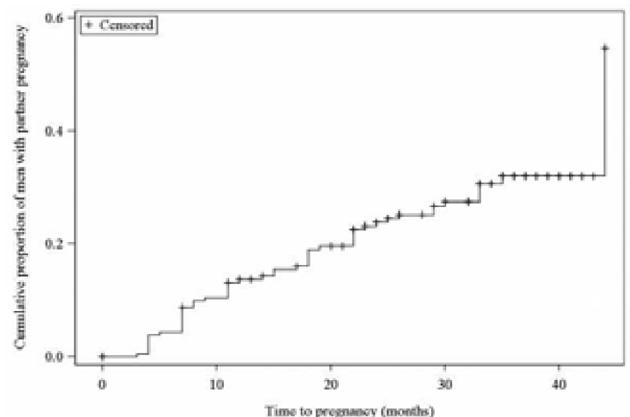
**Background:** In 2015, UNAIDS called for greater inclusion of men within sexual and reproductive health programming. An estimated 30-50% of HIV-positive men intend to have children, and approximately half have HIV-uninfected partners. Men often play a dominant role in reproductive decision-making, including uptake of strategies that support achievement of pregnancy while minimizing sexual HIV transmission. To inform implementation of male-inclusive safer conception services, we measured partner pregnancy incidence among HIV-positive men engaged in HIV care.
**Methods:** Participants were enrolled in the Uganda AIDS Rural Treatment Outcomes cohort of HIV-positive individuals initiating antiretroviral therapy (ART) in Mbarara, Uganda. Bloodwork (CD4 cells/mm$^3$, HIV-RNA) and questionnaires (including health status, behaviors, partner dynamics, and self-reported partner pregnancy) were completed at baseline and quarterly. Our analysis includes 189 HIV-positive men enrolled between 2011-2015. We measured partner pregnancy incidence overall and by reported partner HIV-serostatus and pregnancy intention.
**Results:** At baseline, median age was 40 years [Q1,Q3: 35,47] and median number of living children was 4 [Q1,Q3: 2,5]. 74% were married with 66% reporting HIV-positive partners. 19% reported ≥2 sexual partners. Median years on ART was 3.9 [Q1,Q3: 0,5.1], median CD4 was 318 cells/mm$^3$ [Q1,Q3: 235,424], and 51% were virally suppressed (< 400 copies/mL). Over 480.7 person-years of follow-up, 63 men reported 85 partner pregnancies (incidence rate 17.7/100 person-years). By three years of follow-up, 33% reported at least one partner pregnancy (Figure 1). Of 85 pregnancies, 45% of partners were HIV-negative/unknown-serostatus and only 7% were unintended.
**Conclusions:** One-third of HIV-positive men on ART reported at least one partner pregnancy within 3 years of follow-up. Nearly half of all pregnancy partners were at risk for HIV acquisition and over 90% were intended pregnancies. Findings highlight the need for reproductive health services that include men and support uptake of strategies to minimize sexual HIV transmission risk in the context of intended pregnancy.




*[Figure 1: Probability of reported partner pregnancy over time among HIV-positive men on ART in Mbarara, Uganda]*

## THPDD01 COMMUNITY ENGAGEMENT AND ETHICS IN CURE RESEARCH

### THPDD0101

### ETHICAL AND SOCIAL IMPLICATIONS OF PROPOSED HIV CURE RESEARCH: STAKEHOLDER PERSPECTIVES FROM SOUTH AFRICA

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**Background:** The ethical concerns associated with HIV prevention and treatment research have been widely explored in South Africa. However, HIV cure research is relatively new to the region and significant ethical and social challenges are anticipated as various scientific strategies including early treatment of acute infection, neutralizing antibodies, gene therapy and therapeutic vaccines are explored. Consequently, early stakeholder engagement is critical. While two studies in China and Australia have researched stakeholder perspectives, there has been no similar published empirical enquiry in Africa regarding HIV cure research. This study was conducted to gain preliminary data from South African HIV clinicians, patients, caregivers, medical students, researchers and activists.
**Methods:** In-depth interviews were conducted on a purposive sample of thirty-five stakeholders in South Africa from October 2015 to February 2016. In addition five focus group discussions (FGDs) were conducted with adolescent patients, caregivers, adult patients, Community Advisory Board members and medical students. Audiotaped interviews and FGDs were transcribed verbatim with concurrent thematic analysis. Analyst triangulation occurred as the data were analysed by three researchers independently and then integrated via discussion.
**Results:** Common themes emerged from the interviews. The rapid evolution of HIV cure research agendas was prominent with participants expressing some concern that the global North was driving the cure agenda. Assessing and managing knowledge and expectations around HIV cure research emerged as a central theme related to challenges to constructing 'cure'. Distinguishing between biomedical and emotional cure, remission and healing was highlighted as important. Avoiding curative misconception would be critical. Treatment interruption was regarded as a major risk if "cure" failed.
**Conclusions:** A holistic approach integrating biomedical treatment, prevention and cure research is critical to achieve HIV eradication. The synergistic effect of such scientific research will be enhanced if the social and ethical dimensions of cure are taken into account. The findings of this study have important implications for community engagement, consent processes and possibly compensation for failed interventions in future cure trials. Undoubtedly, knowledge and resource sharing in the context of collaboration between research scientists working in cure and those working in treatment and prevention will accelerate progress towards cure.

### THPDD0102

### COMMUNITY ENGAGEMENT IN HIV CURE-RELATED RESEARCH: APPLYING GOOD PARTICIPATORY PRACTICE (GPP) PRINCIPLES TO COMMUNITY EDUCATION EFFORTS

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**Background:** Meaningful community engagement demands basic scientific knowledge and principles of engagement. We investigated the attitudes and beliefs of people living with HIV toward HIV cure research. The Good Participatory Practice guidelines for HIV Biomedical Prevention (GPP) is a set of recommendations that outlines practices to engage a broad set of stakeholders in the research process.
**Methods:** We completed a cross-sectional survey with 400 American adults living with HIV (22% females; 77% males; < 1% transgender) connected to HIV cure research networks in 2015 to assess basic knowledge and attitudes around HIV cure research. The sample was ethnically diverse with broad geographical representation. We also conducted extensive key informant interviews with 36 people living with HIV, researchers, bioethicists and regulators to discuss the role of community in HIV cure research.
**Results:** Of the survey respondents, 96% [95% CI: 91, 100%]; n = 399 were generally interested in HIV cure research and 95% [90, 100%]; n = 399 were concerned with medical issues. Nonetheless, a proportion of respondents - 8% [3, 13%]; n = 350 thought a cure for HIV was already in existence. Study participants agreed that more information around HIV cure research was needed at a basic level of understanding given the complexity of the science, particularly about the various risks of HIV cure research modalities under investigation. Furthermore, the results revealed a disconnect between this stakeholder group and the research process, highlighting the need for a comprehensive and robust stakeholder engagement plan around HIV cure research in the United States.
**Conclusions:** Given that a subset of HIV-positive survey respondents thought a cure for HIV existed but wasn't currently available to everyone, a comprehensive education and stakeholder engagement plan is needed. Engaging people living with HIV early in the research process using Good Participatory Principles can help lessen potential participants' misconceptions and fears and lead to greater acceptance and support for HIV cure research. Additional formative research is needed with different stakeholder groups, including physicians, religious leaders and community educators.

### THPDD0103

### HIV CURE RESEARCH: A SURVEY OF AUSTRALIAN PEOPLE LIVING WITH HIV ON PERSPECTIVES, PERCEIVED BENEFITS AND WILLINGNESS TO PARTICIPATE IN TRIALS

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**Background:** In 2015, there were over 100 HIV Cure-related trials operating worldwide. Participation in current, and future, trials may pose health risks for people living with HIV (PLHIV), while being unlikely to deliver therapeutic benefit. As such, there is an ethical imperative for researchers to understand the motivations, expectations and understandings of potential trial participants. This paper reports on a survey of Australian PLHIV which aimed to identify:
· familiarity with HIV Cure research and optimism regarding achieving a cure
· anticipated benefits of cure
· socio-demographic and health-related characteristics of PLHIV who indicate willingness to participate in HIV Cure trials
· factors that moderate willingness to participate in a trial.
**Methods:** Data for this study were derived from a cross-sectional survey of PLHIV in Australia conducted in 2015/2016. There were ~800 responses collected via a self-complete instrument that could be filled-in online or using a 'pen and paper' survey. The study was advertised through HIV organisations, relevant email lists, social media and websites. Analysis involved:
(1) multivariate hierarchical regression to identify factors associated with greater willingness to participate in trials and;
(2) non-parametric tests to identify participants' expectations regarding HIV cure.
**Results:** Preliminary data analysis shows that not passing HIV to others and not being at risk of ill-health were the most desirable 'HIV Cure' outcomes reported. Approximately 80% indicated willingness to participate in a trial. However, this was reduced if respondents thought participation could result in greater unpredictability of viral load, increased risk of resistance to current antiretroviral treatment, or increased susceptibility to illness. Belief that an HIV Cure would be achieved within the respondent's lifetime was associated with greater willingness to participate in a trial.
**Conclusions:** These findings suggest that many Australian PLHIV are open to participating in HIV Cure trials. However, concern about possible effects on treatment efficacy and viral suppression clearly influences willingness, pointing to the importance of high quality informed consent processes. Optimism for achieving an HIV Cure may also influence willingness to participate. This is a further ethical concern as unrealistic optimism may be associated with misunderstanding of the therapeutic benefits of trial participation.

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## THPDD0104

### TREATMENT INTERRUPTIONS IN HIV CURE STUDIES IN THE UNITED STATES: PERCEPTIONS, MOTIVATIONS AND ETHICAL CONSIDERATIONS FROM POTENTIAL HIV-POSITIVE VOLUNTEERS

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**Background:** We investigated perceptions of and willingness to undergo analytical treatment interruptions (ATIs) as part of HIV cure studies in the United States.
**Methods:** We completed a cross-sectional survey with 400 American adults living with HIV (22% females; 77% males; < 1% transgenders) in 2015. The sample was ethnically diverse and 38 U.S. states were represented. We also conducted extensive key informant interviews with 36 people living with HIV, researchers, bioethicists and regulators to assess motivations, perceptions of and concerns around ATIs.
**Results:** In the sample of potential HIV-positive volunteers, 98% [95% CI: 93, 100]; n = 400) were currently taking antiretrovirals. Almost half 44% [39, 49%]; n = 399) reported they had ever participated in an HIV treatment study and 7% [2, 12%]; n = 400 said they had ever been part of a HIV cure-related study. Of the survey respondents, 26% [21, 31%] were very willing to interrupt treatment, 42% [37, 47%] were somewhat willing, 12% [7, 17%] were not very willing, 9% [4, 14%] were not at all willing and 11% [6, 16%]; n = 359 were unsure. Close to two thirds (65% [60, 70%]; n = 350) reported that no more HIV treatment ever would be the definition of cure to them. Motivations for undergoing ATIs included: desire to help find a cure, past experiences with treatment interruptions and compensation. A subset of potential volunteers considered ATIs to be "too much risk" and expressed concerns about the possibility of viral rebound and development of resistance to ARVs. Clinicians-researchers and regulators were divided on the topic of ATIs. Some believed ATIs should not be attempted unless proof of concept is established for experimental modalities. Others agreed that there are criteria for proceeding with ATIs, including strong scientific justification, close monitoring and demonstrated substantial reduction in reservoir size and/or significant augmentation of the immune clearance function.
**Conclusions:** As a functional cure may be defined as ART-free remission, ATIs could become a clinically meaningful measure for cure. To ensure ethical utilization, it will be important to continue understanding stakeholders' perspectives while minimizing risks.

## THPDD0105

### INTERRUPTING HIV TREATMENT IN CURE RESEARCH: SCIENTIFIC AND ETHICAL CONSIDERATIONS

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**Background:** Intense activity is being directed at strategies for remission or eradication of HIV infection. However, current laboratory assays for HIV reservoir measurement are insufficient to demonstrate clearance of HIV and the best available test is to interrupt antiretroviral therapy (ART)—known as analytic treatment interruption (ATI)—for a defined period of time or until viral rebound occurs. Although ATIs are currently used in some HIV cure research, they raise important scientific and ethical questions.
**Methods:** A multidisciplinary group conducted an ethical analysis of the use of ATI in HIV cure research. The analysis examined the rationale for ATI and its potential scientific utility as well as the risks and burdens to study participants. Criteria for use of ATI in HIV cure studies were developed.
**Results:** Despite the ethical obligation to minimize research risks, there are limited data to directly inform risk assessment for ATIs in HIV cure trials. Experts have extrapolated from information from trials using longer repeated treatment interruptions, and from biological assays measuring effects of viral replication and inflammation. Despite these best efforts, it is difficult to ascertain the probability and magnitude of harm from a single ATI. There is also disagreement about the scientific utility of ATI in different types of studies. In spite of these uncertainties, studies involving ATIs must meet three basic ethical criteria:
1) a strong scientific justification for the ATI;
2) minimization of risks to study participants; and
3) a robust informed consent process.
**Conclusions:** Based on the ethical criteria identified in this analysis, investigators should carefully consider the acceptability of ATIs by providing a strong justification of an ATI and carefully select participants. Further work should be undertaken by clinical researchers in partnership with social scientists, behavioral researchers and ethicists to enhance the ethical conduct of studies employing ATIs.

## THPDD0106LB

### AN INNOVATION CONTEST AS COMMUNITY ENGAGEMENT FOR HIV CURE RESEARCH IN NORTH CAROLINA: A MIXED METHODS EVALUATION

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**Background:** Optimal ways to engage communities about HIV cure research remain unclear. The early stages of HIV cure research require an examination of alternative community engagement strategies that adopt a bottom-up approach. Innovation contests solicit contributions from the community, then evaluate and celebrate them. This pilot study evaluates community engagement in an innovation contest on HIV cure using social media analytics and qualitative methods.
**Methods:** The innovation contest solicited images and videos of what HIV cure meant to people. Participants submitted entries to an Ideascale site, an encrypted online platform specifically designed for innovation contests. We primarily engaged Black young adults between 18 to 35 years old in North Carolina because they are at the highest risk for acquiring HIV in the state. Recruitment included radio interviews and in-person and online engagement. Google, Twitter, and Facebook analytics assessed social media contest engagement. Online engagement included: page follows (unique users who subscribe to page update alerts), page visits, video views, reach (unique users who saw any contest-related material), and contest submissions. Qualitative research included focus groups and community forums that were transcribed, coded, and analyzed using MaxQDA.
**Results:** The innovation contest resulted in substantial in-person and online engagement, including in-person events (n=258 participants), focus groups and community forums (n=172 participants), and a reach of 168,364 unique users online. We had 31 contest submissions. Facebook analytics showed 277 page followers, 1297 page visits, 1409 video views, and a combined 112,041 unique users who viewed any contest-related media. Similar trends were observed on Twitter, Youtube, and Google analytics. Qualitative findings reveal the innovation contest was perceived as feasible and inclusive. In-person and online engagement about HIV cure research facilitated contest participation. Low HIV cure literacy and HIV-related stigma were barriers to contest participation.
**Conclusions:** Innovation contests may be useful for HIV cure community engagement. Findings suggest that combining recruitment through in-person events and multimedia platforms reach a broad range of individuals for potential participation in innovation contests. Community contributions to innovation contests may provide useful content for culturally relevant and locally responsive social marketing campaigns.

## THPDE01 HIV SERVICES IN PRISONS: LET'S RAISE THE BAR

### THPDE0101

#### PROJECT START INTERVENTION INCREASES HIV TESTING UPTAKE AND DECREASES HIV RISK BEHAVIOUR AMONG MEN RELEASED FROM PRISON: A RANDOMIZED STUDY IN UKRAINE

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**Background:** In Ukraine, the prevalence of infectious diseases and substance use disorders is high among incarcerated population. This study assessed whether the effective case-management intervention Project START decreases risk of HIV in men who transfer from prison to community in four regions of Ukraine.
**Methods:** Male prisoners were randomized either to standard services or to an intervention group that included two sessions before release and up to four sessions within three months after release focused on decreasing risk of HIV, STIs and hepatitis transmission. Participants were assessed at baseline before the intervention, and at 3- and 6-month follow-ups. Primary outcome variables were: being at risk of contracting HIV due to their behavior in the past 3 months, and having had an HIV test in the past 12 months. The effects for group, time and group by time interactions were analyzed using mixed effects logistic regression with random intercepts.
**Results:** In total, 394 male prisoners (mean age 35.2 ± 9.4 years, mean duration of imprisonment 41.0 ± 24.7 months, 56.9%% reported history of injection drug use) were included in the study. Follow-up rates at 3- and 6-month assessments were 86% and 85% for the intervention group and 82% and 82% for the control group, correspondingly. Compared to controls, participants in the intervention group were significantly less likely to report HIV-related risk behavior, including irregular condom use or/and sharing injection needles in the past three months (AOR 0.51, 95% CI: 0.39 to 0.67, identical for the 3- and 6-month post-release assessments). Intervention was associated with higher odds of testing for HIV at 3-month (AOR 4.56, 95% CI: 1.61 to 12.94) and 6-month (AOR 1.70, 95% CI: 1.08 to 8.88) follow-ups.
**Conclusions:** In this first implementation study of the Project START in Ukraine, the intervention was shown effective in increasing HIV testing uptake and decreasing HIV risk behavior in men released from prison, and can be implemented in other countries of the Eastern Europe and Central Asia.

### THPDE0102

#### EXPANDING HIV AND STI CARE TO PRISONERS: THE EXPERIENCE FROM ZOMBA CENTRAL PRISON, MALAWI

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**Background:** Globally, prevalence rates of HIV, sexually transmitted infections (STI's) and hepatitis B (HBV) in prison populations are 2 to 50 times higher than in general populations. Risks affect prisoners, prison staff, their families and the entire community. In 2013, the Malawi Prison Services established a steering committee to scale-up HIV care and treatment in Malawian Prisons. We used routinely collected program data to evaluate the HIV cascade and prevalence of syphilis and HBV in Zomba Central Prison, a high-security facility in the south of Malawi.
**Description:** Since 2014 Dignitas International and the Malawi Prison Health Services have been implementing a comprehensive package of care and treatment for HIV-TB and STI's. Prisoners are routinely screened for HIV, TB and STI at entry and when they are released. In addition, HIV, TB, syphilis and HBV screening campaigns are conducted every six months.
**Lessons learned:** During a June 2015 screening campaign 1052/1745 (60%) prisoners with unknown HIV status accepted to be tested for HIV, HBV and syphilis. 68/1052 (6.5%) tested HIV positive, resulting in an overall prison HIV prevalence of 35%. 52/1052 (4.9%) tested positive for syphilis and 59/1052 (5.7%) tested positive for HBV. 1.1% were co-infected with HIV/HBV. By October 2015, 482/539 (89%) HIV positive patients were on ART, 52% were initiated due WHO 3/4, 48% due to low CD4 (< 350 or < 500 cells/µL, depending on calendar episode). 98% were on the standardized 1st line ART regimen. All ART patients who were eligible for routine viral load (VL) monitoring according to National Guidelines received VL testing. 277/319 (86%) were virologically suppressed (< 1000 copies/ml). All patients with VL≥1,000 accessed enhanced adherence counseling.
**Conclusions/Next steps:** Malawian Prisoners attained acceptable HIV testing coverage, high ART uptake, and good adherence demonstrated by high virological suppression. Incarceration provides an opportunity to address HIV care in hard-to-reach individuals. Prison health care programs needs to carefully plan for the special needs of prisoners such as confidentiality and continuity of care within and outside prisons.

### THPDE0103

#### INSTITUTIONALIZING HEALTH EDUCATION IN PRISONS: THE ADOPTION OF PEER EDUCATION AS THE NATIONAL APPROACH FOR HIV PREVENTION AMONG INMATES IN MOZAMBIQUE

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**Background:** Incarcerated populations in Mozambique are particularly vulnerable to HIV infection. A recent study found the HIV prevalence among male prisoners to be 24%, nearly three times higher than the general adult male population (9.2%). Transmission and acquisition of HIV is affected by many factors, with a large proportion of incarcerated men reporting consensual sex, commercial sex and coerced sex involving both inmates and staff. Overcrowding, poor sanitation, lack of medical assistance, malnutrition, and violence also increase prisoners' vulnerability to HIV exposure, making them a priority group for HIV prevention and care interventions. Despite this, health facilities are often scarce within the prison system.
**Description:** To respond to the health needs of the prison population, Pathfinder International, in partnership with Ministry of Justice (MOJ) and supported by CDC/PEPFAR, developed a multi-faceted HIV prevention program implemented in 10 prisons across Mozambique that incorporated behavioral, biomedical, and structural interventions. In order to generate demand and stimulate behavior change, a 48-hour training curriculum on sexual and reproductive health and rights was used to train 100 peer educators. These peer educators conducted one-on-one sessions with other inmates, and also led groups of 5 - 8 people in a series of five sessions that provided information regarding HIV, STIs, and TB. Additionally 26 senior prison staff were trained to facilitate linkages between prison and health facilities to improve access to health services.
**Lessons learned:** Between April and December 2015, 3,988 inmates took part in the peer education program, resulting in 2,265 referrals to health services and 991 people receiving HTC (HIV testing and counselling). 87 people (8.8%) were found to be HIV positive and 58 (66.7%) were enrolled into care and treatment. The use of a peer-led model allowed for the integration of health services into the existing prison model. This promotes both scalability and sustainability. In addition, although the project focused on HIV prevention and treatment, the training curriculum also provided information on STIs, TB, nutrition, hygiene and sanitation, allowing for adaption of this model to address a range health needs.
**Conclusions/Next steps:** Peer support mechanisms are an effective method of generating demand and reinforcing healthy behavior among incarcerated populations.

### THPDE0104

#### FEMALE PRISONERS IN ZAMBIA: RESOURCING AND RELATIONAL RISK FACTORS FOR HEALTH AND HEALTHCARE ACCESS

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**Background:** In sub-Saharan Africa, empirical research focussing on the experiences and issues of women prisoners is almost non-existent. Forming part of a larger programme to strengthen Zambian prison health systems this study examined factors driving health and access to healthcare among Zambia's female inmates.
**Methods:** A total of 44 interviews were conducted with a cluster random sample of 23 women
(50% HIV-positive) prisoners and 21 officers and healthcare workers. Four Zambian prisons were purposively selected based on geographic spread (one facility in each of four provinces), and a range of security levels (two medium-, one maximum- and one low-security District facility). Interviews were translated and transcribed and analysed using an inductive approach that drew on the principles of health systems analysis.

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**Results:** Poor environmental conditions - including massive overcrowding and lack of adequate sanitation - and poor quality or insufficient quantity of food affected all female prisoners' health. Access to health services was shaped by a combination of prison resourcing, administrative bias and inmate-officer relationships. For example, basic service availability was weak due to the absence of internal health services in any of the female prisons. However, in some sites, access was further limited when male prisoners (in adjacent holding facilities) were given priority access to already limited transport for travel to external health centres. A further compounding factor was the varied and *ad hoc* female officers' responsiveness to requests for healthcare access, with sympathetic responses often dependent on inmates' wealth or long-term relationship with the officer. Women prisoners with no visible physical symptoms of ill-health, as well as those looking after children, reported particular difficulties in persuading officers to commit resources to helping them access services.
**Conclusions:** This study highlights the compounding effect that resource deficits (e.g. weak infrastructure, lack of health services and poor nutrition) and organisational culture (e.g. female officers' lack of responsiveness to women's health needs and implicit prioritisation of male inmates' service access) are having on the health status and healthcare access of Zambian female prisoners. Findings suggest that vulnerabilities and inequities experienced by Zambian women in society are being exacerbated and deepened in prison.

## THPDE0105

### PROMOTING HUMAN RIGHTS AND ACCESS TO HEALTH SERVICES IN PRISONS IN SOUTHERN AFRICA: VSO, UNODC AND SDC WORKING TOGETHER TO REDUCE HIV AND IMPROVE THE HEALTH OF INCARCERATED POPULATIONS

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**Background:** Across Southern Africa HIV infection rates in the regions overcrowded prisons are double that of the general population. Health service provision is poor and rates of disease such as TB, STIs and hepatitis are unacceptably high. Female prisoners, adolescent and juvenile males are at particular risk of sexual coercion and violence.
Governments are reluctant to invest money in prisoner health or rehabilitation despite the fact that up to 33% of prisoners are on remand and most prisoners are eventually released back into society.
**Description:** The project works across 7 countries (Malawi, Zimbabwe, Swaziland, Zambia, Mozambique, Lesotho and Tanzania) following a holistic programming approach including:
- Base line research to establish conditions in relation to prisoner health across the region
- Building capacity of civil society organisations by placing VSO volunteers with organisational development and social work skills to improve health services delivered in prison settings
- Regional advocacy by the VSO supported Southern African Network on Prisons and working with and training Southern African parliamentarians to lobby for implementation of regional minimum prison health standards
- Engaging with ex-offenders and raising their voice at national level Prisons Technical Working Groups.

**Lessons learned:** Evaluation conducted to date has highlighted the following:
- Working with prisoner populations requires time and commitment. A long process of sensitization was undertaken with ministries of justice, parliamentarians, donors and ex-offenders to build support.
- The importance of an evidence base. VSO conducted research and small scale prison projects over a number of years prior to this project.
- The joint approach of capacity building of civil society organizations and prison settings whilst undertaking high level advocacy is most effective
- Working regionally, across 7 countries, maximizes opportunities to share learning
- Long term funding support from SDC provides essential project stability.

**Conclusions/Next steps:**
- Use learning from the first 3 focus countries (Malawi, Swaziland and Zimbabwe) to expand project activity across the remaining four.
- Increase focus on youth and juvenile prisoners as the most vulnerable sub-group scaling up the provision of psycho-social support
- Promote prison health at global level in line with SDG commitments to leave no-one behind.

# THPDE02 THE DOLLARS AND SENSE OF HIV SERVICE DELIVERY

## THPDE0201

### MODELLING THE COST-PER-HIV INFECTION AVERTED BY COUPLES' VOLUNTARY HIV COUNSELLING AND TESTING IN SIX AFRICAN COUNTRIES

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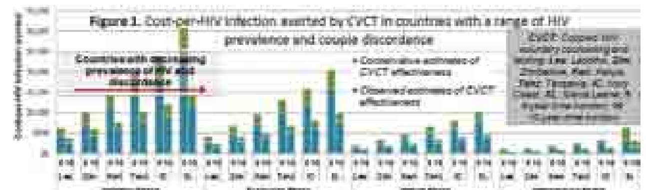
**Background:** Though couples' voluntary HIV counseling and testing (CVCT) has been shown to be effective in multiple countries and financially cost-effective in Zambia, it is not yet widely implemented, funded, or systematically measured in sub-Saharan Africa.
**Methods:** We recently demonstrated the cost effectiveness of CVCT in Zambia using the actual financial expenditures and observed HIV prevention impact of implementing CVCT in Lusaka, Copperbelt, and Southern Provinces among 172,981 couples. Here, we estimate the cost-per-HIV infection averted (CHIA) by CVCT in six sub-Saharan African countries with very different HIV epidemics. We used the prevention impact of CVCT observed in Zambia (63-84% reduction in HIV incidence) as well as conservative estimates of effect (50% reduction). Based on experience implementing CVCT in two countries, models assume a 4-phase CVCT implementation: in the initiation phase, we assume 10% of couples are tested at $75/couple; in the expansion phase an additional 10% of couples tested at $50/couple; in the mature phase an additional 60% of couples tested at $25/couple; and in the maintenance phase 20% of residual and new couples tested at $10/couple.
**Results:** CVCT CHIA ranged from extremes of $35 (in Lesotho, assuming 10-years of impact and observed estimates of CVCT effectiveness) to $3,076 (in Sierra Leone, assuming 5-years of impact and conservative estimates of CVCT effectiveness) (Figure 1). Our model is most sensitive to HIV prevalence and couple serodiscordance. CHIAs were lowest in areas with high prevalence of HIV and HIV discordance (as in Southern Africa) and highest in areas with lower prevalence of HIV and HIV discordance (as in Western Africa).



*[Figure 1]*

**Conclusions:** Estimates of CVCT CHIA were cost-effective under a range of real-world implementation scenarios. These findings provide further support for inclusion of CVCT as a required indicator and for funding priority setting.

## THPDE0202

### HIV PREVENTION COSTS AND ITS DETERMINANTS: EVIDENCE FROM THE ORPHEA PROJECT IN KENYA

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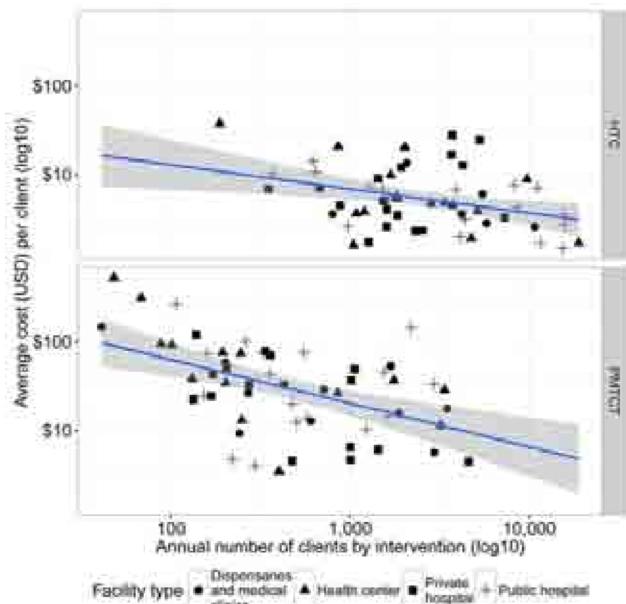
**Background:** As part of the "Optimizing the Response of Prevention: HIV Efficiency in Africa" (ORPHEA) project, we analyzed determinants of economic efficiency for two HIV prevention interventions in Kenya: HIV testing & counselling (HTC), and prevention of mother-to-child transmission (PMTCT).
**Methods:** We collected retrospective data from key informants, administrative registers and time-motion observations for 2011-12 from 78 multi-stage sampled health facilities in 33 districts across Kenya. We stratified analyses by health facility type, ownership, size, and intervention type. We computed total costs of production using both quantities and unit prices for each input. We estimated average costs by

dividing total cost per intervention by number of clients accessing the intervention. We used forward-selection stepwise regression methods to identify and analyze significant determinants of log-transformed average costs (p< .05).
**Results:** For HTC, the cost per client tested was $7.4 and cost per client tested and positive was $146. For PMTCT, cost per client tested was $57.4, and cost per client tested and positive was $677 (**Table**). We found evidence of economies of scale for the two interventions: doubling the number of clients per year was associated with average cost reductions of 25% for HTC, and 48% for PMTCT (**Figure**). Task shifting was associated with reduced costs for PMTCT (59-63%), but not for HTC. On the other hand, costs in facilities that target testing (for persons most at risk or for those with symptoms) tend to have higher costs for HTC (63-75%) but not for PMTCT.
**Conclusions:** Aside from increasing production scale, HIV prevention costs may be further contained by using task shifting for PMTCT; targeted testing for HTC may require more resources.

| | | N (facilities) | Mean | Patient-volume weighted mean | Median | Standard deviation | IQR |
|---|---|---|---|---|---|---|---|
| HTC: | Cost per client tested | 56 | 7.4 | 6.5 | 4.8 | 7.1 | 5.9 |
| | Cost per client tested and positive | 56 | 145.9 | 80.2 | 54.9 | 318.0 | 74.7 |
| PMTCT: | Cost per client tested | 57 | 57.4 | 47.3 | 32.7 | 84.8 | 60.5 |
| | Cost per client tested and positive | 49 | 677.2 | 753.9 | 254.2 | 1,056.8 | 571.6 |
| | Cost per client on ART | 14 | 2,472.6 | 1,752.6 | 364.6 | 5,464.7 | 1,689.9 |

*[Average cost (US$) per client across HIV prevention service cascade in Kenyan health facilities, 2011-12]*




*[Economies of scale in HIV prevention services: Kenyan health facilities, 2011-12]*

## THPDE0203

### ANSWERING THE FINANCIAL QUESTION WITH COUNTRY PROGRAMS: WHAT IS THE COST AND IMPACT OF ADOPTING THE 2015 WHO PAEDIATRIC HIV TREATMENT GUIDELINES?

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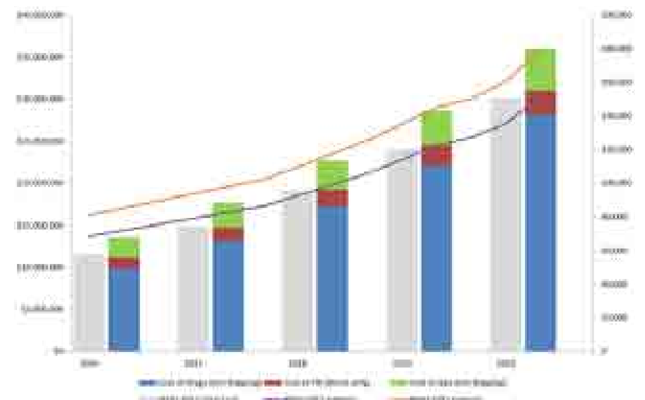
**Background:** The 2015 revisions to the WHO pediatric HIV treatment guidelines align with the UNAIDS 90-90-90 strategy by recommending countries treat all HIV+ patients < 15 years. In moving from the 2013 guidelines, which recommended treating all < 5 years and treating those >5 years if CD4< 500, Governments want to understand the costs in adopting both this treat-all strategy and latest optimized IATT products, such as heat-stable LPV/r oral pellets to replace cold-chain LPV/r syrup to improve treatment outcomes for new initiates < 3 years.
**Methods:** We conducted a macro-level, government-perspective, 5-year (2016-2020) cost analysis of a hypothetical country (defined as 150,000 HIV+ children < 15 years). We included the following variable costs: antiretroviral (ARV) drugs, CD4 tests, viral load tests, early infant diagnosis tests, and health worker salaries, with fixed and programmatic costs excluded. Three scenarios - comparing WHO 2013 vs. 2015 eligibility guidelines, and also a LPV/r pellet and ABC/3TC 120/60mg regimen choice for ART initiates - were then analyzed and compared in an Excel-based mathematical model.
**Results:** A per-patient-per-year costing using WHO 2013 vs. 2015 guidelines yielded estimated ARV costs of US$119 vs. $US122 in 2016, increasing to US$152 vs. $US156 in 2020 to reach the "90% coverage by 2020" UNAIDS target. Total ARV+Lab+HR program costs for 2013 vs. 2015 guidelines were estimated at US$11.5M vs. US$13.6M in 2016, with an annual average of US$22M vs. US$26M through 2020. Notably, adopting LPV/r oral pellets only added $US4M to total 5-year costs for 2015 guideline adoption.



*[Comparing Annual Pediatric Costs and Patient Volumes: WHO 2013 vs 2015 Guidelines]*

**Conclusions:** This evidence indicates a 23% increase in overall costs to adopt a treat-all pediatric strategy featuring LPV/r pellets. This should encourage countries to develop a budgetary roadmap to expand HIV treatment to all infected children. The model and process can be applied in new contexts for informed HIV treatment scale-up policy and implementation decisions.

## THPDE0204

### AVERAGE COSTS OF VOLUNTARY MEDICAL MALE CIRCUMCISION AND THEIR DETERMINANTS IN KENYA, RWANDA, SOUTH AFRICA AND ZAMBIA

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**Background:** Voluntary medical male circumcision (VMMC) is recommended by WHO as a key component of HIV prevention. VMMC programs have substantially contributed to avert new infections, but while coverage scales up, critical challenges arise such as technology adoption and availability of resources hindering the achievement of their goals. The objective of this study was to estimate average costs and to analyze the determinants of efficiency of VMMC in Kenya, Rwanda, South Africa and Zambia for 2013, as part of the ORPHEA project.
**Methods:** ORPHEA is a cross-sectional observational study with data collected in Kenya, Rwanda, South Africa, and Zambia between 2011 and 2013. The analytical sample comprise of 82 facilities: 25 facilities in Kenya, 20 facilities in Rwanda, 23 facilities in South Africa, and 14 facilities in Zambia. Micro-costing methods were applied to determine relevant costs (personnel, supplies, utilities, equipment and property) and output data. Information on self-reported time allocation was used to estimate staff costs and national prices of surgical kits and HIV tests were used in the calculations.
**Results:** Average cost per VMMC was US$ 29 in Rwanda, US$ 51 in Zambia, US$ 32 in Kenya, and US$ 106 in South Africa. Considerable variation in the average cost within countries was found; staff costs dominated in South Africa and Zambia

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(55 and 59% respectively), and circumcision kits costs in Kenya and Rwanda (46%). In all countries, except for Rwanda, we found that unit cost per VMMC decreased with the number of MC clients: from 31 to 48% of average reduction by doubling the number of clients. In general, there were also variations by type of facility, with lower average cost per MC clients found in health centers (both public and private) as compared to hospitals.
**Conclusions:** There were important differences in the average cost per VMMC across facilities in the four countries studied that provide opportunities for increase the levels of efficiency in the provision of VMMC. Additionally, it is important to expand the volume of VMMC services by means of sustained demand generation, while acceptable levels of quality are maintained.

## THPDE0205

### SPENDING MORE TO SPEND LESS: THE UNIT COSTS OF A TAILORED DEMAND CREATION INTERVENTION TO INCREASE UPTAKE OF VOLUNTARY MEDICAL MALE CIRCUMCISION

S. Torres-Rueda[1], H.A. Weiss[1], M. Wambura[2], H. Mahler[3], J. Chilongani[2], E. Kuringe[2], R. Hayes[1], M. Plotkin[3], M. Makokha[3], A. Hellar[3], C. Schutte[4], G. Mshana[2], N. Larke[1], G. Lija[5], J. Changalucha[2], J.M. Grund[6], F. Terris-Presthol[1]
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**Background:** HIV prevalence is higher for men aged 20-34 years than for younger males (aged 15-19 years) in Tanzania. Voluntary medical male circumcision (VMMC) is a proven HIV prevention intervention, but uptake in Tanzania is highest among younger males. A cluster randomised controlled trial was conducted to assess the effectiveness of a locally-adapted demand creation intervention in increasing uptake of VMMC among men aged 20-34 years in Tabora and Njombe regions of Tanzania. The intervention evaluated included: demand-creation messages; use of peer promoters; separate waiting areas for older clients; and information sessions for female partners. This study presents the total, incremental and unit costs of this VMMC intervention.
**Methods:** Cost data were collected from a provider's perspective on surgical, demand-creation and supervisory activities in all clusters across both trial arms. Costs per circumcision were calculated taking into account staff, supplies, start-up and capital costs. Univariate sensitivity analyses were conducted to understand drivers of unit costs.
**Results:** The total mean costs per cluster were higher in the intervention arms ($48,820 and $46,222, in Tabora and Njombe, respectively) than the control arms ($36,088 and $37,344). Cluster-level client load varied widely across clusters and was higher in the intervention arms (480 to 1187 in Tabora, and 218 to 500 in Njombe) than in the control arms (272 to 951, and 102 to 268, respectively). Demand increased more than proportionately, resulting in lower unit costs: the costs per male circumcised in the intervention arms were $62 ($42-$99) in Tabora and $139 ($93-$195) in Njombe, while in the control arms they were $72 ($39-$123) and $202 ($132-$313), respectively. The sensitivity analysis showed that client volume was a greater determinant of unit costs than input prices or other variables.
**Conclusions:** The higher unit cost of VMMC in Njombe compared to Tabora may be due to greater VMMC saturation: the number of clients in Tabora was 2.5 times higher than in Njombe. Despite added costs of delivering the intervention, mean unit costs per circumcision were lower. Developing a tailored demand creation package for older VMMC clients is likely an effective approach to increase uptake and ultimately reduce unit costs.

## THPDE0206

### RAPIDLY FALLING COSTS FOR NEW HEPATITIS C DIRECT-ACTING ANTIVIRALS (DAAS): POTENTIAL FOR UNIVERSAL ACCESS

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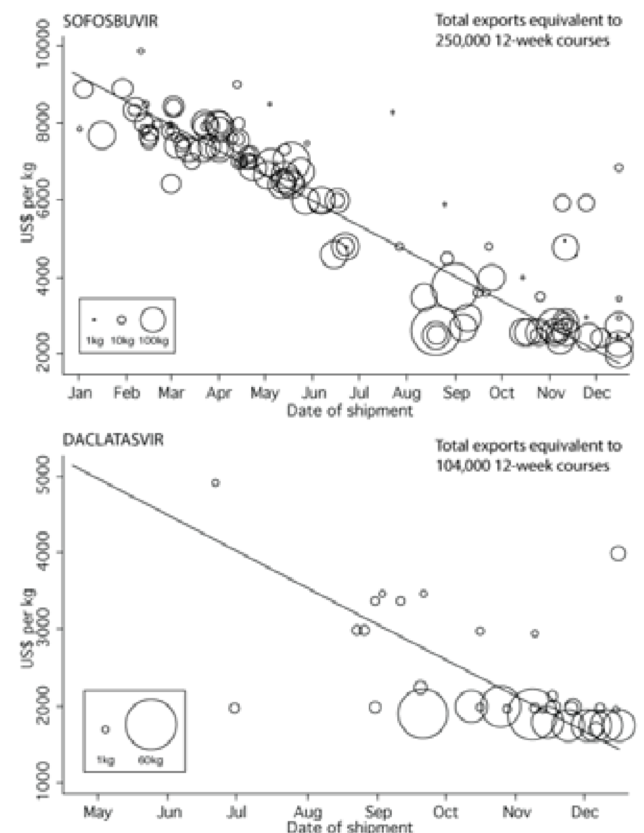
**Background:** Novel direct-acting antivirals (DAAs) achieve high sustained viral response rates of >90% in chronic hepatitis C (HCV). But access to DAAs is low: 'access' prices are available in countries covering only 50% of the worldwide epidemic. Production costs depend largely on prices of active pharmaceutical ingredient (API).
**Methods:** Data on the per-kilogram prices of exported API, and export volumes, were extracted from an online database (www.infodriveindia.com) for Jan-Dec 2015. Mean end-2015 API costs were calculated using linear regression models weighted by shipment size (figures). For velpatasvir, API cost was calculated by analysing chemical synthesis, costs of raw materials, processes, and yields. Per-pill API costs were calculated based on daily dosage. Estimated costs for formulation and excipients ($0.04/ pill), packaging ($0.35/month), and a profit margin (50%) were added.
**Results:** Total exports from India in 2015 were, sofosbuvir: 8.4 tons, (equivalent to 250,000 12-week treatment courses), daclatasvir: 523 kg (104,000 courses), ledipasvir: 56 kg (7300 courses). API prices decreased throughout 2015 (Figure). End-2015 API prices were sofosbuvir $1758/kg, daclatasvir $1432/kg, ledipasvir $11,432/kg. API cost for velpatasvir was estimated at $8900-11,700/kg. US price was 884 times higher than the target price for sofosbuvir, 3706 times for daclatasvir and 409 times higher for sofosbuvir+ledipasvir.
**Conclusions:** HCV DAAs production costs are falling rapidly. We estimate that 12-week treatments of sofosbuvir can be manufactured for $95, sofosbuvir+ledipasvir $231, daclatasvir $17, velpatasvir $119-154, all including a 50% profit margin. These low production prices show the potential for Universal Access programmes for HCV, similar to those already established for HIV/AIDS.




*[Decreasing prices of exported sofosbuvir/daclatasvir through 2015. 1 bubble = 1 shipment, bubble area scaled to size of shipment in kg]*

| Drug | End-2015 API cost/kg | Target price per 12-week treatment | Current global lowest price per 12-week treatment | Current US price per 12-week treatment |
|---|---|---|---|---|
| Sofosbuvir (SOF) | $1,758 | $95 | $483 | $84,000 |
| Daclatasvir | $1,432 | $17 | $183 | $63,000 |
| Ledipasvir (LDV) | $11,432 | $136 | unknown | unknown |
| SOF+LDV | N/A | $231 | $615 | $94,500 |
| Velpatasvir | $8,900-11,700 | $119-154 | unknown | unknown |

*[Calculated target prices and current prices for 12-week DAA treatment courses]*

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# POSTER EXHIBITION

## NK CELLS AND DENDRITIC CELLS

### THPEA001

### EX-VIVO STIMULATION WITH HIV-1-SPECIFIC ANTIGENS SUPPORTS THE EXISTENCE OF NK-CELL MEMORY-LIKE RESPONSE

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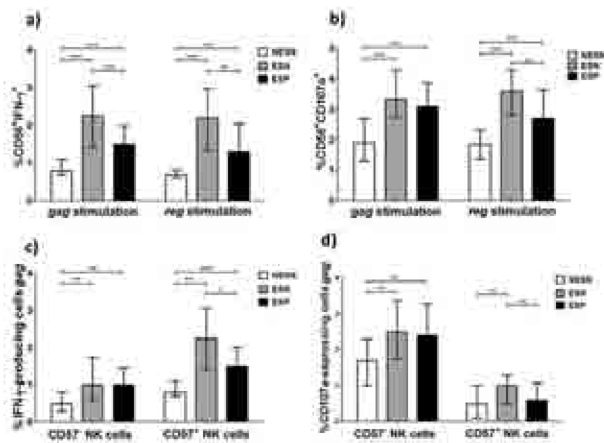
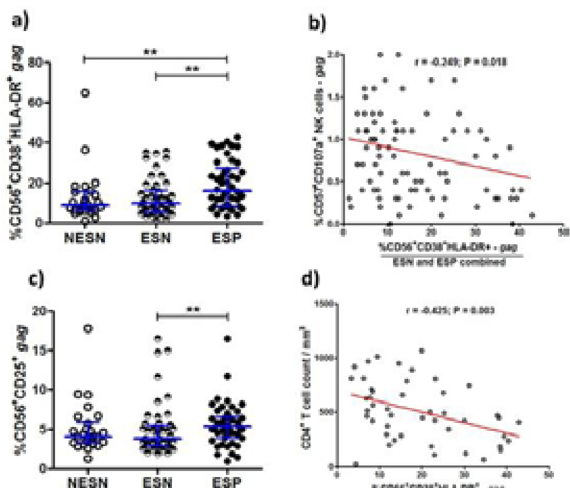
**Background:** The protective immune correlates of HIV infection are yet to be fully elucidated to inform anti-HIV vaccine design. The existence and importance of anti-HIV Natural Killer cell (NK) memory response have been identified in mice and recently in SIV infected macaques.
**Methods:** We selected 49 HIV-1 infected seropositive (ESP) individuals, 48 of their exposed seronegative (ESN) partners, and 28 non-exposed seronegative (NESN) individuals as negative responder control. PBMCs were stimulated for 18h with whole HIV-1 clade A peptide pools of Reg (Tat, Rev, Vif, Vpu, and Vpr) and Gag. Flow cytometry analyses were carried out to assess the characteristics of NK cell effector functions including CD107a and IFN-γ as well as activation status. Differences between groups were assessed using the nonparametric Krushal-Wallis H and Mann-Whitney U tests and correlations performed using the Spearman Rho test.




*[Differential HIV-1-antigen-specific NK recall responses in HIV-1 infected (ESP) and HIV exposed uninfected (ESN) sero-discordant couples]*




*[HIV-1-specific CD56+ and CD56+D57+ NK functional response is associated with low immune activation]*

**Results:** We observed significantly higher proportion of individuals in the ESN had higher NK cell frequencies for functional expression of CD107a and IFN-g which resided predominantly within the more differentiated CD56$^{+}$CD57$^{+}$ NK cell subset. This response was inversely correlated with levels of immune activation markers in both ESN and ESP and positively correlated with the CD4 T cell count in ESP.
**Conclusions:** These data suggest that anti-HIV-1 specific NK recall functional response can be induced in an HIV infected host status in which immune activation is controlled.

### THPEA002

### DISTINCT RESPONSE PROFILES OF HELPER AND CYTOTOXIC INNATE LYMPHOCYTES DURING ACUTE HIV-1 INFECTION

H. Kløverpris[1], S. Kazer[2], J. Mjösberg[3], A. Wellmann[1], S. Nhamoyebonde[1], A. Shalek[2], B. Walker[4], T. Ndung'u[1], A. Leslie[1]
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**Background:** Innate Lymphoid Cells (ILCs) play a central role in the response to infection by secreting cytokines critical for immune-regulation, tissue homeostasis and repair, whereas cytotoxic ILCs (NK cells) have important antiviral functions. Although dysregulation of these systems is central to pathology and antiviral function, the dual impact of HIV-1 on ILCs and NK cells remains unknown.
**Methods:** We used flow cytometry to track levels of innate lymphocytes in 4 chronic infected cohorts from Durban, South Africa. RNA-sequencing of cell sorted innate immune populations during early acute HIV-1 infection was used to study the underlying transcriptional changes in helper and cytotoxic ILCs.
**Results:** We show that human blood ILCs are severely depleted in a large cohort of viremic HIV-1 infected subjects with correlations to disease stage. Moreover, in a unique cohort of early acutely HIV infected subjects enrolled from Durban, South Africa we show that ILC depletion occurs prior to peak viremia and does not reconstitute following resolution of peak-viremia or antiretroviral therapy (ART) begun in chronic disease. However, ILC levels are preserved by very early ART treatment, started 1 day after HIV nucleic acid detection in acute infection. In contrast, we find that NK cells (cytotoxic ILCs) expand during the very early phase of acute HIV infection and subsequently return to baseline levels following resolution of peak viraemia. This expansion is blunted by very early ART treatment. Transcriptional profiling of ILCs from untreated patients during acute infection reveals significant upregulation of genes associated with apoptosis and cell-death that is curbed by early ART. Cytotoxic ILCs (CD56$^{+}$CD16$^{+}$) sorted longitudinal from acute infection however show a distinct transcriptional profiles that provides mechanistic insight into the expansion induced by acute viremia.
**Conclusions:** Taken together, these data show for the first time a striking distinct response pattern of circulating helper and cytotoxic innate lymphocytes that underline their respective distinct roles during acute HIV-1 infection.

### THPEA003

### THE IMPACT OF KIR:HLA LIGAND GENOTYPES IN ACQUISITION OR RESISTANCE TO HIV-1 CLADE C INFECTION IN SUB-SAHARAN AFRICA

S. Zulu[1,2], S. Loubser[3], S. Reddy[4], T. Reddy[5], G. Ramjee[4], A. Coutsoudis[1], C. Tiemessen[6], P. Kiepiela[7]
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**Background:** Immunogenetic studies have suggested a role for KIR:HLA ligand interactions in protection and control of HIV-1 infection. The aim of this study was to determine the possession of select KIR and HLA ligands alone or in combination, associated with host susceptibility/resistance to HIV-1 infection in South African women.
**Methods:** KIR:HLA class I ligand genotypes were determined in 222 HIV-1 infected and 498 HIV-1 exposed seronegative (HESN) women participating in two microbicide clinical trials (MIRA 2002-2005 and Carraguard, 2004-2007). Genomic DNA ex-

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tracted from stored dried blood spots was genotyped for select KIRs (2DL2; 2DL3; 2DL5; 2DS1; 2DS2; 2DS3; 2DS5 and 3DS1) and HLA ligands (HLA-A/B Bw4-80I/TA/TL and HLA-C C1/C2) using "in house" real time PCR assays. Fisher exact tests and odds ratios were calculated to assess the association between genotype and HIV status. We applied Bonferroni correction to adjust for multiple comparisons. Cox proportions hazards regression was used to determine the effect of genotypes on time to seroconversion.
**Results:** C1C1 alone or in combination with 2DS2, 2DL3 as well as possessing at least one C1 ligand in combination with 2DL2, 2DL3 or 2DL2/2DL3 was significantly associated with slower time to seroconversion (Table 1). C2 C2 alone or in combination with 2DL32DL3, was significantly associated with more rapid HIV acquisition.

| | Percent representation | | Time to HIV seroconversion | | |
|---|---|---|---|---|---|
| Protective | HIV Exposed seronegative | Sero-converters | p-value | HR (95% CI) | p-value |
| C1C1 | 51% | 26% | <0.001* | 0.38 (0.28 - 0.52) | <0.001* |
| 2DL3/C1 | 57% | 42% | <0.001* | 0.60 (0.45 - 0.78) | <0.001* |
| 2DL2/C1C1 | 32% | 18% | <0.001* | 0.48 (0.34 - 0.69) | <0.001* |
| 2DL3/C1C1 | 39% | 20% | <0.001* | 0.41 (0.29 - 0.58) | <0.001* |
| 2DS2/C1C1 | 26% | 15% | <0.001* | 0.50 (0.34-0.74) | 0.001* |
| 2DL22DL3/C1C1 | 24% | 12% | <0.001* | 0.45 (0.30-0.69) | <0.001* |
| Acquisition C2C2 | 15% | 24% | 0.003* | 1.60 (1.17 - 2.19) | 0.003* |
| 2DL32DL3/C2C2 | 5% | 11% | 0.001* | 1.98 (1.31 - 3.01) | 0.001* |

*[Table 1:The frequency and effect of KIR: HLA ligand genotypes on HIV status and time to seroconversion]*

**Conclusions:** A potential protective role of C1 ligands alone or in combination with 2DL2, 2DL3 and 2DS2 was identified in HIV-1 acquisition and longer time to seroconversion. There was a higher risk of acquisition and shorter time to seroconversion in individuals who possessed C2 ligands only or in combination with 2DL3.

## THPEA004

### TLR3 AGONISTS SUPPORT THE GENERATION OF A HIGHLY-FUNCTIONAL CDC SUBSET THAT IS PREFERENTIALLY OBSERVED IN CDC FROM HIV ELITE CONTROLLERS AFTER HIV-1 EXPOSURE

E. Martin-Gayo[1], M. Cole[2], K.E. Kolb[1,3,4], Z. Ouyang[1], J. Cronin[1], S.W. Kazer[1,3,4], B.D. Walker[1,5], M. Lichterfeld[1], N. Yosef[1,2], A.K. Shalek[1,3,4], X.G. Yu[1]
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**Background:** Conventional dendritic cells (cDCs) from HIV-1 Elite Controllers (ECs) may contribute to the generation of highly efficient T cell-mediated antiviral immune responses through induction of potent type I IFN responses with improved antigen-presenting properties upon exposure to HIV-1. Mechanisms to support the expansion of EC-like DC phenotype in a broader patient population may provide novel opportunities for improving immune-based approaches for HIV treatment and prevention.
**Methods:** Expression changes of a panel of costimulatory molecules and maturation markers on DCs from different study cohorts were evaluated at 24 hours post-exposure to HIV-1. Allogeneic mixed leukocyte reaction (MLR) assays were used to assess the functional properties of identified DC subsets. TLR ligands were tested for their ability to induced desired DC subsets in DCs from HIV-1 negative donors in the presence of HIV-1 viruses or Gag ssDNA
**Results:** In response to HIV-1 exposure, cDC from EC developed a distinct CD64hi/PDL1hi phenotype (p=0.007), in contrast to cDCs from chronic progressors or healthy individuals. Importantly, this cDC subset demonstrated superior antigen-presenting properties in MLR assays compared to autologous CD64int/lo PDL1 int/lo cDC subsets. In ex-vivo culture assays, synthetic TLR3 agonists were able to induce this highly functional cDC subset in cDCs from HIV-1 negative individuals in response to both HIV viral exposure and Gag ssDNA. The inhibitor of TBK1, a downstream molecule of both TLR3 activation and cGAS-mediated DNA sensing pathways, abrogated the generation of this cDC subset in cDCs from EC after exposure to HIV-1
**Conclusions:** This study identified a previously unrecognized subpopulation of cDCs with improved antigen-presenting properties in HIV-1 ECs. Generation of this cDC subset in HIV-1 negative donors can be significantly facilitated by using TLR3 agonists as adjuvant, suggesting that an EC-like functional profile of cDC can be induced through manipulation of TLR3 signaling pathways.

# MONOCYTES AND MACROPHAGES

## THPEA005

### PREVALENCE AND IMMUNO-METABOLIC ASSOCIATIONS OF FRAILTY IN OLDER AUSTRALIAN MEN LIVING WITH HIV: A CROSS-SECTIONAL ANALYSIS

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**Background:** Frailty, a manifestation of physical and psycho-social vulnerability, is a condition of increasing concern as the HIV population ages. The definition of frailty is contentious and the pathophysiology is unknown. This study compared two commonly used frailty instruments, and identified biomarkers associated with frailty, in older Australian HIV+ men.
**Methods:** HIV+ men aged over 50-years, on ART for >6 months were enrolled between March and August 2015 in a Melbourne HIV referral centre. Frailty was assessed using the Frailty Phenotype (FP), and the Frailty Index (FI). Markers of immune activation (%CD38$^+$DR$^+$ T-cell subsets), metabolic dysregulation (Glut1$^+$ mean fluorescence intensity (MFI) of T-cells) and mitochondrial dysfunction (DiOC$_6$(3)$^+$ MFI of monocytes) were measured by flow cytometry, and the inflammatory marker, sCD163, was measured by ELISA. Differences in co-variates between frail and non-frail groups using FP were tested using Kruskal-Wallis tests, and correlations with the FI using Spearman's rho. Linear and logistic regression models were constructed.
**Results:** 84 HIV+ men completed both clinical and laboratory aspects of the study: median age 59 years; 95% Caucasian, 93% had undetectable viral load. Using the FP, 10% (n=8) were categorized as frail, 52% (n=44) pre-frail and 38% (n=32) robust. The median FI score was 0.13, (0.25 was the cut-off between frail and non-frail), with 23% (n=19) categorised as frail on the FI. HIV+ pre-frail and frail men (using the FP) had higher levels of inflammation than robust men (mean plasma sCD163 3.07 vs. 2.35 ng/ml, respectively, *p*=0.015), remaining significant on multivariable analysis. The FI correlated with markers of inflammation, metabolic dysregulation and mitochondrial dysfunction (plasma sCD163 (ρ=0.263, *p*=0.036), Glut-1 MFI and DiOC$_6$(3) MFI on non-classical monocytes (ρ=0.246, *p*=0.049; ρ=-0.248, *p*=0.048 respectively) with Glut-1 and DiOC$_6$(3) remaining significant in multivariable analysis. Neither the FP nor the FI were associated with T-cell immune activation.
**Conclusions:** Frailty in older HIV+ men on ART using both tools was correlated with inflammatory marker, sCD163. The Frailty Index was also associated with markers of metabolic dysregulation and mitochondrial dysfunction in the inflammatory non-classical monocytes. Our findings do not support an association between frailty and T-cell immune activation.

# OTHER INNATE IMMUNE RESPONSES

## THPEA006

### MODULATION OF NEUTROPHIL GENE EXPRESSION AND PROTEOMIC PROFILE DURING ACUTE HIV INFECTION

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*[1]University of KwaZulu Natal, Kwazulu-Natal Research Institute of HIV and Tuberculosis (K-RITH), Durban, South Africa, [2]MIT Institute for Medical Engineering & Science (IMES) and Department of Chemistry, Chemistry, Boston, United States, [3]University of Alabama Birmingham, Department of Surgery, Birmingham, United States*
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**Background:** Neutrophils are an important component of the innate immune response and are one of the first cells recruited to the site of infection or inflammation. They elicit an immune response through phagocytosis, secretion of antimicrobial molecules, cytokines and neutrophil extracellular traps. Alterations in neutrophil function that occur during HIV infection might be associated with increased susceptibility to opportunistic infections such as tuberculosis. Neutrophils are the first cells recruited to the lungs after *M. tuberculosis* infection and are the most abundant and heavily infected cells at the site of disease.
The primary aim of this study is to investigate modulation of the neutrophil gene expression and proteomic profile during the course of acute HIV infection, in order to establish whether this contributes to the increased susceptibility of HIV infected individuals to opportunistic infections.

**Methods:** Neutrophils were isolated from blood of individuals a few days after HIV infection and followed up to chronic stage of infection. In order to identify the mechanisms of neutrophil dysfunction during HIV infection we employed RNA sequencing (RNAseq) and Liquid chromatography-mass spectrometry/mass spectrometry (LC-MS/MS) for the molecular analysis of neutrophils gene expression and proteomic profiles respectively. Understanding the earliest immunologic events during acute HIV infection is critical to inform understanding of the pathogenesis of HIV and treatment efforts.
**Results:** A number of genes and proteins where differentially expressed between the neutrophils of acute HIV patients and controls at different time points. Using ingenuity pathway analysis, the modulated genes and proteins represented the canonical pathways of cellular detoxification, oxidative stress, inflammation and immune responses.
**Conclusions:** Elucidating the neutrophil gene and protein expression changes that are driven by acute HIV infection provide a better understanding of the impact of acute viremia on the function of this vital immune subset. This may uncover novel mechanistic links between acute HIV infection and increased susceptibility to pulmonary infections such as tuberculosis.

## Antibody diversity and function

### THPEA007

### Crystal structures of a broadly neutralizing anti-HIV antibody targeting the V2/apex epitope on HIV Env and its unmutated common ancestor

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**Background:** Understanding the evolution of broadly neutralizing antibodies against HIV during natural infection is fundamental to the design of a vaccine that elicits broadly neutralizing antibodies. Here, we focus on the evolution of a lineage of broadly neutralizing antibodies targeting the apex of HIV Env, using monoclonal antibodies and deep sequencing derived variants from over the course of 3 years of natural infection.
**Methods:** 36 phylogenetically related monoclonal antibodies targeting the V2/apex of HIV Env were isolated from IAVI Protocol C Donor PC64 at 4 time points, showing an increase in neutralization breadth over time. Further, deep sequencing of donor peripheral blood mononuclear cells and filtering of the resulting sequences based on similarity to the isolated monoclonal antibodies led to the identification of further heavy chain variants from this lineage. In particular, a variant with 99.6% identity to a human germline V-gene was identified. It was paired with a germline-reverted light chain for further characterization as an unmutated common ancestor (UCA) of the antibodies. Select antibodies were expressed as fragment antigen-binding (Fab) fragments and subjected to extensive crystallization screening (384 conditions) to obtain crystal structures.
**Results:** Structures of the UCA and of PC64_26, one of the broadest and most somatically mutated antibodies in the lineage, were determined. Thus, in addition to comparing these structures to those of previously determined broadly neutralizing antibodies targeting the same region, we were also able to compare the UCA and its mature counterpart and map the evolutionary changes to gain a greater understanding of the evolution of the lineage over time - in particular, to map the changes that correspond to the development of heterologous breadth.
**Conclusions:** Our findings constitute important first steps towards a comprehensive structural understanding of the evolution of antibody breadth in Donor PC64. Further studies will be focused on the intermediate members of the lineage and on obtaining sequence and structural information regarding the antibody-Env interactions that drove the development of these broadly neutralizing antibodies.

### THPEA008

### Identification of HIV-1 MPR-directed broadly neutralizing antibodies from the acute-infection cohort RV217 subject 40512

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**Background:** Insight into the natural development of broad and potent HIV-1 neutralizing antibodies (bNAbs) provides critical clues for vaccine design. Several known bNAbs that target the Env membrane-proximal region (MPR) are broadly cross-reactive, neutralizing over 90% of global strains, making the MPR an attractive target for vaccine design. However, the developmental pathways of these bNAbs are unknown.
**Methods:** Individuals within the RV217 acute-infection cohort were longitudinally assessed for neutralizing antibodies starting at 30 days post-infection. The serum neutralizing activity was mapped by peptide competition, activity against chimeric viruses, and neutralization fingerprinting. MPR peptide tetramers were used to sort antigen-specific B cells, and IgG genes were recovered and expressed from single cells. Neutralization was assessed using single-round-of infection Env-pseudoviruses on TZMbl cells. Binding and neutralization patterns of the isolated antibodies were compared to the known MPR-directed antibodies 4E10, 10E8, and 2F5.
**Results:** We identified a donor, RV217-40512, who developed bNAbs after 21 months. This donor had been superinfected between months 5 and 13. Serum neutralizing activity was mapped to the MPR. We isolated and expressed IgG genes from month 21, and identified three lineages of MPR-directed bNAbs. (1) RV217-VRC42.01 is genetically similar to 4E10. It neutralized 93% of a 200-virus cross-clade panel, with a signature that correlates strongly with 4E10 and 10E8. Lineage members bound to autologous virus gp140 proteins as well as MPR peptides, and mapped to an epitope similar to 4E10 and 10E8 at the MPR C-terminus. (2) RV217-VRC43.01 is genetically unrelated to other known MPR bNAbs. It neutralized 63% of a 200-virus cross-clade panel. Neutralization mapping suggests an epitope in the central portion of MPR. The RV217-VRC42 and -43 lineages bound to cardiolipin, indicating autoreactivity similar to 4E10. (3) RV217-VRC46.01 uses the same VH gene as RV217-VRC42 but is not somatically related. It neutralized 13/29 viruses and binds to the gp140 derived from primary but not superinfecting autologous virus.
**Conclusions:** Mapping the co-evolution of virus with multiple neutralizing antibody lineages from the earliest timepoints in acute infection will yield new insights to how HIV MPR-directed broad neutralizing antibodies develop. Such insights will be invaluable for rational vaccine design.

## B cells and alterations in subsets

### THPEA009

### Impact of HAART on activation and exhaustion of B cell subpopulations in pediatric HIV infection

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**Background:** Limited information is available on the effect of highly active antiretroviral therapy (HAART) on activation and exhaustion of B cell subpopulations in HIV infected children less than 5 years of age. Hence, we undertook this study to unveil the effect of HAART in a cohort of treatment naive HIV infected children.
**Methods:** Four-color flow cytometry was performed to evaluate the expression of CD86 and PD-1 on naïve (CD19+IgD+CD27-), non-switched memory (NSM: CD19+IgD+CD27+), switched memory (SM: CD19+IgD-CD27+) and double negative memory (DNM: CD19+IgD-CD27-) B cells in HIV-1 infected children at baseline and 12 months of HAART. The percentage of B cell subpopulations expressing CD86 and PD-1 in HIV infected children at baseline was compared with those obtained in healthy children (n=30).
**Results:** Twenty-seven HIV-1 infected children with a median (IQR) age of 22 (12-44) months were enrolled. Compared to healthy controls, HIV infected children displayed higher expression of CD86 on naïve ($p=0.002$), NSM ($p=0.0005$), SM ($p<0.0001$) and DNM B cells ($p=0.0001$). Similarly, the expression of PD-1 on na-

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ïve, NSM, SM and DNM was higher in HIV infected children (naïve: p<0.0001; NSM: 0.0001; SM & DNM: p=0.0002). At 12 months of HAART, expression of CD86 on B cell subpopulations decreased (although not significant) from baseline values in HIV infected children. Additionally, frequency of naïve B cells expressing PD-1 declined significantly (p=0.001) from baseline values. Similar decline was observed in the frequency of PD-1 expressing NSM, SM and DNM B cells (NSM, p=0.02; SM, p=0.003, DNM, p=0.0007). However, the expression of CD86 was significantly higher on naïve (p<0.0001), NSM (p<0.0001), SM (p=0.0002) and DNM B cells (p=0.001) in HIV infected HAART treated children compared to their healthy counterparts at 12 months visit. Moreover, frequency of naive B cells expressing PD-1 was higher in HAART treated children compared to healthy controls (p=0.02).
**Conclusions:** Although HAART was able to reduce the expression of activation and exhaustion markers on B cell subpopulations in HIV infected children, yet complete normalization was not observed at 1 year of HAART.

## T-CELL IMMUNE RESPONSES (CD4 AND CD8)

### THPEA010

#### IMPACT OF HIV-ART ON TH17 AND TREG SUBPOPULATIONS IN BLOOD AND GENITAL MUCOSA

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**Background:** Th17 and Treg cells play a key role in HIV infection. The aim of this study was to analyze the effect of antiretroviral therapy (ART) on these T-cell subsets in peripheral blood and female genital mucosa (FGM) employing different patient groups.
**Methods:** PBMCs and cervical mononuclear cells (CMCs) from FGM were obtained from the following groups: HIV$^-$ (n=24), HIV$^+$ART$^+$ (>3 years on ART, n=11) and HIV$^+$ (ART*naïve*) (n=15). Th17 and Treg cells were stained with specific markers and analyzed by flow-cytometry. Cytokines secreted by CMCs were measured by Cytometric Bead Array.
**Results:** In PBMCs %Th17 in HIV$^+$ART$^+$ was higher than in HIV$^+$ (p< 0.001), and reached values similar to HIV$^-$, whereas significant lower Th17 values were found in HIV$^+$ in relation to the other groups. Th17/Treg ratios were also incremented after ART (HIV$^+$ART$^+$: medians: 0.22 vs HIV$^+$: 0.03; p< 0.01) and these levels resulted similar compared to those found in HIV$^-$ (p=0.13). However, percentages of Treg cells in HIV$^+$ART$^+$ and HIV$^+$ were comparable (1.52 and 0.97, respectively) and both resulted higher in relation to HIV$^-$ (0.76; p< 0.05). HIV$^+$ART$^+$ showed lower T-cell activation than HIV$^+$ (4.96 vs 11.66, p< 0.002) but still remained at higher levels compared to HIV$^-$ (3.11, p< 0.01). Importantly, ART did not increment CD4$^+$/CD161$^+$ counts (gut-homing Th17 precursor population), as no differences were found in HIV$^+$ART$^+$ vs HIV$^+$ and both groups had significantly lower values compared to HIV$^-$. At genital mucosa level we observed that CMCs from HIV$^+$ART$^+$ secreted lower levels of IL-17A and IL-10 than HIV- upon stimulation (IL-17A: 6.61 pg/ml vs 32.88 pg/ml, p< 0.025; IL-10: 1.27 pg/ml vs 8.10 pg/ml, p< 0.015). Interestingly, we observed in HIV$^+$ART$^+$ patients with detectable levels of IL-17F from CMCs, a positive correlation with higher counts of CD4$^+$/CD161$^+$ counts in peripheral blood (p=0.0333, r=0.8857).
**Conclusions:** Results indicated that after ART, proportions of Th17 and Th17/Treg in peripheral blood were incremented, but Treg were still augmented. Importantly, quantities of gut-homing Th17 precursors and secretion of IL-17A and IL-10 from CMCs were impaired compared to HIV$^-$, suggesting that ART did not restore completely immune functions at mucosal level.

### THPEA011

#### MODIFICATION OF THE HIV-SPECIFIC CD8$^+$ T CELL RESPONSES IN AN ELITE CONTROLLER AFTER CHIKUNGUNYA VIRUS INFECTION

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**Background:** Chikungunya virus (CHIKV), the arbovirus that causes Chikungunya fever, can produce a transient depletion of CD4$^+$ T-cells. Here, we present data of an HIV Elite Controller (EC) who acquired CHIKV infection.
**Aim:** To evaluate the impact of transient CD4$^+$ T-cell depletion on the CD8$^+$ T-cell (CTL) quality response.
**Methods:** Three blood samples, post-CHIKV infection, were obtained at: 3 weeks (Sample 1,S1); 6 weeks (S2) and 52 weeks (S3). Other 15 EC samples were evaluated for comparison. CD4-counts, viral load (VL) and immune activation were recorded. Phenotypic (CD45RO/CCR7) and functional markers (cytokines/CD107) were evaluated to characterize the HIV-specific CTL quality. Gp120-specific IgG/IgA levels were assessed. Data was analyzed using non-parametric statistics.
**Results:** A male HIV$^+$ EC (median CD4-counts= 702cell/µl (574-1161), VL< 50copies/ml and HAART-naïve over 10 years), was confirmed for CHIKV infection. At S1, his CD4-count dropped to 211cells/µl, presented a blip of HIV VL (145copies/ml) and high immune activation. All parameters were recovered by S3. Polyfunctionality was dramatically distorted in S1 and S2 presenting higher %monofunctional CD107$^+$ HIV-specific CTLs (p< 0.005 and p< 0.01) and lower percentage of bi- and tri-functional CTLs (p< 0.002 and p< 0.009), compared to the EC control group. Also, higher percentage of fully-differentiated HIV-specific CTLs was observed (p< 0.01). In contrast, the %Naïve-CTLs decreased (p< 0.008). Polyfunctionality showed an ongoing recovery by S3, presenting decreased of %CD107$^+$ CTLs and increased bi-functional (CD107$^+$/IFN-γ$^+$) CTLs, mirroring the results observed in typical EC. However, the distribution of CTL memory subsets still displayed an altered profile. Antibody responses didn't change over time and were similar to that of EC.
**Conclusions:** This is the first report where the HIV-specific CTL response was studied in an EC co-infected with CHIKV. The results showed that HIV-specific CTLs presented the capacity to control the transient HIV viral rebound concomitant to the co-infection. This capacity was related to an increased proportion of degranulating CTLs, occurring even in the context of presumably non-optimal CD4$^+$ T-cell help. These results provide useful information to undestand how EC maintain their status, control HIV infection and alert of the negative impact to the immune function of HIV-infected patients living in CHIKV endemic areas.

### THPEA012

#### CELLULAR IMMUNE CORRELATES OF BROADLY NEUTRALISING ANTIBODIES IN PAEDIATRIC SLOW PROGRESSOR CHILDREN

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**Background:** Without antiretroviral therapy (ART), disease progression following HIV infection is typically much faster in children compared to adults. However, a subgroup (~5-10%) of HIV-positive, ART-naive children, maintain normal-for-age CD4 counts despite persistent high viremia. Here, we investigate the cellular and humoral responses in a cohort of slow progressors.
**Methods:** We studied ART-naïve HIV-infected children aged >5yrs, age-matched controls and adult controls matched for viral load and CD4 count. Phenotypic characterisation of T-cells was undertaken using mAbs specific for CD3, CD4, CD8, CD127, CD56, CRTH2. Functional characterisation of CD4+ T-cells was performed after 5 hour stimulation with PMA/ Ionomycin and intracellular staining for 8 cytokines using a BD FACS Aria cell sorter. IL-4, IL-5, IL-13 levels in cell culture supernatant of 7 days *ex vivo* stimulation with ConcanavalinA were quantified via Luminex. mRNA of stimulated cells was extracted using a iScript cDNA Synthesis kit (Biorad) and cytokine expression levels quantified using a Lightcycler 480 qPCR system (Roche). Antibody neutralization was measured in plasma using the TZM-bl cell assay with Env-pseudotyped viruses. Breadth was defined as neutralization of >40% of a large multi-subtype panel.

**Results:** bNAbs were detected in 65% of slow-progressing paediatric subjects (n=66) compared to 19% of infected adults (n=21) (p< 0.0001). The NAb titres were exceptionally high in the children compared to the adults (p< 0.0001). When compared to healthy controls or adults matched for viral load and CD4 count, slow progressing children showed significantly elevated levels of Th2 cytokines IL-5 (p=0.003 PSP vs. HC) and IL-13 (p=0.004 PSP vs. HC). QPCR revealed increased expression of IL-5 in stimulated cells (p=0.001 PSP vs HC). For IL-5, an increased secretion was also observed in ICS assays when comparing slow progressors to healthy controls.
**Conclusions:** An increased production of Th2 cytokines (IL-5 and IL-13) was observed in HIV-infected slow-progressing paediatric subjects when compared to healthy controls. Both IL-5 and IL-13 have been implicated in B-cell maturation/ antibody production and thus might represent a cellular immune correlate of broadly neutralizing antibodies in this unique group of children.

## THPEA013

### PHENOTYPIC AND FUNCTIONAL CHARACTERIZATION OF HIV-SPECIFIC CD4 T CELLS USING MHC CLASS II TETRAMERS IN A CLADE C CHRONIC HIV-1 INFECTION COHORT

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**Background:** Antigen-specific CD4 T helper cell responses have long been shown to be a critical component of effective antiviral immunity. However, precise details of CD4 T cell contribution to immune protection against HIV have not been adequately defined, particularly in clade C infection, because of the lack of sensitive assays for studying HIV-specific CD4 T cell immune responses. Here, we set out to identify immunodominant CD4 T cell epitopes and the restricting HLA class II DRB1 alleles. We used this information to synthesize MHC class II tetramers, which were used for detailed phenotype and functional characterization of HIV-specific CD4 T cell responses in chronic clade C HIV-1 infection.
**Methods:** A total of 72 chronically HIV-infected individuals from a clade C HIV infection cohort based in Durban, South Africa were analyzed using the IFNγ Elispot assay to investigate the peptide sequences and epitopes that induce HIV-specific CD4 T cell responses. CD8-depleted cryopreserved peripheral blood samples were tested to clade-specific overlapping (15-18-mer) peptides spanning the entire HIV-1 proteome. Breadth and magnitude were characterized to elucidate immunodominance hierarchies of these responses. Class II HLA restricted HIV-specific CD4 T cell responses were defined using the HLA-DRB1 restriction assay. Six MHC class II tetramers were synthesized using allele variants associated with the highest frequency of responders and most frequently targeted peptides.
**Results:** In chronic HIV-1 clade C infection, HIV-specific CD4 T cell responses were detectable against a limited number of epitopes. Epitopes in the Gag region were the most targeted by CD4 T cells, with OLP 41 in the Gag p24 region being the most dominant epitope targeted (40%), followed by OLP 40 and OLP 6 targeted by 23% and 20% of responders respectively. HLA-DRB 03:01, 13:01 and 11:01 alleles showed the greatest restriction when tested against immunodominant epitopes. The peptide specificity of HIV-specific CD4 T cell responses were verified by dual class II tetramer staining.
**Conclusions:** Low frequency antigen-specific CD4 T cells can be efficiently identified using MHC class II tetramers. Class II tetramers will be used to more precisely define phenotype and function of HIV-specific CD4 T cells over time.

# MUCOSAL IMMUNITY

## THPEA014

### MUCIN-BINDING IGG: CHARACTERIZING A NOVEL ANTIBODY EFFECTOR FUNCTION AND DISCOVERY OF A NEW FC RECEPTOR

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**Background:** MUC16 is a major component of the glycocalyx that protects the epithelial barrier of the upper female reproductive tract (FRT). We have recently published an IgG binding function in a fragment of MUC16 (MUC16RnD). Increased IgG binding was observed in the sera of HIV infected individuals. Surface Plasmon Resonance (SPR) analysis revealed the IgG interaction with the MUC16RnD is Fc-mediated. Removal of the Fc glycan leads to increased binding while enzymatically modifying the antibodies to the G0 glycoform gave tightest binding (6.2 ± 3.2 nM $K_D$ for VRC01). In contrast treating MUC16RnD with PNGaseF to remove N-linked glycans caused an ablation of IgG binding, revealing that mucin glycosylation is necessary for binding.
**Methods:** We isolated IgG from the serum of SIV infected rhesus macaques (RM) and obtained IgG from serum of chronically HIV infected individuals. Human and RM IgG populations that associate with MUC16 were then interrogated for their antigen specificity through a Luminex assay and effector function through FcγR ELISA and a fluorescent ADCC assay. Finally we subcloned out smaller fragments of MUC16 to precisely identify the IgG binding region and mutated N-linked glycosylation residues that could contribute to binding.
**Results:** Analysis of the MUC16 associated IgG from SIV infected macaques revealed that MUC16 associating antibodies were enriched approximately 8-fold for gp41 specificity. Reduced ADCC and FcγR engagement were observed in these MUC16 associated IgG populations relative to the input IgG, highlighting Fc specialization and a unique effector function profile. Subcloning revealed a ~300 amino acid region of MUC16 containing the major IgG binding activity. Mutagenesis of the single N-glycosylation site therein greatly decreased IgG binding.
**Conclusions:** These results reveal that MUC16 has at least one Fc receptor with nanomolar binding to the G0 IgG glycoform. The population of IgG binding to MUC16 is distinct from the FcγR binding and ADCC acting population. The increased amounts of gp41 specific IgG binding to MUC16 indicates that a specific antigen response is naturally targeted to MUC16. Through dissection of the precise mucin domain where IgG binds we can exploit the glycocalyx to create an antibody shield to prevent HIV from breaching mucosal barriers.

# VIRUS ESCAPE FROM ADAPTIVE IMMUNITY

## THPEA015

### ROLE OF MYELOID DERIVED SUPPRESSIVE CELLS ON ECOHIV EVASION FROM VACCINE INDUCED T CELL IMMUNE RESPONSE

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**Background:** Innate immune responses are critical for initiating the CD8 T cells responses for the resolution of infection, and aberrant innate immune response, such as expansion of myeloid derived suppressive cells (MDSC) induced by some viral infection contribute to persistent infection by suppression of T-cell function. Role of innate immune response on prophylactic effects of vaccination has not been carefully studied.
**Methods:** Balb/c mice were immunized with sPD1-p24$_{fc}$/EP vaccine through intramuscular. After 4 weeks, immunized and non-immunized mice were challenged with EcoHIV via i.p. route. Five mice in each group were euthanized at 1, 2, 3 and 12 weeks post inoculation (wpi). Blood and lymphoid tissues were collected for analysis of virus infection, immune response and T cells function.
**Results:** immunization in mice elicited high frequencies of p24-specific IFN-γ+CD8+ T cells, with on around, 45% of total splenic CD8+ T cells. However, provirus DNA was readily detected in PBMC and spleen in all of the infected mice at every time

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point tested with no detectable resistant mutations. Compared to non-immunized mice, provirus copies in immunized mice was reduced 2.52 fold at 1, and 2.63 fold at 2 wpi with slight decrease over the following weeks. Infection of mice led to an increase in MDSCs in spleen as early as 7 dpi, which was enhanced at 2 wpi and sustained throughout chronic infection. Expansion of MDSC was associated with decreased p24-specific CD8 T cells number (15% at 2 wpi and decreased overtime by more than 50%), and increased surface expression of PD-1 and Tim 3 and provirus copies. Importantly, MDSCs were primarily infected, and potently suppressed p24-specific memory CD8 T cells proliferation in a dose dependent manner. Depletion of MDSC recovered T cells proliferation in vitro.
**Conclusions:** MDSCs infection and expansion at early stage of infection likely have a critical role in rendering virus resistant to vaccine protection by serving as viral reservoir and suppression of CD8 T cells memory recall and function. This study has important implication for future vaccine strategy design.

## MECHANISMS UNDERLYING IMMUNE RECONSTITUTION INFLAMMATORY SYNDROME (IRIS)

### THPEA016

#### THE EFFECTS OF PREBIOTICS ON MICROBIAL DYSBIOSIS, BUTYRATE PRODUCTION AND IMMUNITY IN HIV-INFECTED SUBJECTS

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**Background:** Altered interplay between gut mucosa and dysbiotic bacteria during HIV infection seems to contribute to chronic immune dysfunction. Nutritional interventions exert immunologic effects, but a deep understanding of how these interventions could ameliorate gut dysbiosis and influence health among HIV-infected individuals remain unexplored. cts
**Methods:** Forty-four subjects, including 12 HIV+ viremic untreated (VU), 23 antiretroviral therapy-treated (ART+) virally suppressed (15 immunological responders and 8 non-responders) and 9 HIV- controls (HIV-), were blindly randomized to receive either prebiotics (scGOS/lcFOS/glutamine) or placebo (34/11), during 6 weeks. We performed a comprehensive assessment of changes in fecal microbiota composition using 16S rRNA deep sequencing and measured in blood a number of immunological and genetic markers involved in HIV immunopathogenesis.
**Results:** The short dietary supplementation with prebiotics attenuated HIV-associated dysbiosis, which was most apparent in VU individuals and less in ART+ subjects, especially among those with CD4+ T cell recovery above 350 cells/mm$^3$, whose gut microbiota was found more resilient. This compositional shift was not appreciated in the placebo arm. After the intervention, significant declines in markers of bacterial translocation and T-cell activation, improvement of thymic output, and changes in butyrate production, were observed. Increases in the abundance of *Faecalibacterium* and *Lachnospira* were observed with the prebiotic intervention and strongly correlated with an increase of butyrate production and amelioration of the inflammatory biomarkers soluble CD14 and high-sensitivity C reactive protein.
**Conclusions:** We found evidence of interplay between intestinal microbial ecology, characterizing key components of the microbiota, and levels of inflammatory predictors of disease progression. This interaction occurred, at least, partially through the production of butyrate by intestinal bacteria. We showed that the response to the prebiotics depends on the stability and resilience of the whole bacterial community.
Hence, bacterial butyrate synthesis pathway holds promise as a viable target for interventions.onse to the prebiotics depends on the stability and resilience of the whole bacterial community.

## TARGETING AND ERADICATION OF RESERVOIRS

### THPEA017

#### SIRTUIN1 INHIBITOR NICOTINAMIDE DISRUPTS HIV-1 LATENCY

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**Background:** Quiescent, integrated, replication competent latent provirus is the biggest hurdle in sterilizing cure. This latent pool doesn't diminish unless the cells carrying it die by apoptosis or be succumbed to cytopathic effect once viral replication is induced by antigenic stimuli. In the walk of breaking this dormancy of HIV, various histone dependent and independent activators and inhibitors are being used to flush this latent reservoir. Nicotinamide (NAD) is a Sirtuin1 (Class III deacetylase) inhibitor. Sirtuin1 naturally deacetylases p65 subunit of NFKB which being deacetylated cannot recruit P-TEFb on LTR. NAD blocks this pathway facilitating recruitment of TFs and Polymerase II to LTR of HIV, thus breaking latency in an antilatent fashion and creating a hyper activation cell state.
**Methods:** CD8T-cell depleted PBMCs isolated from 15 HIV+antiretroviral-treated patients with undetectable viral loads over a period of two years were used.We measured HIV-1 recovery in ex-vivo cell cultures first activated by PHA and treated with NAD for 48 hours and then cultivated in RPMI medium supplemented with IL-2 and fetal bovine serum. While CD8+T-cell depleted PBMCs activated with PHA alone and then cultivated in RPMI medium supplemented with IL-2 and fetal bovine serum were used as control samples.
**Results:** NAD induced purging in 12 out of 15 subjects. Three days after treatment with NAD, culture supernatants were tested for viral load using qPCR and the results revealed HIV-1 emergence from day 4th- day 18th (median 7 days) with viral load from 2.5 log10 to 7.0 log10 (median of 6.2), whereas viruses were not detected in control experiments. Relating viral emergence with clinical parameters showed that culture positivity is independent of CD4+T cell nadir, time of viral load below detection limits, antiretroviral scheme and viral tropism.
**Conclusions:** Certain Sirtuin substrates can be tied to pathogenesis of diseases (like cancer) infections (HIV-1) and metabolic disorders. Hence NAD, being inhibitor of Sirtuin1, can be promising in flushing out the reservoirs. Since NAD is also depleted in HIV-1 patients, it may further help in regulating the redox environment, without any significant toxicity.

### THPEA018

#### THALIDOMIDE REVERSES LATENCY OF HIV-1 PROVIRUS

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**Background:** Chronic immune activation is a hallmark of HIV infection, one of the triggers of which is the breach in the integrity of mucosal immune system and microbial translocation which in turn determines the rate of progression to AIDS. Thalidomide is a derivative of glutamic acid that besides being an inhibitor of TNF-α and having an anti-inflammatory property has immunomodulatory and anti-oncogenic properties as well. Thalidomide and its analogues have been shown to have phosphorylation activity of certain transcription factors (TFs) and cell surface receptors, involved in cell signaling.
Since HIV transcription utterly needs active cell state with upregulated TFs and their access to viral genome, we tested Thalidomide for its potential in reactivating HIV-1 from latency.
**Methods:** CD8T-cell depleted PBMCs isolated from 15 HIV+antiretroviral-treated patients with undetectable viral loads over a period of two years were used.We measured HIV-1 recovery in ex-vivo cell cultures first activated by PHA and treated with thalidomide for 48 hours and then cultivated in RPMI medium supplemented with IL-2 and fetal bovine serum. While CD8+T-cell depleted PBMCs activated with PHA alone and then cultivated in RPMI medium supplemented with IL-2 and fetal bovine serum were used as control samples.
**Results:** Thalidomide induced purging in 6 out of 7 subjects. Second day after treatment with Thalidomide, culture supernatants were tested for viral load using qPCR and the results revealed HIV-1 emergence at day 4th with viral load from 2.2 log10 to 6.0 log10 (median of 5.7),whereas viruses were not detected in control experiments. Relating viral emergence with clinical parameters showed that culture positivity is independent of CD4+T cell nadir, time of viral load below detection limits, antiretroviral scheme, viral tropism and subtype of virus.

**Conclusions:** Our results show that Thalidomide is causing purging of HIV by an unknown mechanism so therapeutic manipulation with this drug can generate particular interest. A better understanding of its pharmacology and its sensitive targets is needed to harness the full potential of this agent in HIV-infection.

## THPEA019

### TARGETING HSF1-MEDIATED STRESS RESPONSE CAN ENHANCE HSP90 INHIBITOR-INDUCED SUPPRESSION OF HIV-1 REACTIVATION FROM LATENCY

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**Background:** The state of latency, when HIV-1 persists in cellular reservoirs, allows the virus to avoid eradication and be reactivated afterwards. It was previously shown that heat shock protein 90 (Hsp90) is required for HIV-1 reactivation from latency, so that inhibitors of the Hsp90 chaperone activity can suppress this reactivation and be considered as anti-AIDS agents. Taking into account that the Hsp90 dysfunction provokes the heat shock transcriptional factor-1(HSF1)-mediated up-regulation of inducible Hsp90, Hsp70, Hsp27, MDR1/Pgp, we hypothesized that such accumulation of stress-proteins in cellular reservoirs somewhat assists the virus and impairs the beneficial effects of Hsp90-inhibiting treatments. Here we examined whether the suppressive action of Hsp90 inhibitors on the HIV-1 reactivation can be enhanced by targeting HSF1.
**Methods:** The HIV-1 reactivation was studied in cultured J-Lat cells. 17AAG and AUY922 were used as cell-permeable inhibitors of Hsp90. The HSF1-mediated stress-response in the Hsp90 inhibitor-treated cells was blocked by co-treatments with quercetin or KNK437. Expression of the (co)chaperones and inducible stress-proteins was analyzed by immunoblotting and imunoprecipitation.
**Results:** It was found that inhibition of the Hsp90 chaperone activity with 17AAG or AUY922 does suppress the HIV-1 reactivation in the drug-treated cells; however, this is also accompanied by the HSF1 activation and up-regulation of the cellular levels of inducible chaperones (Hsp90, Hsp70 and Hsp27) and Pgp (a drug-excluding membrane pump).
In the case of inhibitory co-treatments (17AAG or AUY922 + quercetin or KNK437), no increase in the cellular levels of inducible stress-proteins or Pgp took place despite of the dysfunction of Hsp90-dependent chaperone machine. Importantly, such a combination of the two inhibitors simultaneously targeting the Hsp90 activity and the HSF1-mediated stress response stronger suppressed the chaperone-dependent HIV-1 reactivation from latency, as compared with the action of Hsp90 inhibitors alone.
**Conclusions:** The suppressive effects of Hsp90-inhibiting drugs on the HIV-1 reactivation from latency are partly impaired by the newly induced chaperones and Pgp. Herein, the beneficial action of Hsp90 inhibitors can be enhanced by parallel inhibiting the HSF1-mediated stress response.

## THPEA020

### A NOVEL ASSAY TO EVALUATE THE RESPONSE OF PATIENT-DERIVED VIRUS TO LATENCY-REVERSING AGENTS *EX VIVO*

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**Background:** Despite antiretroviral therapy (ART), HIV latency remains a major barrier to cure. One strategy to eliminate latently infected cells is to stimulate virus production from latency. Latency-reversing agents (LRAs) have been shown to be highly potent *in vitro*, however their efficacy in activating latent HIV is highly variable *ex vivo* and *in vivo*. We developed a novel model of HIV latency to test the efficacy of LRAs on patient-derived viruses.
**Methods:** Integrated HIV long terminal repeats (LTRs) isolated from $CD4^+$ T-cells of four ART-treated patients were cloned into a modified HIV lentiviral vector, pGBFM-nefFluc. Vesicular stomatitis virus G glycoprotein pseudotyped viruses were generated for infection of activated primary $CD4^+$ T-cells. Cells were cultured for 10-12 days post-infection and then negatively sorted by flow cytometry based on size and expression of the activation markers CD69, CD25 and HLA-DR. The activity of LRAs (vorinostat, panobinostat, romidepsin, JQ-1 and chaetocin) on HIV transcription was measured by quantification of luciferase activity.
**Results:** After prolonged culture of infected cells, we identified 3 populations of cells based on size and activation marker expression. In the large (blast) $CD69^+$/$CD25^+$/$HLA\text{-}DR^+$ T-cells, luciferase expression persisted but in the $CD69^-CD25^-HLA\text{-}DR^-$ blasts, luciferase activity was downregulated. There was minimal luciferase expression from the small (non-blast) cells. Following mitogen re-stimulation, luciferase expression increased maximally in the $CD69^-CD25^-HLA\text{-}DR^-$ blasts, consistent with the establishment of latency within these cells.
Following infection with pseudotyped viruses containing either NL4-3 or patient-derived LTRs, we showed that the LRAs romidepsin and chaetocin had the most potent effect on LTR reactivation. Finally, there was no difference in the response to the LRAs following infection with pseudotyped viruses containing patient-derived LTRs.
**Conclusions:** We have generated a new model of post-activation HIV latency to screen LRAs using patient-derived LTR viruses. In these patients, the LTR sequence alone did not determine the potency of response to an LRA.

## THPEA021

### THERAPEUTIC IMMUNE RECOVERY PREVENTS EMERGENCE OF CXCR4-TROPIC HIV-1

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**Background:** In the absence of therapy CXCR4-tropic HIV increases over time, associated with an accelerated disease progression. In most successfully treated patients the situation is quite different: The majority harbors CCR5-tropic variants in the circulation. As antiretroviral therapy itself may be responsible for reducing CXCR4-tropic HIV-1 this study aimed at monitoring the abundance of CXCR4-tropic viral sequences in infected cells during suppressive antiretroviral therapy.
**Methods:** For a group of patients in the Swiss HIV Cohort Study with documented suppressive ART, all carrying subtype B virus, the relative frequencies of CXCR4-tropic proviral HIV-1 variants in circulating PBMC were assessed by next-generation sequencing and interpretation by Geno2Pheno (FPR 3.5%, R5=X4< 2%) before and after treatment initiation. Aside from a continuous viral suppression a steady CD4 T cell recovery under cART were was documented for all patients. Viral phylogenetics and evolution were analysed.
**Results:** In 28 of the 35 patients (80%) we observed that frequencies of CXCR4-tropic provirus decreased or in fewer remained stable under therapy. This is in contrast to the situation in untreated patients. In the 7 other individuals (20%) the frequency of CXCR4-tropic provirus increased. In all these latter cases a single viral variant emerged, which was already detectable at time points before therapy initiation. Although a certain proviral sequence evolution was demonstrable in >50% of all patients under therapy this growing diversity was not associated with a similar frequency increase of CXCR4-tropic proviruses.
**Conclusions:** Our study demonstrates that under successful therapy particularly those cells that are infected with CXCR4-tropic HIV decline in most patients, leading to an overrepresentation of CCR5-tropic provirus. This indicates a preferential pressure on cells harboring CXCR4-tropic envelops. Such a progressive proviral reduction in the immune-competent host could eventually lead to the selective depletion of the pool of CXCR4-tropic HIV in successfully treated individuals, paralleling the improving immune response. A better understanding of the underlying mechanism and of the involved cell types may provide crucial information for the new strategies towards HIV eradication.

## THPEA022

### DENDRITIC CELLS PROGRAMMED BY INFLAMMATORY MEDIATORS CAN EFFECTIVELY INDUCE BOTH THE IMMUNOLOGIC 'KICK' AND 'KILL' OF LATENT HIV-1

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**Background:** While dendritic cells (DC) have been used safely in the clinic as a means of inducing CTL responses in the settings of cancer and HIV, recent *in vitro* and *in vivo* evidence suggest that they may also play a role in HIV-1 latency reversal. Of significance, we recently showed that a DC-based HIV-1 vaccine increased

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residual viremia in cART-suppressed individuals following analytic treatment interruption. Here we investigate the degree to which DC maturation/polarization status affects the ability of DC to promote both HIV-1 latency reversal and CTL targeting of autologous HIV-1 reservoir antigen.
**Methods:** Using HIV-1-infected Multicenter AIDS Cohort Study participants on cART, and our previously published culture methods, we generated differentially polarized monocyte-derived DC, as characterized by their combined surface expression of CD83, CD86, CCR7, OX40L, Siglec-1, and their IL-12p70 producing capacity. These DC were loaded with autologous HIV-1 antigen and used to test their ability to induce HIV-1 specific cytolytic CD8+ T cells (CTL). The DC were also tested for their ability to induce HIV latency reversal by co-culture with autologous CD4+ T cells in the absence or presence of Efavirenz and/or antigen (SEB), respectively. Cellular and culture supernatant viral RNA content was quantified by qRT-PCR.
**Results:** Type 1-polarized DC (DC1), which were generated using a combination of inflammatory mediators and characterized by their increased expression of CD83/CD86/Siglec-1/CCR7 and IL-12p70, effectively induced both CTL responses and increases in transcription of proviral DNA from CD4+ T cells. Importantly, the increase in HIV-1 replication observed using DC1 was antigen-dependent. In contrast, IL-12p70-deficient, OX40L-expressing, type-2-polarized DC (DC2) generated in the presence $PGE_2$ exhibited a decreased capacity to either induce HIV-1-specific CTL responses or to promote HIV-1 latency reversal.
**Conclusions:** The ability of DC to promote either the 'kick' or 'kill' of the latent HIV-1 reservoir is greatly influenced by their maturation/polarization status. We show that DC1 are superior to DC2 in both functions. This critical information is currently being used in development of a potentially effective personalized DC1-based immunotherapeutic approach towards curing HIV-1 infection.

## Systems biology approaches to HIV infection

### THPEA023

#### Association of the chemokine stromal-derived factor-1 (SDF-1) genetic polymorphism with transaminitis in HIV-infected Thais who are on combined antiretroviral therapy

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**Background:** Liver disease has emerged as one of the major causes of death in HIV-infected patients who are on combined antiretroviral therapy (ART). The chemokine stromal-derived factor-1 (SDF-1) has an important role in homing of immune cells to the liver and an increase of SDF-1 levels has been demonstrated to be associated with acute and chronic liver injury.This study was aimed to determine frequency of SDF-1 gene polymorphism and its association with transaminitis in HIV-infected patients on combined ART.
**Methods:** A single-center cross-sectional study was conducted from October 11, 2011 to 2013 in Thai HIV-infected patients. Combination ART was received by 71.4% % of the patients, median duration; 39 (16-55) months. They were examined for transaminitis defined as increased levels from the upper normal limits of aspartate aminotransferase (AST) and/or alanine aminotransferase (ALT), hepatitis B or C coinfection and distribution of SDF-1 gene polymorphisms, a G to A transition at position 801 in 3'UTR region, in the patients by tetra-primer polymerase chain reaction. Logistic regression analyses were performed to determined risks for transaminitis in the studied group.
**Results:** Of 164 HIV patients, rate of transaminitis was 28% and prevalence of hepatitis B virus (HBV) coinfection, hepatitis C virus (HCV) coinfection and HBV/HCV triple infection were 9.1%, 8.3% and 0.8% respectively. Genotype frequencies of AA, GA and GG in the studied group were 6.5%, 36.1%, 57.1% respectively. Chi-square test demonstrates a significant association between AA/GA genotypes and transaminitis ($p$=0.014). In univariate logistic regression analysis, presented that AA/GA genotypes are significant risk factors of transaminitis (crude odd ratio; 95%CI; p-value: 2.5; 1.2-5.3; $p$=0.015), together with male gender (crude odd ratio; 95%CI; p-value: 3.7; 1.6-8.4; $p$=0.002) and hepatitis C virus (HCV) coinfection (crude odd ratio; 95%CI; p-value: 12.2; 2.4-61.5; $p$=0.002).
However, multivariate analysis indicated only coinfection with hepatitis C virus (HCV) as a significant risk of transaminitis in this studied group (adjusted odd ratio; 95%CI; p-value: 22.2; 2.5-199.1; $p$<0.006).
**Conclusions:** The SDF-1 3'A polymorphism is an independent risk for transaminitis, potentially leading to severity of liver disease in Thai HIV-infected patients who are on long-term treatment of combination ART.

### THPEA024

#### Optimal resource allocation of a female sex workers HIV prevention interventions across districts of different size and prevalence

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**Background:** HIV transmission in India is driven by high-risk groups such as female-sex workers (FSWs) and their clients. Interventions targeting FSWs have in the past been effective in reducing the number of HIV interventions by 42% over 4 years, but at substantial cost ($258 million over 4 years). One of the reasons for this was the absence of guidance on how money should be allocated to districts of different size and prevalence. We combine modelling and cost data from a large FSW intervention to consider best strategies for allocation of resource across different districts as well as exploring the optimal intervention combination necessary.
**Methods:** A model for HIV transmission amongst FSWs and their clients was parametrised using behavioural and cost data from a large-scale FSW intervention in India and calibrated against reported HIV prevalence. We simulated different combinations of scale and intensity HIV condom-use prevention intervention, and projected the optimal allocation of resources across districts of different size and / or prevalence.
**Results:** Across each district the optimal intervention combines initial intensity increase with intervention scaling-up and a final increase in intensity when all FSWs are reached. Small budget levels (< $31 per FSW reached) can be allocated regardless of district size or prevalence with an optimal intervention of low scale and increasing intensity that averts a small number (< 3%) of HIV infections averted. Budget between $31-$94 per FSW reached requires scaling up of the intervention and should be allocated to either more prevalent (of same size) districts or the larger (of same prevalence) districts. When choosing between larger but less prevalent district and smaller but more prevalent one, resource would be allocated to the smaller more prevalent district up to certain district size. Budget above $94 per FSW reached need to be split between different districts.
**Conclusions:** Both size and prevalence of districts are important in deciding how to optimally allocate available resources with a combination of scaled-up and intensity focus interventions in line with the recent UNAIDS/UN recommendation in HIV intervention.

## Novel approaches in immunotherapeutics (including bnAbs and anti-inflammatory mediators

### THPEA025

#### A novel bispecific immunoadhesin displays enhanced breadth and potency against diverse HIV-1 subtypes *in vitro* and in humanized mice

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**Background:** Without an effective vaccine for eliciting broadly neutralizing antibodies (bnAbs), passive immunization using existing bnAbs, Ab-like immunoadhesins (IAs) or bi-specific bnAbs/IAs becomes an attractive strategy for human immunodeficiency virus (HIV) prevention and immunotherapy. We aimed to generate a bi-specific IA (BiIA) with improved breadth and potency against diverse HIV-1 subtypes.
**Methods:** Based on the newly identified HIV-1 bNAbs, we have designed and constructed five secretory IAs (PG9, PG16, PGT128, hu5A8, VRC01) by linking the gene-optimized scFv of antibodies with the hinge and Fc regions of human IgG1. Bi-specific IAs were generated by either single gene encoded or "knobs into holes" methods. The breadth and potency of BiIAs were evaluated by a panel of 40 HIV-1 Env-pseudotyped viruses or three live viruses in vitro and their efficacy were assessed in humanized NSG mice.
**Results:** We found that one single gene-encoded bi-specific IA (combining PGT128 and hu5A8), namely BiIA-SG, neutralized 100% of the 40 viruses tested, including five transmitted/founder viruses and two viruses resistant to both parental IAs. The mean IC50 (1.122 nM) of BiIA-SG is significant better than that of parental PGT128 (69.1 nM) and hu5A8 (13.0 nM). Moreover, BiIA-SG achieved complete protection

against live HIV-1JFRL and Transmitted/Founder HIVBJZS7 challenges in humanize NSG mice. No infected cells were found in all tissue compartments tested including brain, spleen, lung, intestine, kidney and liver. Critically, AAV-delivered BiIA-SG also exhibited complete suppression of viral replication in HIV-1JFRL-infected animals. Interestingly, splenocytes derived from 2/5 treated mice did not cause new infections in new naïve humanized NSG mice via adoptive transfer experiments.
**Conclusions:** Our results demonstrated that the novel BiIA-SG is an attractive candidate of passive immunization for antibody-based prophylactics and immunotherapy.

## B CELL-BASED VACCINES

### THPEA026

### EVOLUTION OF CROSS-NEUTRALIZING ANTIBODIES AND MAPPING EPITOPE SPECIFICITIES IN PLASMA OF CHRONIC HIV-1 INFECTED ART NAÏVE CHILDREN FROM INDIA

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**Background:** Very little information is available on the neutralizing antibody response in HIV-1 infected children. In this study, we assessed the neutralizing antibody specificities, over time, in HIV-1 infected children from India.
**Methods:** We enrolled and followed up twenty ART naïve HIV-1 chronically infected children. Plasma neutralization activity at five time points was assessed against a panel of 14 pseudoviruses including subtype A, A/D, B and C using TZM-bl cell line. Neutralization epitope specificities were determined using N332A, N156K, K169A and K171A mutant pseudoviruses. Max50 binding titres were determined by ELISA using consensus V3B, V3C, IDR, MPER-B and MPER-C peptides. CD4bs specificity of plasma antibodies was evaluated using CD4bs-selective probe RSC3 and its mutant RSC3Δ371I/P363N for ELISA and for magnetic bead based depletion assays.
**Results:** This is the first longitudinal study to assess neutralizing antibody response and epitope specificities in HIV-1 infected children from India. All HIV-1 infected children (11 male and 10 female; median age: 9.5yrs; median CD4 count at baseline: 645cells/µl) were ART naïve, asymptomatic and had mother-child transmission. Twelve (60.0%) baseline and fifteen (75%) follow up samples neutralized ≥50% of the viruses tested. A modest improvement in neutralization breadth and potency was observed with time. At baseline Subtype C specific neutralization predominated (P=0.018); interestingly, follow up samples exhibited cross neutralizing activity (P=0.098). None of the plasma showed N332A dependence while AIIMS_329 and AIIMS_330 showed N160K dependence, suggesting the presence of V1/V2 directed neutralizing antibodies. Epitope mapping revealed V3C reactive antibodies with a significantly increased Max50 binding titres (0.043) in follow up samples. CD4bs specific antibodies were found in AIIMS_523 which improved with time(p=0.041). RSC3 depleted flow through of AIIMS_523 plasma demonstrated more than 50% ID50 decrease in the neutralization capacity against four pseudoviruses. Further, the presence of CD4 binding site specific plasma neutralizing antibodies of AIIMS_523 was confirmed by competition with sCD4 against JRFL gp120.
**Conclusions:** Improvement in plasma cross neutralizing activity with time, suggests the evolution of broadly neutralizing antibodies. V1/V2 and CD4bs directed plasma neutralizing activity seen in children identifies these individuals as potential candidate for the isolation of V1/2 specific and CD4bs directed neutralizing antibodies.

### THPEA027

### MOLECULAR CHARACTERISTICS AND USE OF BOVINE IGG WITH BROAD HIV-1 NEUTRALIZING ACTIVITY FROM COLOSTRUM OF COWS VACCINATED WITH ENV-GP140 TRIMERS

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**Background:** HIV-patient serum with elite virus-neutralizing breadth has led to preparation of monoclonal antibodies (mAb) with long and highly mutated CDRH3 domains that can neutralize a broad array of viral strains and prevent transmission in animal models. Primate vaccination has not matched these broad neutralizing antibody responses, but vaccination of a Holstein Friesian dairy cow (7004) before then during pregnancy with four 100µg doses of purified HIV-1$_{AD8}$Env-gp140 trimers in adjuvant yielded vast quantities of polyclonal IgG in colostrum that binds HIV Env-gp140 with titres of 1x10$^5$ and neutralized all 27 Env (24-strongly, 3-moderately) from clade A, B and C reference panels. We explored the suitability and feasibility using bovine HIV-neutralising antibody in a topical vaginal microbicide.
**Methods:** We repeat vaccinated cow-7004 during 2 subsequent pregnancies at either early then late interval, or just a late timepoint in the last trimester with 100µg of HIV-1$_{AD8}$ Env-gp140, and harvested serum and colostrum. IgG was tirated for Env binding by ELISA and neutralisation of pseudotyped reporter viruses. Circulating lymphocytes were collected 5 days after vaccination and draining lymph node at autopsy for isolation of IgG+CD21+memory B-cells. Single cell mRNA was used to prepare mAbs with matched chimeric bovine-VH and -VL with human C-regions from HIV gp140-binding IgG+ CD21+ circulating memory B-cells present at 0.66%.
**Results:** Potent bovine IgG responses were sustained at equivalent levels through two ensuing pregnancies. 33 mAbs were selected that had long CDRH3 sizes ranging from 12 - 64 aa's with a high Cys and aromatic-aa frequency. Two mAbs, 6A and 8C, displayed strong binding to HIV-1$_{AD8}$ Env-gp140 uncleaved trimers, but not monomer, and bound cleaved covalently-stablized HIV-1$_{AD8}$ SOSIP gp140 trimers. The VH somatic mutation rate for 6A and 8C was 27% and 25% respectively and their 21 and 14aa CDRH3 domains were 57% and 93% mutated from germline. Mutation of CDRH3 Cys or Trp eliminated the HIV-specific binding characteristics.
**Conclusions:** Reproducible production of large quantities of HIV-neutralizing polyclonal IgG from hyperimmune bovine colostrum shows its suitability and feasibility for testing as an HIV microbicide. The current bovine-V-region mAbs, despite strong trimer-specific binding, haven't yet matched the broad neutralizing activity of the polyclonal IgG.

## NOVEL VECTORS AND STRATEGIES

### THPEA028

### INTRANASAL VACCINATION WITH A LIVE RECOMBINANT RHINOVIRUS AND A DNA BOOST ELICITS HIV-SPECIFIC IMMUNITY THAT CONTROLS ECOHIV INFECTION IN MICE

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**Background:** Most HIV-1 transmissions occur via genitorectal mucosa, highlighting the need for vaccines that elicit mucosal immunity. HIV Gag-specific cell mediated immunity (CMI) and anti-Tat neutralizing antibodies are considered essential for long-term control of HIV. Thus, Gag and Tat are desirable components of a HIV vaccine. We developed a candidate mucosal vaccine by engineering a replication-competent human rhinovirus serotype A1 (HRV-A1) to encode Gag and Tat (rHRV-Gag/Tat). Intranasal administration of this novel vaccine may generate robust pan-mucosal and systemic HIV-specific immunity.
**Methods:** Balb/c mice (n=7 per group) were vaccinated intranasally with 2 doses (5x10$^6$ TCID$_{50}$/dose) of rHRV-Gag/Tat or WT-HRV then boosted intradermally with a 50 µg of a DNA vaccine encoding Gag and a novel oligomerised Tat (pVAXGag/Tat). Another group of mice received 3 intradermal doses (50 µg/dose) of pVAXGag/Tat. Splenocytes and lymphocytes from mesenteric lymph nodes were analysed for Gag-specific systemic and mucosal CMI by ELIspot and ICS. We also analysed blood and cervical vaginal lavage (CVL) samples for Tat-specific systemic (IgG) and mucosal (IgA), respectively.
**Results:** Peptide-stimulated lymphocytes from rHRV-Gag/Tat vaccinated mice showed significantly higher numbers of effector memory CD8$^+$T-cells producing IFN-γ, IL-2 and TNF-α (130 vs 62, P= 0.0192) than mice vaccinated with 3 doses of pVAXGag/Tat. The Tat-specific IgG titers were significantly higher in rHRV-Gag/Tat vaccinated mice (titer~1:17704 vs 1:338, p=0.0221). Only rHRV-Gag/Tat vaccinated mice developed detectable Tat-specific IgA (titer~1:100) in CVL samples after a DNA boost. rHRV-Gag/Tat vaccinated mice showed superior control of EcoHIV infection (a surrogate murine HIV challenge model) in the peritoneal cavity and the spleen (2 log reduction in viral load) compared with wt-HRV vaccination. Experiments comparing the protective efficacy of heterologous prime-boost rHRV-DNA vaccination to homologous prime-boost pVAXGag/Tat vaccination are currently ongoing.
**Conclusions:** Our data shows that rHRV-Gag/Tat has the potential to prevent or at least control HIV infection at the mucosa. We believe that this is the first time rHRVs have been used to vaccinate against HIV and highlights the need to further test rHRV-Gag/Tat in large animals and humans.

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## THERAPEUTIC VACCINES

### THPEA029

### HIV-TAT FUSED TO THE OLIGOMERISATION DOMAIN OF THE C4-BINDING PROTEIN IS HIGHLY IMMUNOGENIC AND CONTROLS ECOHIV CHALLENGE IN MICE

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**Background:** The HIV Tat protein is a promising component of a HIV vaccine. A DNA-based Tat vaccine would be a cheap, cost-effective and therefore readily accessible HIV-1 vaccine to low-income communities which are greatly affected by HIV. However, native Tat is highly unstable, easily oxidised and degraded by proteolysis, which affects its immunogenicity. Thus, protecting Tat from these detrimental processes would be expected to improve Tat immunogenicity.
**Methods:** We have developed a candidate Tat-DNA vaccine (pVAX-sTat-IMX313) encoding Tat fused with the oligomerisation domain of a chimeric C4-binding protein (C4b-p), termed IMX313, resulting in Tat heptamerisation. To ensure that the bulk of heptamerised Tat is secreted, we linked Tat to the leader sequence of tissue plasminogen activator (TPA). Another DNA vaccine (pVAX-sTat) encoding Tat linked to TPA, but without IMX313 was also developed as a control. Balb/c mice (n=7 per group) were vaccinated intradermally with 5 doses (50 µg/dose) of pVAX-sTat-IMX313 or pVAX-sTat. Splenocytes were harvested 14 days after the last dose and analysed for Tat-specific cell-mediated immunity by ELIspot. Blood and cervical vaginal lavage samples were harvested prior to each dose and 14 days after the last dose and analysed for Tat-specific serum (IgG) and mucosal (IgA), respectively.
**Results:** Peptide-stimulated splenocytes from pVAX-sTat-IMX313 vaccinated mice showed higher Tat-specific IFN-γ responses than pVAX-sTat vaccinated mice (mean SFUs 601 vs 498). pVAX-sTat-IMX313 vaccinated mice developed higher titres of IgG (~1: 65957 vs 35871) that showed higher inhibition of Tat transactivation activity in an *in vitro* assay (~80% vs 76% inhibition). IgA was detected in 7/7 (100%) of pVAX-sTat-IMX313- and in only 4/7 (57%) pVAX-sTat-vaccinated mice. The EcoHIV viral load (a surrogate murine HIV challenge model) was reduced by ~11 fold in the peritoneal cavity ($p$= 0.0022) and by ~7 fold in the spleen ($p$= 0.0022) in pVAX-sTat-IMX313- compared with pVAX-sTat-vaccinated mice.
**Conclusions:** We believe that this is the first time secreted Tat has been fused to IMX313 to improve the immunogenicity of Tat-DNA vaccine and highlights the need to further test pVAX-sTat-IMX313 in large animals and humans.

## NOVEL ASSAYS OF IMMUNE RESPONSES

### THPEA030

### INTRODUCING THE NEW FULLY-AUTOMATED VOLUMETRIC AQUIOS FLOW CYTOMETER PANLEUCOGATE (PLG) PLATFORM FOR CD4-T LYMPHOCYTE ENUMERATION IN SOUTH AFRICA. PART I: ESTABLISHING INSTRUMENT PRECISION AND ACCURACY

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**Background:** The new Aquios "load and go" cytometer incorporates fully automated sample preparation/analysis with a small bench-top footprint and CD4 PanLeucogating protocol. The aim of the study was to establish the accuracy/precision of this system prior to validation against the current predicate system (MPL/CellMek with PLG).
**Methods:** For 12 consecutive days, two Aquios instruments were evaluated with daily quality control (QC) material, Immunotrol 'Normal' and 'Low' (Beckman Coulter, Miami, USA) and reproducibility studies (10x analysis/sample) using Immunotrol and three patient samples/group with low, medium or high CD4 counts. Inter-instrument comparison was done on 50 random CD4 samples. Ten fresh samples were aged on the bench and tested daily for 5 days to assess the impact on accuracy. GraphPad software was used for statistical analysis and %coefficient of variance (%CV) to indicate accuracy. Results for both absolute CD4 count (CD4#) and CD4 percentage of lymphocytes (CD4%) are reported. A retrospective external quality assessment (EQA) panel (n=20) was analysed and standard deviation index (SDI) calculated.
**Results:** Daily QC over 12 days showed %CV values of < 8% for CD4# and CD4% using 'Normal' or 'Low' Immunotrol. Reproducibility data with both levels of Immunotrol showed excellent precision with %CVs< 7%. Reproducibility using patient CD4 samples>700cells/µl (high) and 300-500 cells/µl (medium), showed excellent reproducibility with CV's< 5%. CD4 counts < 40cells/µl showed increased CV's ~11%. Differences were not clinically significant. Inter-instrument variability was negligible, with corresponding %similarity of 100±2.85% (CV's < 3%), and a bias of 12.9±27 cells (95% limit of agreement -40.2 to 66.1) in a cohort with CD4 counts from 2-1582 cells/µl (median 424cells/µl). Samples aged for 5 days (23-1001 cells/µl) showed no statistically significant changes over 4 days. EQA panel data revealed overall accuracy (SDI values >0 - +2) for low and normal panel samples for CD4# and CD4% respectively.
**Conclusions:** Internal and external quality control assessment material and a range of CD4 counts (patient samples) confirmed accuracy and excellent reproducibility of the Aquios PLG system over time. Accuracy was not impaired by sample age and inter-instrument comparisons showed minimal bias, making the Aquios platform suitable for replacement of older technology.

## ACUTE AND EARLY INFECTION

### THPEB031

### ACUTE HIV DISCOVERED DURING ROUTINE HIV SCREENING IN 6 URBAN EMERGENCY DEPARTMENTS (EDS)

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**Background:** Lab-based 4th generation HIV 1/2 Ag/Ab testing platforms in emergency departments (EDs) provide HIV test results in approximately 1 hour and can also detect acute HIV infection (AHI) 10-21 days after exposure, when patients are often symptomatic and seeking medical care.
We describe the prevalence of AHI among patients screened in 6 EDs across the United States and the percentage of all new HIV infections identified that were acutely infected.
**Methods:** We obtained HIV test results from patients undergoing routine HIV screening in 6 EDs since implementation of the fourth generation testing algorithm to determine the total number of HIV tests performed, the number of new HIV diagnoses and the number with AHI. AHI was defined based on a repeatedly reactive HIV Ag/Ab assay, negative HIV ½ antibody differentiation test, and detectable HIV-1 RNA.
**Results:** The EDs initiated routine HIV screening at different time points between November 2012 and July 2015. Over 120 cumulative months of screening through November 30, 2015 in the 6 EDs, 154,389 HIV Ag/Ab tests were performed . There were 569 (0.37%) new HIV diagnoses, of which 80 (14.1%) were AHI. Prevalence of AHI amongst those screened was 0.05%. The percentage of new HIV diagnoses ranged from 0.31% to 0.47%, and the percentage of newly diagnosed HIV that were AHI ranged from 10.6% to 37.5% in the 6 EDs

| Location | Screening period, months | HIV Tests | New HIV diagnoses, n (%) | New diagnoses that were acute HIV, n (%) |
|---|---|---|---|---|
| Chicago | 36 | 17,125 | 62 (0.36%) | 12 (19.4%) |
| Houston | 13 | 61,886 | 189 (0.31%) | 20 (10.6%) |
| Los Angeles | 29 | 48,324 | 229 (047%) | 31 (13.5%) |
| Oakland | 19 | 17,936 | 55 (0.31%) | 8 (14.5%) |
| Philadelphia (1) | 18 | 6,652 | 26 (0.39%) | 6 (23%) |
| Philadelphia (2) | 5 | 2,466 | 8 (0.32%) | 3 (37.5%) |

*[New HIV Diagnoses and Acute HIV Infections Identified during Routine HIV Screening, 6 urban EDs]*

**Conclusions:** HIV Ag/Ab screening in EDs offers a unique opportunity to identify undiagnosed HIV, of which a substantial percentage are acute infections. The disproportionate percentage of acute infections among ED patients is likely secondary to these patients seeking medical care for symptoms attributable to AHI, and provides a valuable opportunity for early intervention.

## THPEB032

### PLASMA AND GENITAL HIV DECLINE ON ART AMONG PREGNANT/POSTPARTUM WOMEN WITH RECENT HIV INFECTION

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**Background:** Early and acute maternal HIV infection increases risk of mother-to-child and heterosexual transmission due to high maternal HIV viral load (VL). While plasma VL is rapidly decreased with antiretroviral therapy (ART), ART response in the genital tract has not been well characterized among pregnant/postpartum women with recent HIV infection and could contribute to transmission.
**Methods:** Women with early or acute infection (detected by nucleic acid amplification tests on plasma samples conducted serially during pregnancy and postpartum) were identified in a prospective study in Western Kenya. Women initiating ART within 40 days of confirmatory HIV diagnosis and with ≥2 vaginal or ≥2 cervical samples collected were included in the analysis. Cox proportional hazards regression was used to determine time to HIV suppression, defined as < 75 copies/mL for cervical/vaginal samples or < 150 copies/mL for plasma samples, using the GenProbe HIV RNA assay.
**Results:** Among 23 women with early or acute infection who initiated ART, median age was 22 years (interquartile range [IQR]:19-26) and time to ART initiation was 14 days (IQR 8-20). All women had detectable cervical and vaginal HIV at diagnosis. Mean plasma VL (5.44 $log_{10}$ copies/mL) prior to ART initiation was >1 log higher than cervical and vaginal VL (4.13 and 3.90 $log_{10}$ copies/mL, respectively; p< 0.001 for both). Viral suppression was more frequent in the vagina (87%) than cervix (83%, p=0.07) or plasma (65%, p=0.06). Among women with viral suppression, median time to suppression was shorter in the cervix (2.5 months) than in the vagina (3.3 months) or plasma (7.8 months); there were no differences in time to viral suppression in any compartment between women who acquired HIV in pregnancy versus postpartum. Following viral suppression in the cervix or vagina, detection of virus at a subsequent visit was common: 48% cervical and 70% vaginal.
**Conclusions:** HIV was detected in genital secretions soon after HIV diagnosis, at lower levels than in plasma. Viral suppression following ART occurred more rapidly in the cervix and vagina than plasma, however, was not consistently sustained in any compartment. Improving viral suppression among pregnant and postpartum women with recent HIV will be important to prevent transmission.

## THPEB033

### FASTER RESTORATION OF CD4:CD8 RATIO DURING THE FIRST 12 WEEKS OF ART INITIATED AT EARLY HIV INFECTION COMPARED WITH ART INITIATED AT CHRONIC INFECTION IN THE SAME PATIENTS

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**Background:** Early initiation of antiretroviral therapy (ART) is believed to result in better immunological reconstitution than initiation of ART during chronic HIV infection (CHI). However, the degree and rate of immune restoration haven't been directly compared in the same patients between ART initiated during primary HIV infection (PHI) and CHI ART.
**Methods:** We studied 48 patients that received 24 or 60 weeks of temporary ART initiated at PHI and subsequently reinitiated ART during CHI after a median of 2.4 years without treatment. Clinical parameters were measured at ART initiation and every 12 weeks thereafter up to week 60 of both PHI and CHI ART.
**Results:** Median $CD4^+$ counts were 505 (IQR: 303-713) and 310 (245-418) cells/$mm^3$ at the PHI and CHI ART baselines, respectively (p< 0.0001, paired Wilcoxon test). No difference in the dynamics of $CD4^+$ count reconstitution between the PHI and CHI ART was observed throughout the follow-up period. Median $CD4^+$ count gains by 60 weeks ART were 210 cells/$mm^3$ for both PHI and CHI ART. In contrast, although there was no significant difference in the CD4:CD8 ratio at the PHI and CHI ART baselines (0.48 (0.25-0.80) vs. 0.36 (0.25-0.41), respectively; p>0.05), by 12 weeks ART this ratio increased to 0.95 (0.74-1.29) on PHI ART and 0.52 (0.41-0.74) on CHI ART (p< 0.0001). Significant difference in CD4:CD8 ratio between PHI and CHI ART persisted throughout the follow-up period, but no further difference in the dynamics of CD4:CD8 ratio increase was observed after the first 12 weeks. By 48 weeks ART, 59% of patients treated during PHI and 24% of patients treated during CHI achieved the CD4:CD8 ratio of 1 (p=0.0049, Fisher's test).
**Conclusions:** This is the first study to directly compare immune reconstitution between PHI and CHI ART in the same patients. Although no difference was observed in the dynamics of $CD4^+$ count reconstitution, the CD4:CD8 ratio demonstrated faster restoration in the first 12 weeks of PHI ART compared to the CHI ART, which translated into a larger percentage of patients achieving the CD4:CD8 ratio of 1 by 48 weeks ART. Early initiation of ART conveys a significant immunological benefit to the patient.

## THPEB034

### EARLY START OF ANTIRETROVIRAL THERAPY DURING PRIMARY HIV INFECTION IS ASSOCIATED WITH FASTER OPTIMAL IMMUNOLOGICAL RECOVERY - RESULTS OF ITALIAN NETWORK OF ACUTE HIV INFECTION (INACTION) RETROSPECTIVE STUDY

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**Background:** INACTION is a network currently including 24 centers, created with the aim of studying primary HIV infection (PHI). Aim of this study: to assess whether an early start of combined antiretroviral therapy (cART) during PHI could be beneficial in terms of time to immunological recovery and virological suppression.
**Methods:** Patients with PHI diagnosed between 2008 and 2014 at 16 Italian centers were enrolled in this retrospective cohort study. PHI was classified according to Fiebig criteria. Patients starting cART within 3 months since PHI diagnosis (baseline, BL) were classified as early-cART group (E-cART-g), while other patients as late-cART group (L-cART-g).
**Results:** Overall, 247 patients were enrolled (median age 38y, 87.4% males, 61.5% homo/bisexual, 67.6% Fiebig ≥4, BL-median CD4 452 cells/µL, BL-median HIVRNA 5.64 $log_{10}$copies/mL). During follow-up, cART was started in 247 (100%) patients, of which 177 (71.7%) in E-cART-g.

| | Early-cART (n=177) | Late-cART (n=70) | P-value |
|---|---|---|---|
| Symptomatic PHI | 146 (82.5%) | 48 (68.6%) | 0.026 |
| BL-CD4 cells/mm3 | 450 (312-579) | 488 (376-637) | 0.062 |
| BL-CD4/CD8 >1 | 19 (10.7%) | 3 (4.3%) | 0.028 |
| BL-HIV-RNA, log10copies/mL | 5.91 (5.19-6.57) | 5.07 (4.45-5.74) | <0.001 |
| cART NNRTI-based | 19 (10.7%) | 31 (44.3%) | <0.001 |
| cART PI-based | 138 (78.0%) | 33 (47.1%) | <0.001 |
| cART InSTI-based | 176 (99.4%) | 8 (11.4%) | <0.001 |
| First-cART-regimen>3 drugs | 76 (42.9%) | 3 (4.3%) | <0.001 |
| HIV-Diagnosis 2008-2011/2012-2014 | 40(22.6%)/ 137(77.4%) | 39(55.7%)/ 31(44.3%) | <0.001 |

*[Table 1 - Main baseline characteristics PHI patients]*

At multivariate analysis, higher plasma HIV-RNA and PHI diagnosis between 2012-2014 vs 2008-2011 were associated with E-cART-g. At Cox analysis, predictors to time to virological suppression were CD4/CD8>1 (p=0.005), HIV-RNA $log_{10}$copies/mL (p< 0.001) and years of HIV diagnosis (2012-2014 vs 2008-2011) (p< 0.001). E-cART-g had shorter time to optimal immunological recovery (see Figure1):

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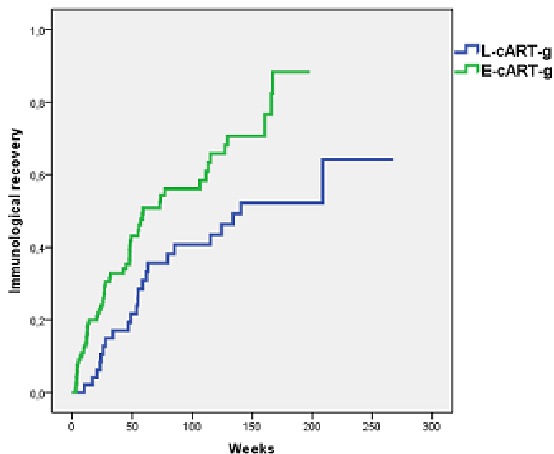


*[Figure 1: Proportion of pts with optimal immunological recovery (defined as: CD4>500/mmc, CD4%>30, CD4/CD8>1); w48: E-cART-g 39.2% vs L-cART-g 19.3%]*

Association of early-cART to optimal immunological recovery was confirmed in multivariate analysis {aHR=1.99(1.09-3.63;95%CI), p=0.026}, after adjusting for immunological BL characteristics, first cART regimen and years of diagnosis.
**Conclusions:** PHI patients who started cART within 3 months after PHI achieved optimal immunological recovery faster after therapy initiation than patients who began later during the course of infection, despite worst E-cART-g BL viro-immunological conditions.

## THPEB035

### USING DDPCR TO ASSESS PERSISTENCE OF HIV DNA RESERVOIRS IN PERINATALLY INFECTED INFANTS TREATED WITH CART BEFORE OR AFTER 12 MONTHS OF AGE

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**Background:** The major barrier to achieving HIV remission is the establishment of HIV in latent CD4+ T cells during acute infection. Recent studies suggest that early treatment of neonatal infection may reduce the establishment and quantity of latent reservoirs and enhance proviral decay, allowing potential drug-free HIV remission as seen in the "Mississippi baby." Data is limited, so we measured persistent HIV viral reservoirs and HIV antibody profiles in a cohort of 10 perinatally infected infants with known timing of treatment and serially banked blood samples.
**Methods:** In a retrospective study, 10 HIV perinatally infected infants followed from birth and initiating cART before or ≥ 12 months of age were divided into "early" or "late" treatment cohorts. All children remained on cART. Serial analysis of banked peripheral blood samples were assessed for HIV RNA viremia, HIV antibodies, and proviral reservoirs over time. We measured HIV RNA PCR ~ Q4 months. Of those treated early, HIV antibody levels were assessed by 4th generation Western blot (WB) at 16 months and 1-5 years post-cART. We defined incomplete WB by band analysis (< 4 of 9 +). HIV DNA reservoirs were quantified by droplet digital PCR (ddPCR) at the same time points.
**Results:** Of infants treated early, 5/8 (62.5%) had incomplete WBs at 16 months of age; 6/8 (75%) remained incomplete at second time point. Half of early treated with incomplete WBs, also had marked decrease in HIV provirus. ddPCR was performed in 10 infants, 8 with early Rx and 2 with late Rx. At 16 months of age the early Rx cohort had a mean proviral DNA of 12,773 copies/million cells compared to 14,864 copies/million cells at 1-5 years later.
**Conclusions:** Preliminary data suggests that the majority of early treated infants showed incomplete antibody profiles by WB at 16 months which persisted in follow up. The quantity of proviral reservoir was not significantly different among the early cohort. However, a subset showed a decrease in proviral reservoir size. This data confirms that early treatment may inhibit viral replication and development of HIV antibody. Further studies are needed to correlate HIV antibody profiles with proviral reservoir levels.
Research reported in this publication was supported by the James B. Pendleton Charitable Trust.

# HIV DIAGNOSTIC TESTING (INCLUDING NEW ALGORITHMS, RAPID/POINT OF CARE TESTING, AND STRATEGIES FOR EXPANDING/IMPROVING TESTING)

## THPEB036

### HIGH YIELD OF 4TH GENERATION EIA TESTING FOR HIV IN DENGUE-LIKE FEBRILE ILLNESS IN SINGAPORE

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**Background:** Strategies to diagnose Acute HIV infection (AHI) are needed to improve individual and public health outcomes. As AHI causes a febrile illness in up to 89% of cases, routinely offering sensitive new-generation AHI tests to well defined clinical populations could identify a high number of AHI cases. In Asia, 800,000 new HIV infections each year must be distinguished from other causes of fever, including over 2 million episodes of dengue fever (DF). We sought to estimate the prevalence of AHI in suspected DF patients using 4th generation Antigen-Antibody Enzyme-linked Immunoassay (EIA) and Nucleic Acid Amplification Test (NAAT).
**Methods:** This cross-sectional study prospectively recruited febrile patients with clinical features of DF at three Singapore hospital clinics and acute medical wards. Eligible participants were Singaporean citizens, aged over 21 years, with a fever >37.5°C and two symptoms of DF (WHO, 2009). Patients were excluded if they were pregnant or had a clinically obvious diagnosis based on signs (e.g. varicella) or diagnostic tests performed prior to their presentation. We assessed risk of recent HIV exposure and collated clinical and laboratory data with a questionnaire. HIV-1 testing was by concurrent EIA and NAAT, and confirmed by quantitative viral load and western blot. Participants gave informed consent to participate in the study, which was approved by the National Healthcare Group Domain Specific Review Board.
**Results:** Of the 263 eligible participants, 140 consented to AHI testing (53.2% acceptance). Three of 140 participants had AHI, 2.14% (95% confidence interval (CI): 0.6% - 6.5%). The AHI cases had rash and blood count abnormalities typical of DF. Restricting HIV testing to those reporting sex in the last three months would limit testing to 56.4 % of our cohort of suspect DF patients, and result in a slightly higher yield 2.7% (2.2 - 11.4%). The negative predictive value of a sexual history was 100% in our sample, but could be lower (95% CI: 94.1% - 100.0%).
**Conclusions:** We have shown routine AHI testing has a high yield in this population and is acceptable to many. Testing could be further targeted according to recent risk exposures.

## THPEB037

### APPROPRIATENESS OF WORLD HEALTH ORGANIZATION TO DETECT AND MANAGE VIROLOGIC FAILURE FOR PEOPLE LIVING WITH HIV ON ANTIRETROVIRAL THERAPY: RESULTS FROM AN OBSERVATIONAL COHORT STUDY

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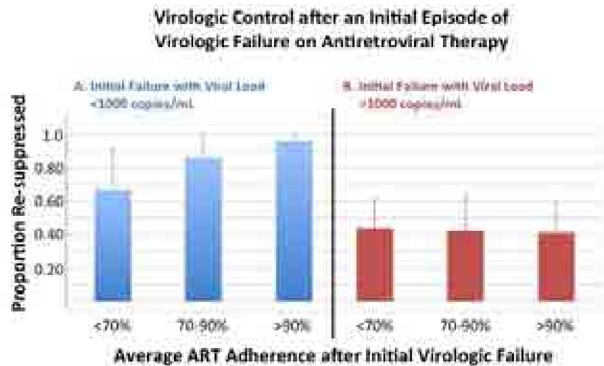
**Background:** World Health Organization HIV guidelines recommend viral load (VL) measurements annually after 6 months of antiretroviral therapy (ART). Regimen change is recommended for patients with two VL measurements >1,000, at least three months apart, with adherence reinforcement in the interim. These recommendations presume that 1) a VL < 1,000 is unlikely to predict persistent virologic failure, and 2) high adherence after an initial detectable VL is likely to result in virologic control. We assessed the appropriateness of these recommendations using data from a longitudinal cohort in southwestern Uganda.
**Methods:** Participants in the Ugandan AIDS Rural Treatment Outcome Study were followed quarterly after ART initiation with VL monitoring. ART adherence was monitored using electronic pill monitors. We analyzed episodes in which participants

had 1) a detectable VL (>400) 6-12 months after ART initiation or after a prior suppressed VL; and 2) continued on the same ART regimen until the next VL measurement. We assessed relationships between initial VL result and re-suppression, and evaluated whether ART adherence in the interim predicted re-suppression.
**Results:** We identified 231 detectable VL events in 168 participants. 82% (102/124) of those with an initial VL < 1,000 re-suppressed, but only 42% (43/103) re-suppressed if the initial VL was >1,000 (p< 0.001). Average adherence in the interim predicted re-suppression for those with an initial VL < 1,000 (*P*=0.002), but not for those with an initial VL >1,000 (*P*=0.628), interaction term *P* =0.013 (**Figure 1**).



*[Figure 1. Antiretroviral adherence and re-suppression after virologic failure]*

**Conclusions:** Patients with a detectable VL < 1000 have a high probability of re-suppression, and interim levels of adherence correlate with odds of re-suppression. However, those with a VL >1000 have a low probably of re-suppression, and odds of re-suppression is not associated with adherence, suggesting a high likelihood of drug resistance. WHO recommendations to delay regimen changes in those with a high VL should be reconsidered.

## THPEB038

### A CLUSTER-RANDOMIZED TWO-PERIOD CROSSOVER TRIAL ASSESSING NURSE-DRIVEN HIV SCREENING TARGETING KEY POPULATIONS IN FRENCH EMERGENCY DEPARTMENTS

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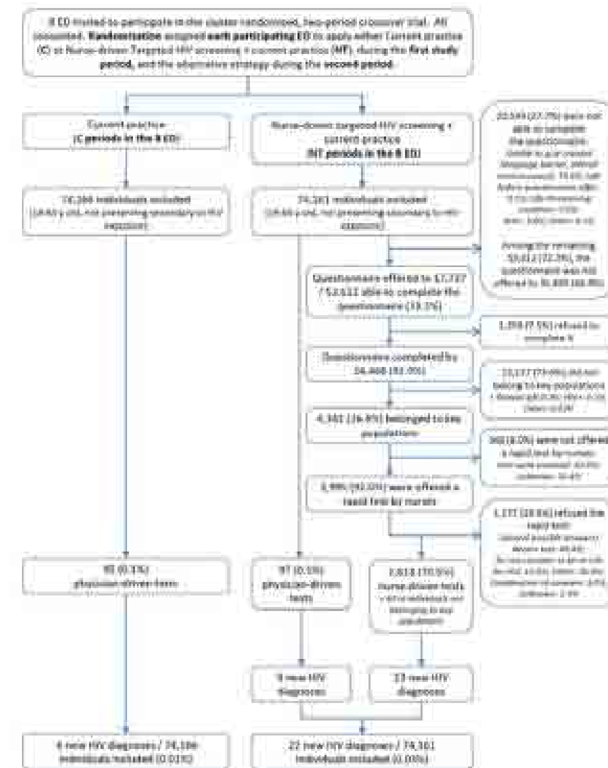
**Background:** In France, a country with HIV concentrated epidemic, the number of New HIV Diagnoses (NHIVD) continues to increase among key populations. Thus optimizing screening to reach individuals with undiagnosed infection is challenging. Physician-directed diagnostic testing is routinely performed in French Emergency Departments (ED). The feasibility and impact of combining nurse-driven targeted screening with physician current practice on the identification of NHIVD were evaluated.
**Methods:** A cluster-randomized, two-period crossover trial compared Nurse-driven Targeted screening+current practice (NT) to Current practice alone (C) in ED. All individuals aged 18-64, not presenting secondary to HIV exposure were included. In periods with NT, a self-administered questionnaire was proposed, resulting in a nurse's offer of a rapid test to patients belonging to key populations: Sub-Saharan African origin or partner, men having sex with men, >5 sexual partners/last year, lifetime injection drug use. A sample size of 140,000 subjects was estimated assuming 3.38 and 1.04 NHIVD/10,000 persons in NT and C periods, respectively, with b=80%, a=5%. The proportions of NHIVD in each group were compared using a Poisson generalized linear mixed-model.
**Results:** Between June 2014-June 2015, 74,161 (NT periods) and 74,166 individuals (C periods) were included in 8 ED in metropolitan Paris (see Figure). In NT periods, the questionnaire was offered to 17,727 individuals, out of which 2,818 were tested by nurses (64% men, 36% women), resulting in 13 NHIVD. Combined with 9 NHIVD among 97 physician-directed diagnostic tests, the total number of NHIVD in NT periods was 22 (22/74,161: 0.03%; 95% CI 0.02-0.05). In C periods, 92 individuals were tested, resulting in 6 NHIVD (6/74,166: 0.01%; 95% CI 0.00-0.02). Nurse-driven targeted screening combined with current practice increased the identification of NHIVD (relative risk 3.7; 95% IC 1.2-10.9).


*[Figure]*

**Conclusions:** Targeted screening by ED nurses added to current practice was feasible. This innovative strategy significantly enhanced the identification of new HIV diagnoses.

## THPEB039

### USE OF A LIMITING ANTIGEN AVIDITY ASSAY TO MONITOR VIRAL BREAKTHROUGH DURING ANTIRETROVIRAL TREATMENT

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**Background:** HIV viral load testing is used to monitor antiretroviral treatment (ART). However, this testing requires special equipment, laboratory expertise, and is not affordable in many resource-limited settings. Simple and less expensive laboratory tests are needed to monitor ART in these settings. Previous studies have shown that viral suppression can down-regulate the anti-HIV antibody response, and that viral breakthrough during ART may be associated with serologic changes. We evaluated whether a limiting antigen avidity enzyme immunoassay (LAg-Avidity assay) could be used to detect viral breakthrough in individuals on ART.
**Methods:** Samples were obtained from adults in the United States who were infected with HIV for >2 years and on ART. This included: (1) 72 samples from 18 adults with 1 sample before and 3-7 samples after ART initiation; and (2) 179 samples from 20 adults who were virally suppressed on ART and had viral breakthrough with subsequent viral suppression (22 viral breakthrough events). A cutoff of 400 copies/mL was used to define viral suppression. Samples were tested with the LAg-Avidity assay; results were reported as normalized optical density units (OD-n). We compared the difference in OD-n values between individuals who were or were not virally suppressed, and evaluated the change in OD-n values in longitudinally-paired samples, where individuals were suppressed at both time points (n=120), or at only one time point (n=22).
**Results:** LAg-avidity values were strongly correlated for a given individual; therefore, these data were only useful for analysis of longitudinal samples. Significant differences in OD-n values were observed more frequently for paired samples when viral

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breakthrough occurred, then when individuals were suppressed at both time points (86% [16/22] vs. 68% [39/120], p<0.001, Fisher's exact test). Using an increase of 0.2 OD-n between paired time points as a cutoff, the sensitivity of detecting viral breakthrough was 65% (14/22) and specificity of detecting viral breakthrough was to 86% (17/120, p <0.001, Fisher's exact test).
**Conclusions:** The LAg-avidity assay cannot identify individuals with viral breakthrough using a single sample due to intra-individual variation in OD-n values. When paired longitudinal samples were evaluated, viral breakthrough was identified in a majority of cases.

## THPEB040

### COMPARISON OF THE NEW SIEMENS VERSANT® HIV-1 RNA 1.5 ASSAY (KPCR), VERSANT® HIV-1 RNA 1.0 ASSAY AND THE ABBOTT REALTIME HIV-1 ASSAYS ON CLINICAL SAMPLES FROM WEST AND CENTRAL AFRICA

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**Background:** The high frequency of HIV-1 mutations is a known risk for viral load assays. Continuous surveillance of HIV sequence databases led to an update of the VERSANT® HIV-1 RNA 1.0 Assay (kPCR). Performance of the new assay design was evaluated using HIV infected patient plasma samples from West and Central Africa.
**Methods:** HIV infected patients from Cameroon, Guinea-Bissau, Senegal, and Congo representing Group M subtypes and Group O were evaluated. Samples were tested with the VERSANT® HIV-1 RNA 1.5 Assay (kPCR)* and VERSANT® HIV-1 RNA 1.0 Assay(kPCR) using the VERSANT® kPCR Molecular System at Siemens Healthcare Diagnostics Inc., Berkeley, CA. Abbott REALTIME HIV-1 Assay testing was performed at the Siemens Clinical Laboratory, Berkeley, CA. The linear relationship was determined using Deming regression of a scatter plot of the paired log copies/mL quantitations.
**Results:** All samples (85) were quantified by the VERSANT® HIV-1 RNA 1.5 Assay (kPCR) and 1.0 Assay. The regression line slope for the log-log plot was 0.96 and the R-squared value was 0.96. The majority of the discrepant results showed higher quantitations of CRF02_AG with the VERSANT® HIV-1 RNA 1.5 Assay (kPCR). The average difference between the VERSANT® HIV-1 RNA 1.5 Assay (kPCR) and Abbott REALTIME HIV-1 Assay was -0.08 $log_{10}$ copies/mL. The regression line slope was 0.95 and the R-squared value was 0.94. Among the 82 patient samples in which viral load levels were determined by both assays, 76 samples (93%) differed by less than 0.5 $log_{10}$ copies/mL.
**Conclusions:** The new VERSANT® HIV-1 RNA 1.5 Assay (kPCR) accurately detects samples of HIV infected patients from West and Central Africa, has good correlation with the VERSANT® HIV-1 RNA 1.0 Assay (kPCR), and shows overall higher quantitation of subtype CRF02_AG. The VERSANT® HIV-1 RNA 1.5 Assay (kPCR) has a high degree of correlation with the Abbott REALTIME HIV-1 Assay.
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*CE-marked for IVD use.

## THPEB041

### EVALUATION OF TRIN-SCREEN HIV FROM TRINITY BIOTECH, A SCREENING RAPID TEST FOR THE DETECTION OF HUMAN HIV-1/2

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**Background:** The objective of this study was to evaluate the performance (sensitivity and specificity) of the new Trin-Screen HIV rapid lateral-flow assay against a 2-test algorithm, 1st line and 2nd line, used as the reference standard (1st line: Alere Determine™ HIV-1/2, 2nd line confirmatory: Uni-Gold™ HIV). Performance was also compared to First Response HIV-1/2.O and KHB HIV (1+2).
**Methods:** A total of 437 prospective EDTA whole blood samples were collected at two hospitals in the Republic of South Africa between October 2015 and January 2016. A total of 202 male, 225 female and 10 unidentified gender samples were collected from patients aged between 3 months to 89 years of age. The clinical status of the patients was defined using the 2 rapid test algorithm, Alere Determine™ HIV-1/2 as the 1st line screening assay and Uni-Gold™ HIV as the 2nd line confirmatory assay. If the screen and confirmatory assays conflicted, the HIV status for the sample was uncertain and excluded from the study. All products were used in accordance with their IFU procedure.
**Results:** A total of 144 samples were confirmed HIV seropositive, while 289 samples were confirmed HIV seronegative with the 2-test algorithm. The Trin-Screen HIV demonstrated 100% (144/144) sensitivity and 99.65% (288/289) specificity versus the 2 rapid test algorithm. Versus both other rapids (First Response HIV-1/2.O and KHB HIV (1+2)), the Trin-Screen HIV gave 100% (144/144) agreement for HIV seropositive samples and 99.65% (288/289) agreement for HIV seronegative samples.
**Conclusions:** The new Trin-Screen HIV rapid test demonstrates excellent sensitivity and specificity when compared to the 2-test algorithm for detection of HIV-1/2. Trin-Screen HIV is a viable alternative to the current 1st line HIV test assays in Africa.

## THPEB042

### THE CHALLENGE OF DISCRIMINATION BETWEEN HIV-1, HIV-2 AND HIV-1/2 DUAL INFECTIONS

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**Background:** It is important to discriminate between HIV types, as HIV-2 is intrinsically resistant to non-nucleoside reverse transcriptase inhibitors (NNRTIs), which is often used in first-line antiretroviral treatment (ART) regimens. However, correct discrimination may be difficult because of cross-reacting antibodies and because many HIV-2 infected patients do not have detectable HIV-2 RNA plasma levels. The performance of established discriminatory assays in populations harboring HIV-1, HIV-2 and HIV-1/2 dually infected patients is not well known. This study validates two of the most widely used discriminatory assays.
**Methods:** Samples from ART naïve HIV infected patients from the Bissau HIV Cohort in Guinea-Bissau were selected for the study. The two tests INNO-LIA HIV-1/2 Score and ImmunoComb HIV 12 Bispot were performed on all samples. HIV-1 and HIV-2 RNA was measured on plasma samples using Abbott m2000 system and an *in-house* method, respectively. To ease comparison, HIV positive (untypable) results by INNO-LIA were classified as HIV-1/2 dual infections.
**Results:** The median age of the 239 included patients was 36 years (IQR 29-45), and 73% were females. The median CD4 cell count was 245 cells/μL (IQR 140 - 464).
INNO-LIA categorized samples as 122 HIV-1 positive, 69 HIV-2 positive and 48 HIV-1/2 dually positive. According to ImmunoComb, 122 were HIV-1, 49 HIV-2 and 68 HIV-1/2 dually infected. There was disagreement in 22 samples, of which 20 were typed HIV-2 infected by INNO-LIA but HIV-1/2 dually infected by ImmunoComb. None of these 20 samples had detectable HIV-1 RNA and 10 (50.0%) had detectable HIV-2 RNA levels. These results are in accordance with the HIV-2 typing called by INNO-LIA but not with dual infection as called by ImmunoComb, as undetectable HIV-1 RNA in untreated dual infected patients is unlikely.
In two other samples disconcordantly typed HIV-1 and HIV-1/2 dually infected, HIV-1 RNA was detected whereas HIV-2 RNA was not. Thus, final type determination could not be concluded.
**Conclusions:** Both assays have been used as gold standards for HIV type discrimination in several studies. However, ImmunoComb overestimated the number of HIV-1/2 dually infected samples and HIV RNA measurements did not disprove any INNO-LIA results.

## CD4 measurement (including point of care diagnostics)

### THPEB043

#### Accurate and precise performance of the BD FACSVia™ system for determination of CD4 cell count and %CD4 cell concentration

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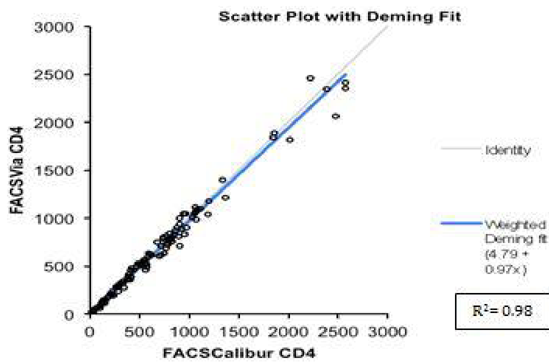
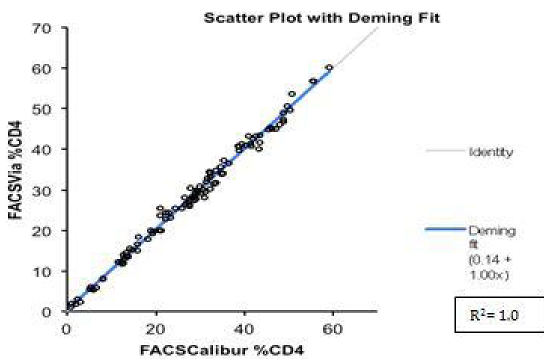
**Background:** An accurate, precise determination of CD4 cell count and %CD4 cell concentration is essential for quality care of HIV-infected individuals. The BD FACSVia™ system,* a new, easy-to-use flow cytometer, designed for clinical settings such as reference and district hospitals, to maintain continuity of quality testing. It features a lightweight, compact design with fixed alignment and pre-optimized detector settings to simplify testing and reduce cost-of-operation. This abstract describes the analytical performance of this system tested against the BD FACSCalibur™ predicate cytometer.
**Methods:** A study compared the BD FACSVia system to BD FACSCalibur system results. Accuracy was evaluated by testing venipuncture samples from 104 HIV-infected individuals (Biocollections, Florida, USA) using BD Tritest™ CD3/4/45 with BD Trucount™ tubes for CD4 cell count and %CD4 cell concentration on both systems. Precision was evaluated in a 21-day study using commercially available CD4 controls and following CLSI EP5 A3 guidelines. Deming regression was used to compare the two methods.
**Results:** Deming regression for absolute CD4 cell count showed an $R^2$ of 0.98 and a slope of 0.97 (Figure 1).




*[Figure 1. Specimens Tested for Absolute CD4 by BD FACSVia and FACSCalibur]*

Deming regression for %CD4 cell concentration showed an $R^2$ of 0.99 and a slope of 1.0 (Figure 2).




*[Figure 2. Specimens Tested for %CD4 by BD FACSVia and BD FACSCalibur]*

BD FACSVia precision studies showed %CVs for CD4 cell counts and % CD4 concentration of 8% and 6%, respectively.
**Conclusions:** The accuracy of CD4 cell count and %CD4 cell concentration using the new BD FACSVia system is consistent with BD FACSCalibur/Tritest performance.
*Product not yet available for sale. For Investigational Use Only.

### THPEB044

#### CD4 variability in Malawi: Implications for continued use of a CD4 threshold of 500 cells/mm³ versus universal eligibility for antiretroviral therapy

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**Background:** Despite WHO recommendations for universal antiretroviral therapy (ART), many resource-constrained countries may continue to use CD4 threshold to determine eligibility. Given the uncertainty about the ability of a single CD4 count to accurately classify a patient as ART eligible, we sought to understand the extent to which CD4 variability results in misclassification at a CD4 threshold of 500 cells/mm³.
**Methods:** We performed a prospective study of CD4 variability in Malawian HIV-infected, ART-naive, WHO Stage 1or 2, non-pregnant adults. CD4 counts were performed daily for 8 consecutive days. We fit a Bayesian linear mixed effects model of log-transformed CD4 cell counts to the data. Using samples from the posterior distribution, we employed Monte Carlo approximations to estimate misclassification rates for different observed values of CD4 based on different numbers of repeated measurements. The misclassification rate was defined as the conditional probability of the true CD4 being below 500 cells/mm³ given a geometric mean of N measurements being above 500 cells/mm³.
**Results:** Fifty patients were enrolled from two sites yielding 387 samples. The median age was 33.5 years (IQR 27.5, 40.0) and 34 (68%) were female. Misclassification rates were < 1% when the observed CD4 counts were ≤250 cells/mm³ or ≥750 cells/mm³. Rates of misclassification were high at observed CD4 counts between 350-650 cells/mm³, particularly when a single measurement was used (up to 46.7%). Repeated CD4 measures resulted in decreases in misclassification rates with the largest benefit observed at CD4 counts of 350-650 cells/mm³.

| Observed CD4 (cells/mm³) | Misclassification Rates % (95% Credible Interval) [illegible] | | | | |
|---|---|---|---|---|---|
| | N=1 | N=2 | N=3 | N=4 | N=5 |
| [illegible] | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |
| [illegible] | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |
| [illegible] | <0.1 (<0.1, 0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |
| [illegible] | 5.8 (2.3, 10.7) | 0.8 (0.1, 1.7) | 0.1 (<0.1, 0.3) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |
| [illegible] | [illegible] | 34.8 (16.2, 57.2) | [illegible] | 21.8 (6.7, 46.9) | 17.3 (3.8, 41.9) |
| [illegible] | 15.8 (7.3, 28.9) | 13.5 (3.6, 25.1) | 11.5 (1.8, 21.2) | [illegible] | 8.5 (0.8, 20.4) |
| [illegible] | 4.1 (1.3, 7.7) | 1.2 (0.1, 2.8) | 0.4 (<0.1, 1.1) | 0.1 (<0.1, 0.4) | <0.1 (<0.1, 0.3) |
| [illegible] | 0.6 (0.1, 1.8) | 0.1 (<0.1, 0.4) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |
| [illegible] | 0.3 (<0.1, 0.8) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |
| [illegible] | <0.1 (<0.1, 0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) | <0.1 (<0.1, <0.1) |

*[Table. Misclassification Rates (%) by Observed CD4 Based on the Geometric Mean of N Measurements]*

**Conclusions:** Our data show that ART eligibility based on a single CD4 count results in highest risk of misclassification when CD4 counts are in the range of 350-650 cells/mm³. Given the benefits of early ART, countries should weigh the costs and complexity of CD4 testing using a 500 cell/mm³ threshold against the cost savings and public health benefits of universal eligibility.

### THPEB045

#### Implementation and validation of PIMA CD4 program in Ukraine

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**Background:** The Fast-Track treatment targets are known as the 90-90-90 targets that refer to the pathway by which a person is tested, linked and retained in HIV care, and initiates and adheres to antiretroviral drugs. Despite the changes in the national HIV treatment protocol on increasing the index of CD4-lymphocytes as one of the most important criterion in making the decision to start ART to 500 cells/µL, CD4 definition remains relevant for MARPs.
**Description:** To scale up PWIDs' linkage to care, the PIMA point-of-care (POC) CD4 testing has been implemented within the framework of the GFATM program in Ukraine and the Cooperative Agreement between the USCDC and the ASM funded

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by PEPFAR. Alliance procured 30 Alere Pima CD4 analyzers. Analyzers were distributed to regional AIDS centers, mental hospital, general hospitals, medical units of State Penitentiary Service in 17 regions of Ukraine.
**Lessons learned:** PIMA CD4 program was launched with PIMA analyzers validation provided by National Reference Laboratory. With technical support from the ASM 4 trainings on the PIMA Analyzer utilization; 2 trainings on PIMA CD4 program management; 1 training on the role of case managers in PIMA program were conducted. Guidelines for PIMA CD4 testing with SOPs for method and communication algorithm were developed. Proficiency Testing for PIMA CD4 count was established, 93.1% of POC received correct results. PIMA CD4 testing at POC started in November 2014. Target group includes MARPs who: got positive test results for HIV first time; already got confirmed HIV-positive result; are registered at AIDS-center and don't receive ART. 15545 patients were tested for PIMA CD4 T-lymphocytes; mean count was 351 cells/µL. It showed that mostly of HIV infection cases were detected at late stages of disease. The average number of days from receiving positive result of HIV rapid test till ART start is about 60 days. After integration PIMA CD4 test initiation and beginning of ART took about 15 days.
**Conclusions/Next steps:** First results showed that PIMA POC CD4 testing and the interaction between HCIs and NGOs can improve HIV-infected PWID linkage to care. Next steps will be introduction of the mainstream PIMA analyzers use in mobile clinics and VCT sites.

## HIV RNA and HIV DNA assays (including point of care platforms)

### THPEB046

#### Increasing access to routine viral load with nearly point-of-care SAMBA-1: outcomes from a decentralised HIV program in Malawi

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**Background:** Viral load (VL) testing is key for timely provision of intensive adherence counselling or switching treatment regimen of suspect failures. From August 2013, Médecins sans frontières implemented gradually in 4 decentralised sites and 1 hospital of Chiradzulu district (Malawi) the semi-quantitative (1000 copies threshold) VL test with SAMBA-1, a nearly point-of-care (POC) system. The protocol recommends 2 follow-up tests after a high VL before a change in ART regimen for those remaining high. The objective is to review the VL cascade and identify challenges with VL monitoring.
**Methods:** We describe sequence of VL tests performed between August 2013 and December 2015 in five ART-treatment sites on first line ART-patients with at least 1 VL test, up-to 1 year after the first high VL.
**Results:** Over the study period, 13,675 patients had a VL test, among which 1,611 (11.8%) had a high VL. VL coverage ranged from 60 to 81% depending on POC implementation. Among patients with high VL, 1,146 (71.1%) had follow-up tests. Median time between tests was 3.2 months [IQR 2.8-4.6] and clinical review was same day for over 80% of tests in decentralised sites. Among the 1,146, 354 (30.9%) suppressed at 2nd test and 94 suppressed at 3rd test giving an overall suppression of 39.1% and a marginal gain of 11.3%. A total of 381 patients remained with high VL at 3rd test and 259 (68.0%) were switched to 2nd line regimen in a median time of 1.0 month [IQR 0-3]. Second VL test was missing for 465 patients and third one for 317. Among these, over 80% were still followed on 31/12/2015.
**Conclusions:** Good treatment adherence and VL coverage were observed. Use of POC VL demonstrated short turn-around time for clinical review. However VL follow-up of suspect failures remains a major challenge. Further the VL algorithm of 3 tests showed minimal gain in virological suppression whilst a large number of patients remained on a potentially failing regimen.
One follow-up test at 3 months after high VL seems sufficient to confirm treatment failure. This will simplify the process and may lead to improvement in VL test monitoring and HIV treatment outcomes.

## Drug resistance testing

### THPEB047

#### Gag-PR interplay and HIV-1 PI resistance in the Swiss HIV Cohort

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**Background:** HIV resistance against protease inhibitors (PIs) is typically characterized by the accumulation of mutations in the viral protease (PR). However, the Gag polyprotein, natural substrate of PR, intricately interacts with PR, also on the way of selecting for therapy resistance.
Since current genotyping algorithms generally analyze only the PR gene itself to predict the degree of PI resistance, we set out to investigate the role of Gag in PI resistance by assessing the mutational patterns observed in Gag-PR under antiretroviral therapy.
**Methods:** Data sets were collected from routine diagnostics of 369 PI treatment-experienced (PI-TE) and 521 PI treatment-naïve patients infected with subtype B HIV-1 at the cohort enters in Basel and Zurich. Each set included Gag C-terminal sequences (up to 140 AA), along with protease sequences and treatment history. Fisher's exact test with significance level alpha=0.05 was used for linking PI treatment to changes in Gag. Pairwise associations between selected mutations were identified in PI-TE samples.
**Results:** We assessed the prevalence of 49 Gag mutations that have previously been reported to associate with PI-exposure or -resistance: Among the PI-TE samples 82.4% carried ≥1 such Gag mutations. 17.9% of all PI-TE samples had mutations in Gag that had been experimentally proven to decrease PI susceptibility either alone or in combination with PR resistances.
We also report novel associations of A360S/P (OR=6.3), Q369L (OR=5.5), T427D/N (OR=2.9), E467V/K (OR=4.8) to PI exposure, and specifically of T427D/N to LPV (OR=3.1), E467K to NFV (OR=3.5), Q474H (OR=3.5) and Y484P to DRV. Some of these mutations could potentially influence Gag processing through altering p6 phosphorylation.
Additionally we deciphered the development of resistance mutational patterns that include the observed mutations and obtained first phenotypic evidence of fitness-compensating role of T427D and previously described mutations S451N and R452S.
**Conclusions:** Principles of collecting and structuring comprehensive data sets on mutations in Gag have been implemented and help to improve current genotypic algorithms. This study contributes to the deeper understanding of PI resistance by providing additional details on clinical relevance, development, and interplay of Gag and PR resistance patters.

### THPEB048

#### How accurate is the WHO viral load-based first-line ART failure determination algorithm? Evidence from southern Swaziland

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**Background:** HIV drug-resistance (HIVDR) testing is used to determine the need for anti-retroviral treatment (ART) switching and make informed decisions on drug selections in resource-rich countries. However, the high costs and very limited testing capacities limit its routine use in resource-limited settings. Therefore, WHO recommends treatment switching when virologic failure (VF) is detected, defined as two consecutive viral loads (VL) ≥1000 copies/ml despite intensive adherence counselling. We aimed to assess the performance of the WHO VL algorithm in rural Swaziland to predict HIVDR and the need for treatment switching.
**Methods:** From 08/2013 to 10/2014, dried blood spot (DBS) samples from patients (aged ≥18 years) on ART and with VF were genotyped using ATCC kits at the resistance testing laboratory at CDC, (Atlanta) and , DR mutations were interpreted with the Stanford HIVdb algorithm. We combined all levels of DR against first-line

ART (lamivudine (3TC) with zidovudine (AZT)/ tenofovir (TDF) and nevirapine (NVP)/ efavirenz (EFV)) and the second-line drug lopinavir/ritonavir (LPV/r), and evaluated the positive predictive value (PPV) of the WHO VL algorithm to accurately identify patients with DR requiring treatment switching.
**Results:** Overall, 135 DBS samples were successfully genotyped and 123 (56.2%) were females. Fifty nine (43.7%) were on AZT/3TC/NVP, 23 (17.0%) on AZT/3TC/EFV, 13 (9.6%) on TDF/3TC/NVP and 40 (29.6%) on TDF/3TC/EFV. AZT resistance in the four regimens ranged from 17.5 - 74.6% (p< 0.001), 3TC from 85.0 - 93.2% (p=0.569), TDF from 47.8 - 77.5% (p=0.027) and for NVP and EFV combined from 87.5 - 94.9% (p=0.623). Of the 53 patients receiving TDF, 12 (22.6%) showed resistance against AZT and none against LPV/r. Of the 82 patients receiving AZT, 40 (48.8%) had resistance against TDF and one (1.2%) against LPV/r. The overall PPV was 91.9% and ranged from 87.5% (p=0.5986) for TDF/3TC/EFV to 94.9% (p=0.6477) for AZT/3TC/NVP.
**Conclusions:** This study demonstrated high accuracy of the WHO VL switching algorithm in predicting HIVDR to the current first-line ART regimens. In our setting following a public health approach, most patients failing their first-line regimens may not require DR testing for diagnosis and confirmation of virologic treatment failure.

## THPEB049

### A POINT MUTATION RESISTANCE ASSAY TO OPTIMIZE HIV-1 SUBTYPE C ANTIRETROVIRAL THERAPY IN INDIA

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**Background:** HIV guidelines recommend tenofovir in first/second line therapy. Upon failure, regimens may be optimized by genotyping. Conventional genotyping (Sanger) is expensive and typically unavailable for care in India and other resource-limited settings,where nucleos(t)ides combinations for new regimens are limited. Point mutation assays can be subtype/region-specific due to genomic variability. We evaluated whether a simple, lower-cost point mutation assay for tenofovir-associated K65R mutation can help optimize regimens and identify patients who may benefit from zidovudine addition.
**Methods:** At YRG-CARE, Chennai, India, we developed an allele specific PCR (ASPCR) point mutation assay for K65R, tested it in RNA and DNA from drug naïve and tenofovir-treated, HIV-infected, YRG-CARE patients, and compared results to Sanger sequencing, to evaluate its detection as a minority variant (>5%). Resistance interpretations were with Stanford Database tools.
**Results:** Participants included 83 adults (≥18 years); 37 drug naïve (64% female; median age 26 years; viral load 62,053 copies/mL) and 46 on tenofovir-based 1st-line (n=26) or 2nd-line (n=20) regimens (54% female; median age 38 years; viral load 102,920 copies/mL). All sequences were subtype C. K65R was not detected among naïves by Sanger, while of 46 patients failing tenofovir, 96% and 89% had reverse transcriptase drug resistance, 85% and 67% dual-class, and 26% and 17% had K65R in RNA and DNA, respectively (Table). ASPCR detected >5% K65R in 1/37 (3%) RNA and DNA naïves, and 20% of RNA (those detected by Sanger and additional 2) and 26% DNA (those detected by Sanger and additional 8) treated. Of 14 patients with high-level predicted resistance to tenofovir in RNA and 8 in DNA by Sanger,12 (86%) and 8 (100%) were identified by ASPCR.
**Conclusions:** An ASPCR point mutation assay may provide a simple, lower cost approach in resource limited settings, to identify K65R and tenofovir resistance. In those patients with evidence of K65R, zidovudine may be added in the next regimen for additional activity. The significance of K65R minority variant detection >5% by ASPCR (below the Sanger >20% threshold) remains to be determined.

## THPEB050

### VERY LOW PREVALENCE OF PRIMARY RESISTANCE MUTATIONS TO INTEGRASE INHIBITORS AMONG PATIENTS INFECTED WITH HIV-1 IN A SINGLE CENTRE (NORTHERN ITALY)

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**Background:** Genotypic resistance testing (GRT) for integrase strand inhibitor (INSTI) is not currently recommended before antiretroviral therapy (ART) initiation, due to low prevalence of primary resistance. Nonetheless, increase in INSTI use suggests that continuous surveillance is advisable.
**Methods:** All consecutive HIV-infected patients naïve to ART, undergoing GRT between January 2012 and May 2015 in Monza (Italy), were evaluated for the presence of INSTI resistance mutations. Mutations in the integrase region were assessed using a commercially available kit (Trugene OpenGene, SIEMENS). Antiretroviral resistance was estimated using the Stanford HIV drug resistance database. HIV subtype was assigned basing on *pol* gene sequences.
**Results:** One-hundred-eighty-two naïve patients were included (82% male, mean age 40y [SD:11.8y], 35% MSM, 71% subtype-B). Among non-B subtypes, the most prevalent were CRF02_AG (10%) and C (6%). Major INSTI resistance mutations were detected in only one patient, whose virus harboured S147G and the accessory mutation H51Y. Other accessory mutations (H51Y, T97A, V151I, E157Q) were found in 10 additional patients. Moreover, the following amino-acid substitutions, not previously associated with exposure or reduced susceptibility to INSTI , were found at relevant codon positions listed by the Stanford HIV database: H51S, L68I, L74I/V, T97P/S, E138D, G163E/Q/T/V/X. Mutation patterns interpretation resulted in high-level resistance to raltegravir in 1/182 patient (0.5%). Low-level or potential-low-level resistance to raltegravir, dolutegravir or elvitegravir was detected in 8 (4.4%), 9 (4.9%) and 2 (1.1%) patients, respectively.

| Patient | Subtype | Major Mutations | Accessory Mutations | Substitutions in relevant positions | RAL | DTG | EVG |
|---|---|---|---|---|---|---|---|
| Pt 1 | B | S147G | H51Y | G163E | High-level resistance | Low-level resistance | Potential Low-level resistance |
| Pt 2 | B | - | T97A | - | Potential Low-level resistance | Low-level resistance | Susceptible |
| Pt 3 | B | - | E157Q | - | Low-level resistance | Low-level resistance | Susceptible |
| Pt 4 | B | - | V151I | - | Susceptible | Susceptible | Susceptible |
| Pt 5 | B | - | E157Q | L74I | Low-level resistance | Low-level resistance | Susceptible |
| Pt 6 | B | - | E157Q | - | Low-level resistance | Low-level resistance | Susceptible |
| Pt 7 | B | - | H51Y | - | Low-level resistance | Low-level resistance | Potential Low-level resistance |
| Pt 8 | G | - | T97A | L74I | Potential Low-level resistance | Low-level resistance | Susceptible |
| Pt 9 | B | - | V151I | L74I | Susceptible | Susceptible | Susceptible |
| Pt 10 | G | - | E157Q | L74I, G163E | Low-level resistance | Low-level resistance | Susceptible |
| Pt 11 | CRF02_AG | - | T97A | - | Potential Low-level resistance | Low-level resistance | Susceptible |

*[Mutational pattern and predicted susceptibility to integrase inhibitors of viruses harbouring major or accessory mutations in the integrase region]*

Despite a steady increase in INSTI prescription (from < 10% in 2012 to >40% in 2015, in our cohort), the proportion of patients harbouring major or accessory INSTI mutations did not significantly change across time (8.2%, 4.4%, 4.3% and 5.9% in 2012, 2013, 2014 and 2015, respectively).
**Conclusions:** In this single centre analysis, primary resistance to INSTI was rare but not absent. Local and global continuous surveillance are advisable as use of INSTI becomes more widespread.

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## Clinical Trials: Phase I/II

### THPEB051

### Antiviral activity and safety of ABX-464 in HIV-infected treatment-naive patients

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**Background:** ABX464 is a first-in-class antiviral drug candidate for the treatment of patients with HIV-infection. It is an orally available small molecule that blocks HIV replication through an entirely novel mechanism, inhibition of Rev activity. Preclinical data in humanized mice showed that ABX 464 monotherapy had an antiviral effect which was sustained after treatment interruption (Campos et al, Retrovirology 2015 12:30) A prior food-effect study demonstrated a 3-fold increase in parent drug exposure when administered with food without a significant impact on the active glucuronide metabolite.
**Methods:** The objective of this study was to evaluate the safety of ABX-464 at ascending doses versus placebo in HIV-infected treatment-naive patients. Patients were randomized into successive cohorts of 8 patients where 6 received 14-or 21 days of ABX 464 and 2 placebo. Patients from Mauritius and Thailand were included in the study after confirmation of HIV infection and no history of prior antiretroviral therapy. At day 0, patients received the first dose of ABX-464/ placebo in a once daily schedule. Safety assessments and laboratory parameters were recorded throughout the study. After completion of each cohort, a DSMB reviewed safety data and recommended whether the next cohort be initiated at a higher dose. Successive cohorts received 25, 50, 75, 100 and 150 mg QD. The 25, 50 and 100 mg.cohorts took drug fasting for 21 days, the 75 and 150 mg cohorts took drug with food for 14 days.
**Results:** Safety and Tolerability : No grade 3 or 4 events were noted. No patient stopped the study due to adverse events and all patients completed at least 14 days of treatment. Viral load reduction was observed in 3/12 patients in the 75 and 100 mg cohorts and 4/6 in 150 mg cohort; there were no significant viral load changes in the 6 placebo patients from these cohorts.
**Conclusions:** ABX 464 was well tolerated in this first study in HIV-infected patients. ABX 464 monotherapy showed early antiviral activity in HIV-infected treatment naïve patients. These results warrant the further planned development of this novel acting antiretroviral drug.

### THPEB052

### Satisfaction, tolerability, and acceptability of cabotegravir (CAB) + rilpivirine (RPV) long-acting therapy: LATTE-2 results

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**Background:** CAB and RPV are long-acting injectables (LAI), in Phase 2b development for treatment of HIV-1. LATTE-2 evaluated an intramuscular (IM) regimen of CAB LA + RPV LA and assessed the safety and efficacy of 2-drug IM antiretroviral therapy (ART), compared to 3-drug oral ART (CAB + ABC/3TC). Secondary objectives include tolerability, satisfaction, and acceptability of CAB LA + RPV LA.
**Methods:** LATTE-2 is an open-label study in ART-naïve HIV infected adults. Patients who were virologically suppressed with oral CAB+ABC/3TC during the 20-week Induction Period (IP) were randomized 2:2:1 to IM CAB LA + RPV LA every 4 weeks (Q4W), every 8 weeks (Q8W), or remained on daily oral CAB + ABC/3TC (PO) in the Maintenance Period (MP). Acceptability and tolerability were self-assessed with the HIV-Medication Questionnaire (HIV-MQ) while satisfaction was measured with the adapted HIV-Treatment Satisfaction Questionnaire (HIV-TSQ). The HIV-TSQ and HIV-MQ were administered at Wks -16 and -4 (during IP); and at Day 1, Wk8, and Wk32 during MP.
**Results:** LATTE-2 included 309 patients. In the MP, 95% (Q8W) and 94% (Q4W) of patients maintained HIV-1 RNA < 50 c/mL at W32 compared to 91% on PO (ITT-ME). Drug-related AEs included injection site pain (92% of patients on IM arms) with 99% of injection site reactions (ISRs) being mild (82%) or moderate (17%), lasting a median of 3 days and decreasing in frequency after the first injection. HIV-MQ results show that 151/215 (70%) with CAB LAI found no/very little pain through Wk 32; similar results (71%) were observed with RPV LAI. HIV-TSQ showed that most patients found the Q8W 101/106 (95%) or Q4W 93/100 (93%) LAI regimen much more convenient than the PO regimen. At Wk 32, patients were significantly more satisfied with LAI treatment in both the Q4W and Q8W arms compared to PO treatment in the IP on all items of the HIV-TSQ, including convenience, flexibility, and ease of use.
**Conclusions:** While ISRs occurred in most patients receiving LAI, questionnaire results suggest that they had little impact on the patients and they experienced a high level of overall satisfaction with and preference for LAI on dimensions in the HIV-TSQ.

## Clinical Trials: Phase III

### THPEB053

### Association between NNRTI exposure, virological suppression and emergence of resistance in HIV-infected patients on tuberculosis treatment: a substudy from the CARINEMO-ANRS12146 trial

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**Background:** The CARINEMO randomized clinical trial included 570 HIV-tuberculosis co-infected patients in Mozambique with the objective of comparing two non-nucleoside reverse transcriptase inhibitors (NNRTIs) in treatment naïve patients. The non-inferiority of the nevirapine (NVP) compared to efavirenz (EFV)-based antiretroviral therapy was not shown. We explored the relationship of NNRTI concentrations with virological suppression and the possible emergence of resistance mutations at week 48.
**Methods:** Participants were randomized to NVP or EFV (no lead-in-dose) and were followed for 48 weeks. At inclusion and every three months, blood was collected to measure HIV-RNA. Plasma concentrations of NNRTI were measured 12 hours after administration at weeks 12, 24, 36 and 48.
Resistance mutations to (N)NRTI were determined in all patients with HIV-RNA counts greater than 400 copies/mL at week 48. Viral suppression was defined as an HIV-RNA below 400 copies/mL, and viral escape as an HIV-RNA above 400 copies/mL at a given timepoint. Percentiles of drug concentrations were calculated for each NNRTI.
**Results:** Among the 570 randomized patients, 470 (82%) had an HIV-RNA result at week 48. Patients who modified their allocated NNRTI during the conduct of the trial (n=21), and patients with NNRTI concentrations below the limit of quantification at all timepoints (n=3), were excluded, leaving 446 for these analyses. At week 48, 54 (12.1%) patients had a viral escape and 34 patients had a virus with resistance mutations ((N)NRTI) detected.
Among patients with virological escape at week 48, 18 (40.9%) had a drug concentration below the 25th percentile at week 12. Among patients who had a suppressed HIV-RNA at week 48, only 78 (23.2%) were below the 25th percentile at week 12.
Low drug exposure at week 12 (below the 10th percentile) was associated with virologic escape (OR 2.6, 95%CI [1.2; 6.0]) and also with the emergence of (N)NRTI mutations (OR 5.7 95%CI [2.4; 13.9]) at week 48.
**Conclusions:** The NNRTI level of exposure even during the first 3 months of treatment translates into changes of virological suppression and low measurable concentrations leads to emergence of resistance mutations.

## Clinical Trials: Post-licensing

### THPEB054

### The role of plasma HIV RNA and T cell subset counts/percent and ratio in explaining the benefit of immediate antiretroviral therapy (ART) initiation in HIV+ individuals with high CD4+ counts

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**Background:** The START study demonstrated a 57% risk reduction in serious AIDS, serious non-AIDS events or death (primary endpoint) with immediate versus deferred ART. Most events occurred at CD4+ counts >500 cells/mm$^3$. We investigated the extent to which treatment differences in CD4+, CD8+ and plasma HIV RNA (VL) explained the clinical benefit of immediate ART.

**Methods:** ART-naïve HIV+ participants with CD4+ >500 cells mm$^3$ were randomised to immediate (n=2326) or deferred ART (n=2359) with assessments every 4 months for CD4+, CD8+ counts/percent, and VL. We estimated average biomarker levels using longitudinal mixed models, and hazard ratios (HR, Immediate/Deferred ART) using Cox models with and without adjustment for most recent (latest) biomarker levels.

**Results:** Over mean follow-up of 3 years, 138 participants experienced primary events. Average levels of CD4+, CD8+ and VL were 194 cells/mm$^3$ higher, 189 cells/mm$^3$ lower, and 1.2 $\log_{10}$ copies/mL lower, respectively, with immediate compared to deferred ART. Latest CD4+ count was modestly associated with the primary endpoint in the deferred arm ((HR=0.87 per 100 cells higher; 95% CI: (0.79, 0.97), p=0.01) but not in the immediate arm (HR 0.98 (0.88, 1.11) p=0.78). In contrast, higher VL, higher CD8+, CD8+% and lower CD4+/CD8+ ratio were strong predictors of the primary endpoint regardless of treatment group. The association with CD8+ count and CD4+/CD8+ ratio remained strong after adjusting for VL (data not shown). As shown in the table, treatment differences in CD4+%, CD8+%, or CD4+/CD8+ ratio during follow-up predicted less than half the observed risk reduction conferred by immediate ART.

| Adjustment[a] | HR(Immediate/Deferred ART) after adjustment for latest marker levels HR | 95% CI | P | Proportion of treatment effect explained (PTE)[b] Estimate | (95% CI) |
|---|---|---|---|---|---|
| No adjustment | 0.43 | (0.30, 0.62) | <0.001 | - | - |
| CD4+ cell count | 0.52 | (0.35, 0.76) | 0.001 | 0.15 | (0.00, 0.42) |
| CD4 percent | 0.66 | (0.44, 0.98) | 0.041 | 0.40 | (0.18, 0.90) |
| CD8+ cell count | 0.50 | (0.34, 0.72) | <0.001 | 0.12 | (0.05, 0.27) |
| CD8 percent | 0.62 | (0.42, 0.92) | 0.016 | 0.33 | (0.14, 0.71) |
| Log CD4/CD8 ratio | 0.69 | (0.46, 1.02) | 0.065 | 0.45 | (0.20,1.02) |
| Log HIV RNA | 0.98 | (0.62, 1.55) | 0.937 | 0.97 | (0.40, 2.44) |

[a] Biomarkers were considered singly in the adjustment.
[b] PTE = 1 - (unexplained risk reduction/net risk reduction). For each biomarker, the unexplained risk reduction is one minus the adjusted HR. Net risk reduction (0.57) is one minus the unadjusted HR.

*[Proportion of treatment benefit (immediate vs deferred ART) that could be explained by treatment differences in laboratory markers]*

**Conclusions:** In this population, latest CD8+ count and percent and CD4+/CD8+ ratio are better predictors of clinical outcome than latest CD4+ count. The reduction in incidence of the primary endpoint conferred by Immediate ART could be explained mostly by the reduction in VL and, to a lesser extent, by increase in log CD4/CD8 ratio.

## Timing of therapy initiation

### THPEB055

### Treatment initiation at higher CD4s: challenges to HIV care in four African countries

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**Background:** Immediate initiation of antiretroviral therapy (ART), regardless of CD4 count, and routine monitoring of viral load (VL) improve clinical outcomes among HIV-infected individuals but can be difficult to implement in resource-limited settings. Evaluating the effectiveness of current mechanisms for ART initiation and VL monitoring can inform new strategies to facilitate best practices in resource-limited settings.

**Methods:** The African Cohort Study prospectively enrolls adults at 11 PEPFAR-supported facilities in Uganda, Kenya, Tanzania, and Nigeria. HIV management history and laboratory assessments were obtained at entry and every 6 months. We categorized participants into 3 groups by first available CD4: low (≤350 cells/mm$^3$), middle (351-500) and high (>500). Viral suppression (VS) was defined as VL <50 copies/mL. We evaluated demographics, incident illnesses, time from entry into HIV care to ART eligibility, and rates of VS at most recent visit using t-tests, Chi-squared tests, ANOVA and negative binomial regression to compare CD4 groups.

**Results:** Between January 2013 and September 2015, we enrolled 1732 HIV-infected adults (59% female) with a mean age of 39 years (SD 10). The low CD4 group included 62% of participants, middle 16%, and high 22%. Among those with a low CD4, 87% were WHO stage IV. Febrile illnesses were common (17.0/100 person-years [PY] in the low CD4 group, 15.2/100PY in the middle, 12.6/100PY in the high; p=0.61). All-cause hospitalizations were also common (8.1/100PY, 5.8/100PY, 9.1/100PY; p=0.63). Time from entry into care to ART eligibility varied by CD4 group with the low group having a mean (SD) of 0.21yrs (0.7), the middle 1.3yrs (1.7) and the high 2.2yrs (2.02) (p< 0.001). Rates of VS in those on ART were similar across CD4 groups with 74% in the low group, 80% in the middle and 80% in the high (p=0.057).

**Conclusions:** Despite expanded testing, enrollment into HIV care with advanced disease is common and delays in ART initiation exist. Once on ART, participants in our cohort achieve VS regardless of CD4 strata and differences in clinical events are not observed. Interventions are needed to engage HIV-infected individuals in care and initiate ART before CD4 declines are observed.

### THPEB056

### Immediate HIV treatment reduces mortality and improves long-term immune health: causal evidence on the real-world impact of immediate versus deferred ART in rural South Africa

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**Background:** Immediate initiation of antiretroviral therapy (ART) improves clinical outcomes and reduces mortality in randomized controlled trials. However, the effect of immediate ART under real-life conditions, where patients may have reduced adherence and retention in care compared to trials, is not well characterized. We present results from a large population-based longitudinal cohort in KwaZulu-Natal, South Africa, to investigate the effect of immediate ART initiation on all-cause mortality. We use a quasi-experimental regression discontinuity design that enables estimation of causal effects even in the presence of confounding.

**Methods:** All patients seeking care at the Hlabisa HIV Treatment and Care Programme between January 2007 and August 2011 with CD4 counts up to 350 cells/µl were included in the analysis (N=4,435). Patients were followed until December 2014. A

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regression discontinuity design was used to assess the intention-to-treat (ITT) effect of immediate versus deferred ART eligibility on all-cause mortality, HIV-related and HIV-unrelated mortality, and immune health (CD4 count). Exploiting the threshold rule for ART initiation (CD4< 200 cells/µL until August 2011), we used Cox proportional hazards models to compare survival for patients just above versus just below the threshold and mixed effects regression models to assess immune health.
**Results:** Among 4,435 index patients, 69.2% were female, 30.8% male, mean age was 33.9 years, and 2,751 (62.0%) were eligible for ART at presentation (CD4 count < 200 cells/µl). There were 935 deaths among the 4,435 individuals over 19,282 person-years of follow-up (incidence rate 4.8 deaths per 100 person-years, 95% CI 4.5 to 5.2). Immediate eligibility for treatment resulted in a 33% decrease in all-cause mortality mortality (HR=0.67, 95% CI 0.48-0.93). Effects were driven entirely by reductions in HIV-related mortality. Immediate eligibility led to a 75-cell advantage in CD4 counts, which persisted at five years.
**Conclusions:** We demonstrate large reductions in mortality and long-run gains in immune health in a population-based cohort study with immediate eligibility for ART. Previous clinical trials in sub-Saharan Africa have not been powered to detect an effect of immediate ART initiation on mortality. These results provide support for scaling up immediate ART in sub-Saharan Africa.

## THPEB057

### UPTAKE AND IMPLEMENTATION OF THE WHO 2015 CONSOLIDATED ARV GUIDELINES: PROGRESS TOWARDS TREAT ALL

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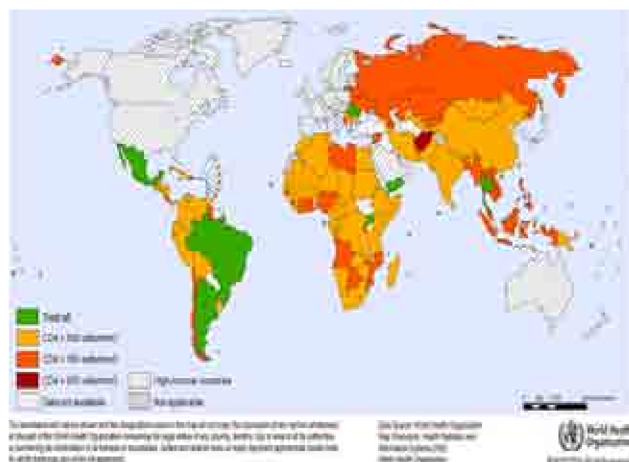
**Background:** Progress towards the ending the AIDS epidemic by 2030 depends on adoption and implementation of global guidelines to optimally treat all people living with HIV. With the *2015 Consolidated ARV Guidelines*, WHO successfully updated and launched new policy recommendations on the clinical and service delivery aspects of HIV treatment and care, and raised the bar to treat all PLHIV.
**Methods:** WHO operates a country intelligence monitor to better follow policy trends at country level. Data from country surveys, MoH HIV focal points, and Global AIDS Response Progress Reporting (GARPr) have been triangulated and validated for the adoption of priority HIV treatment policies within 144 LMIC and 20 WHO focus countries for Fast Track support.
**Results:** Data are presented for 144 LMIC and 20 fast track counties, respectively. 54% of all LMIC and 80% of fast track countries adopted a CD4 count threshold of ≤500 cells/mm3, while 7% and 10% have moved to a treat all policy regardless of CD4 cell count. Adoption and implementation of treatment eligibility varied by WHO region (Figure 1).



*[Figure 1. Uptake of WHO Policy for ART initiation threshold among adults and adolescents living in LIMC, 2015]*

83% and 100% adopted PMTCT Option B/B+; 80% and 95% adopted TDF + 3TC (or FTC) + EFV as the preferred first-line therapy, 60% as a fixed dose combination (FDC); and 63% and 70% implement routine viral load monitoring; all other fast track countries implement targeted viral load monitoring. An update on the country implementation of these policies will be available in April 2016.
**Conclusions:** With the *2015 Consolidated ARV Guidelines*, WHO has rapidly updated global guidance to reflect new science regarding the benefit of early HIV treatment. There is broad support for universal treatment among fast track countries and many are committed to adopting 'Treat All' policies; challenges to full implementation remain. Differentiated service delivery models are key to improving efficiency while maintaining quality as programs expand.

# FIRST-LINE THERAPY

## THPEB058

### SAFETY AND TOLERABILITY OF TENOFOVIR-CONTAINING ANTIRETROVIRAL THERAPY IN WOMEN WHO ACQUIRED HIV IN TWO TENOFOVIR GEL TRIALS

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**Background:** We assessed whether women who acquired HIV while receiving tenofovir gel pre-exposure prophylaxis can be safely treated with tenofovir-containing antiretroviral therapy (ART).
**Methods:** Between May 2011 and October 2014, women who acquired HIV from two tenofovir gel trials (CAPRISA 004 and CAPRISA 008 studies) were recruited for participation in the CAPRISA 009 study when eligible for ART (CD4 count < 350 cells/µl, pregnancy or AIDS-defining illness). Women were randomised to tenofovir-containing (tenofovir, lamivudine/emtricitabine, efavirenz) or tenofovir-sparing (zidovudine, lamivudine/emtricitabine, efavirenz) antiretroviral treatment regimens. The proportion with adverse events and drug switches were compared.
**Results:** Fifty-nine women, median age 28 [Interquartile range (IQR) 25-31], were enrolled and followed-up for median 18 months (IQR 6-24). Twenty-nine women (7 tenofovir gel exposed) were randomized to a tenofovir-containing and 30 (9 tenofovir gel exposed) to a tenofovir-sparing regimen. Twenty-two (37%) women, 6 with prior tenofovir gel exposure, experienced at least one grade 3 or 4 adverse event. Of the 37 adverse events reported, 24 (65%) occurred in women receiving a tenofovir-sparing regimen with 11 (46%) being possibly or probably related to study-initiated ART in this arm (3 efavirenz-related, 6 zidovudine-related, 2 other drugs). Three of the zidovudine-related adverse events were related to bone marrow suppression, requiring hospitalisation in two cases. A total of 15 drug switches were required in 11 women; all on the tenofovir-sparing regimen (p< 0.001). There were 12 drug switches related to drug toxicities; 7 zidovudine-related toxicities (4 haematological, 2 metabolic, and 1 sleep disturbance), 3 efavirenz-related psychiatric toxicities and 2 general metabolic toxicities. Of the remaining 3 women with drug switches, 2 were due to poor compliance to the twice daily zidovudine regimen, and one was due to pregnancy. One death occurred in each arm, one suicide and one cardiac arrest, cause unknown.
**Conclusions:** These data show that tenofovir-containing ART was more tolerable in women who acquired HIV in tenofovir gel trials. Adverse events and drug switches for toxicity were frequent on the tenofovir-sparing regimen and close clinical monitoring is indicated in young women receiving this regimen.

# SECOND-LINE THERAPY

## THPEB059

### HYPERLIPIDEMIA IN HIV-INFECTED PATIENTS ON LOPINAVIR/RITONAVIR MONOTHERAPY IN RESOURCE-LIMITED SETTINGS

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**Background:** Cardiovascular disease (CVD) is an emerging concern for HIV-infected patients. Hyperlipidemia is a risk factor for CVD and a complication of protease-inhibitor-based antiretroviral therapy, but little is known about its incidence and risk factors in treated patients in resource-limited settings (RLS).

**Methods:** This is a secondary analysis of ACTG A5230 trial in which HIV-infected adults from India, Malawi, Tanzania, Thailand and South Africa, with virologic relapse on first line therapy were initiated on lopinavir/ritonavir (LPV/r) monotherapy. Hyperlipidemia was, a Grade 2+ elevated fasting total cholesterol (FTC≥240 mg/dl) or fasting triglycerides (FTG≥500 mg/dl) or calculated low density lipoprotein cholesterol (LDL≥160 mg/dl) based on measurements at weeks 12, 24, 48, 68 and 104. We evaluated factors potentially associated with quantitative lipid changes from baseline to week 12. These were age, sex, race, site, and baseline body mass index, CD4 cell count, HIV-1 RNA level, and lipids.
**Results:** 106 participants without hyperlipidemia at baseline started LPV/r; median age 39 years, 68% black African, 55% female. The cumulative incidence of hyperlipidemia at week 104 was 48% (95% CI: 36-58%). At week 12, there were significant mean increases from baseline in FTC (17 mg/dL, P<0.001) and FTG (104 mg/dL, P<0.001). In multivariable analysis, higher baseline FTC (P=0.044), FTG (P=0.025), Thai (P<0.001) or Indian sites (P=0.020) versus African sites were associated with increased risk of hyperlipidemia.
**Conclusions:** In HIV-infected adults in RLS initiating LPV/r, hyperlipidemia was common. Baseline lipid measurements and routine monitoring should be recommended in individuals starting LPV/r-based treatments with borderline high lipids.

## THPEB060

### SECOND LINE ART - ESTIMATED NEED VS ACTUAL INITIATIONS - GAP ANALYSIS

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**Background:** Free ART programme in India was rolled out in 2004 and currently over 9.20 lakh PLHIV receive ART at 520 ART centers. The Second line ART was introduced in 2008 at 10 Centers of Excellence and is currently initiated from 72 ART plus centers across the country. The PLHIV with suspected treatment failure are evaluated by an expert panel at these centers and are initiated on second line ART if Viral load is >1000 copies/ml. It is estimated from available literature that 3% of patients on first line need second line after 5 years on firstline ART. However programme data show that actual no. of PLHIV on second line (16920 as of October 2015) is much less than the estimated numbers (36,900; 3% of PLHA initiated first line ART, March 2015). A crude data analysis was undertaken to understand this gap.
**Methods:** An excel based format was circulated to 15 ART centers across 5 States to capture the baseline and serial CD4 of PLHIV receiving first line ART for more than 3 years. The ART centers were asked to randomly select 90-100 patients and provide these details. Data of 1,495 patients was collected and serial CD4counts were analyzed on WHO immunological failure criteria.
**Results:** Out of 1495 PLHIV, around 22.4% had one or more of criteria of immunological failure after data cleaning. Among these 8% had CD4 below baseline, 18% had more than 50% fall from peak value while 1% persistently had CD4 below 100/cmm. Nearly 4% of suspected immunological failure cases had multiple failing criteria.
**Conclusions:** This study provides a rough estimate of suspected failure and these PLHIV need to be assed for adherence level, existing OIs and any CD4 -VL discordance for confirming failure to first line. Nevertheless it indicates need for second line ART could be much higher than those currently receiving second line ART. There is need to build the capacity of human resource at ART center for timely identification of immunological failure and referral ; expand number of sites for second line initiation as well as to expand viral load testing early for identification of failure.

# THERAPY IN HIGHLY TREATMENT-EXPERIENCED PERSONS

## THPEB061

### ROLE OF EVG/COBI/FTC/TDF (QUAD) PLUS DARUNAVIR REGIMEN IN CLINICAL PRACTICE

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**Background:** Patients with prior failures, currently in complex suppressive ART, usually claim for an easier regimen. A combination of EVG/COBI/FTC/TDF (Quad) plus darunavir (DRV) 800 mg gives the opportunity of reducing significantly the number of pills while maintaining similar antiretroviral activity. Our objective is to assess the short term safety, efficacy of QUAD plus DRV and DRV levels.
**Methods:** All Quad plus DRV-treated subjects in our clinic were retrospectively collected since July 2014. Baseline and complete follow-up of each patient were entered into a database. Demographics, baseline CD4 cell count and viral load, reasons for new regimen use, change/end of QUAD plus DRV use and darunavir plasma levels while taking new regimen at least one month after initiating it were assessed. Paired analysis were explored.
**Results:** We included 20 participants, 47.9 years old, 75% men, 45% prior IDU, 66.7% AIDS stage, and 45% HCV co-infected. Median baseline and nadir CD4+ cell count were 539 and 122 cells/mm3, respectively. Median length of prior ART was 186 months with exposure to a median of 3.75 drug families. Six HIV strains (30%) presented darunavir-specific mutations (66% L33F and 33% I54L). Main reasons for prescribing new regimen were: simplification 55%, treatment intensification 20%, naive to ART and transmitted mutations 13.3%, and prior toxicity 6.7%. Only one (6%) was a treatment-naïve patient. 80% had HIV RNA level below 100 copies/mL. 30% of patients changed study therapy due to toxicity: 5 patients showed creatinine clearance worsening (4 ml/min mean decrease) and another person suffered from arthralgia. Daily number of pills decreased from 4.6 (SD 1.6) to 2. No significant changes were observed in lipid, hepatic, kidney profiles and CD4+ cell count after a median follow up of 10 months (4 months SD). 88% (15/17) of the patients with follow-up viral load data showed HIV-RNA below 50 copies/mL at week 24. Median darunavir concentrations were 4349 ± 3808 ng/mL in 14 patients. 85% showed adequate DRV concentrations (trough levels >400 ng/mL).
**Conclusions:** In clinical practice darunavir 800 mg once daily plus Quad Combo Tablet were used as a simplification regimen in highly treated patients, with adequate darunavir levels and viral response.

# SIMPLIFICATION (WITH ONE- OR TWO-AGENT REGIMENS) AND SWITCH STUDIES

## THPEB062

### SWITCHING FROM TRIPLE THERAPY WITH PROTEASE INHIBITORS PLUS TWO NUCLEOS(T)IDES TO DUAL THERAPY WITH PROTEASE INHIBITORS PLUS LAMIVUDINE FOR MAINTENANCE OF HIV VIRAL SUPPRESSION: A META-ANALYSIS OF EFFICACY AND SAFETY

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**Background:** Antiretroviral treatment simplification to protease inhibitor (PI/r) plus lamivudine (3TC) has shown to be safe and effective. We conducted a meta-analysis to assess the efficacy and safety of switching from triple therapy (TT) consisting of PI/r plus two N(t)RTIs to dual therapy (DT) with PI/r plus 3TC.
**Methods:** Electronic databases were searched for studies evaluating switching from TT to DT. Eligible patients were adults, with at least 3-months of suppressed viremia, without previous treatment failure, and negative Hepatitis B surface antigen. Randomized clinical trials and cohort's studies were included. Random-effect meta-analysis model was conducted to measure the proportion of achieving virological suppression. Analysis of changes in $CD4^+$ cell count, total cholesterol and estimated glomerular filtration rate (eGFR) were evaluated in both arms. The outcomes were reported in Risk Ratios (RRs) and standardized differences in means.
**Results:** We identified seven studies; three were randomized and four observational. A total of 928 patients were included, 357 continue the TT and 571 switched to DT. Of the 571 patients with DT; 272, 167 and 132 used ATZ/r, DRV/r and LPV/r as the PI/r, respectively. Tenofovir-based NRTI backbone was present in 71% of the patients before switching to DT. Meta-analysis found no statistically significant difference in efficacy (i.e. by intention-to-treat analysis with HIV RNA < 50 copies/mL) between DT and TT (RR 1.03; 95% confidence interval (CI) 0.97-1.10; $p = 0.27$; $I^2 = 0\%$). No significant differences for change in $CD4^+$ cell counts was observed between the two arms (standardized differences in means = 0.109 cells/mm3; p =0.341). DT was associated with an increase in both total cholesterol (standardized difference in means= 0.30 mg/dl; p=0.041) and eGFR (standardized difference in means = 0.2744 mL/min; p < 0.001) *vs* TT. Of the 571 assigned to DT, 61 (10.6%) developed virological failure (*vs* 15.4% in TT), but primary PI/r-associated mutations were not found.
**Conclusions:** Switching from TT to DT is non-inferior and is not associated with increased risk of resistance development in virologically suppressed HIV patients. However, there are mixed patterns of changes attributable to discontinuation of tenofovir component, which is known to reduce both total cholesterol and eGFR.

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## THPEB063

### EFFICACY OF A MAINTENANCE FOUR-DAYS-A-WEEK REGIMEN, THE ANRS162-4D TRIAL

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*Presenting author email: p.de-truchis@aphp.fr*

**Background:** Previous studies (FOTO, BREATHER) have given encouraging results with a 5/7days efavirenz-based maintenance regimen. Based on pilot experience (Leibowitch, FASEBJ-2015), we conducted a 48-week multicenter, open-label, single-arm prospective study evaluating efficacy and safety of a 4/7days maintenance therapy in HIV infected patients with controlled VL.

**Methods:** The main inclusion criteria were age>18 years; current regimen with 2 nucleoside analogs and either a boosted protease inhibitor PI/r or a NNRTI; no treatment modification in the last 6 months; VL< 50 c/ml for at least one year; no resistance mutation to the drugs in current regimen. Maintenance therapy used the same regimen, taken 4 consecutive days of each week. Virological failure (VF) was defined as VL>50 c/ml confirmed within 4 weeks between D0-W48. Patients were evaluated at D0, W4, W8, W12, W16, W24, W32, W40, and W48. The study was designed to show that the efficacy of the strategy >80%, assuming a success rate ≥ 90%, with a power of 87% and a 5% type-one error. Values are presented as median [range]. Adherence to therapy was assessed by questionnaires, pill count, drug concentrations, and MEMS caps for a subgroup of patients.

**Results:** One hundred patients were included in the study, 82 men and 18 women, median age 47[25-75], CD4 nadir 282[7-1044] cells/µl, and receiving ARV therapy since 5.1[1.3-25.2] years with VL< 50 since 4.1[0.5-15.5] years. Current regimen included tenofovir-DF+FTC (89 patients) or abacavir+3TC (11 patients), combined with a PI/r for 29 (lopinavir/r:1, atazanavir/r:13, darunavir/r:15) or a NNRTI for 71 (EFV:41, RPV:25, ETV:5). After 48 weeks, 96% [95%CI 90-98, Kaplan-Meier estimate] were still under maintenance 4/7days regimen without failure; 1 patient returned to 7/7 regimen and left the study at W4, VF was confirmed in 3/100 patients at W4, W8, W40, with VL 785, 124, and 969 c/ml respectively. These 3 patients returned to 7/7 regimen and VL was subsequently suppressed in all 3.

**Conclusions:** Over 48 weeks, maintenance ARV therapy with a 4 days a week regimen was effective in these patients with suppressed VL under 2 nucleosides and either a PI/r or a NNRTI, resulting in a success rate of 96%.

# PHARMACOLOGY / PHARMACOKINETICS / PHARMACOGENOMICS / ROLE OF THERAPEUTIC DRUG MONITORING

## THPEB064

### IMPACT OF FOOD ON THE BIOAVAILABILITY OF DARUNAVIR, COBICISTAT, EMTRICITABINE AND TENOFOVIR ALAFENAMIDE, THE FIRST PROTEASE INHIBITOR-BASED COMPLETE HIV-1 REGIMEN (DCFTAF)

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**Background:** DCFTAF is the first one pill, once-a-day protease inhibitor-based complete HIV-1 regimen containing darunavir (DRV, 800mg), cobicistat (COBI, 150mg), emtricitabine (FTC, 200mg) and tenofovir alafenamide (TAF, 10mg). The efficacy and safety of DCFTAF is being investigated in two large Phase 3 studies (NCT02431247, NCT02269917). The present study evaluated the impact of food on the bioavailability of the DCFTAF components (NCT02475135).

**Methods:** Open-label, 2-period crossover study in 24 healthy subjects. Subjects received a single dose of DCFTAF in fasted conditions or after a standardized high-fat breakfast, with a 7-day washout in between. Pharmacokinetic sampling occurred over 72 hours after dosing. Plasma concentrations of DRV, COBI, FTC and TAF were determined using validated LC-MS/MS assays. Pharmacokinetic parameters were calculated using non-compartmental methods. Safety and tolerability were assessed throughout the study.

**Results:** Results are summarized in the Table. The exposure to DRV and COBI administered as DCFTAF was 30-45% and 16-30% lower, respectively, in fasted compared to fed conditions. For FTC, the $C_{max}$ was 26% higher in fasted compared to fed conditions, while AUC was comparable. For TAF, the $C_{max}$ was 82% higher in fasted conditions, while the AUC was 20% lower ($AUC_{inf}$) to comparable ($AUC_{last}$, boundaries 90% CI within 80-125%) in fasted compared to fed conditions. Administration of DCFTAF was generally safe and well tolerated in fed and fasted conditions. There were no grade 3/4 or serious adverse events, and no discontinuations due to adverse events.

**Conclusions:** The exposure to DRV from the DCFTAF tablet is increased in fed conditions, similar to other (co-)formulations of DRV. Differences in the exposures to COBI, FTC and TAF in fed compared to fasted conditions are not considered clinically relevant. The DCFTAF tablet should be taken with food, which is also the recommended intake in the ongoing Phase 3 trials.

| Parameter | LSmeans[a] | | LSmeans ratio, % | 90% CI, %[f] |
|---|---|---|---|---|
| | DCFTAF fed (high-fat) (reference) | DCFTAF fasted (test) | | |
| DRV | | | | |
| $C_{max}$, ng/mL[b] | 6446 | 3545 | 54.99 | 46.73 - 64.71 |
| $AUC_{last}$, ng.h/mL[b] | 85793 | 56320 | 65.65 | 56.76 - 75.92 |
| $AUC_{inf}$, ng.h/mL[c] | 84267 | 59196 | 70.25 | 59.49 - 82.95 |
| COBI | | | | |
| $C_{max}$, ng/mL[b] | 692 | 532 | 76.96 | 55.70 - 106.33 |
| $AUC_{last}$, ng.h/mL[b] | 5772 | 4092 | 70.90 | 51.13 - 98.30 |
| $AUC_{inf}$, ng.h/mL[d] | 5863 | 4948 | 84.39 | 68.52 - 103.95 |
| FTC | | | | |
| $C_{max}$, ng/mL | 1731 | 2180 | 125.99 | 112.85 - 140.65 |
| $AUC_{last}$, ng.h/mL | 11332 | 11345 | 100.12 | 96.29 - 104.10 |
| TAF | | | | |
| $C_{max}$, ng/mL | 88.9 | 162 | 182.29 | 140.50 - 236.50 |
| $AUC_{last}$, ng.h/mL | 109 | 97.5 | 89.54 | 81.20 - 98.72 |
| $AUC_{inf}$, ng.h/mL[e] | 120 | 96.8 | 80.38 | 73.04 - 88.45 |

[a] n=24 for reference and test
[b] n=24 for reference and n=23 for test
[c] n=20 for reference and test
[d] n=24 for reference and n=22 for test
[e] n=16 for reference and n=21 for test
[f] 90% confidence intervals

*[Table: Statistical Analysis Summary Table]*

# ANTIRETROVIRAL DRUG RESISTANCE

## THPEB065

### HIV-1 DRUG RESISTANCE PATTERN AMONG PATIENTS SUSPECTED OF FAILING SECOND-LINE ANTIRETROVIRAL THERAPY IN NAMIBIA

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**Background:** HIV-infected patients on antiretroviral therapy (ART) are at increased risk of emergence of HIV drug resistance (HIVDR) and virologic failure (VF) due to the lifelong nature of ART, continuous drug pressure on HIV virus, and the associated treatment adherence challenges. The cost of antiretroviral drugs (ARVs) dramatically increases with change of ART regimen from 1st-line to 2nd- or 3rd-line and hence necessitates the need for careful monitoring of HIVDR. Since 2007, Namibia has been conducting limited resistance testing in the public sector for patients suspected of failing 2nd-line ART containing nucleoside reverse-transcriptase inhibitors (NRTI) tenofovir plus lamivudine plus zidovudine, plus protease-pump inhibitor (PI) lopinavir or atazanavir plus ritonavir. Here we report the results of retrospective HIVDR analyses.

**Methods:** We conducted a retrospective review of all laboratory reports for patients undergoing genotyping resistance testing between 2010 - 2015 after VF on 2nd-line ART. HIVDR genotyping results were abstracted from laboratory database and analysed for HIVDR mutations and subtypes. All genotypes were done using the TRUGENE HIV-1 Genotyping Kit (Siemens, Munich, Germany).

**Results:** A mong 898 patients with VF; 420 patients [51% female; median age 38 [IQR 28; 45] were successfully genotyped of whom 341 (82%) harboured any HIVDR mutations. Of those genotyped, 75%, 63% and 23% had non-nucleoside reverse transcriptase inhibitors (NNRTI), NRTI, and PI mutations, respectively. Furthermore, 55% had NRTI and NNRTI, and 19% had NRTI, NNRTI and PI mutations. Dominant NRTI mutations included M184V/I (33%), T215Y/F (17%), D67N (12%), K219Q/E (11%) and K65R (7%). K103N was the dominant NNRTI mutation (21%) followed by G190A/S (13%) and V106M (9%). PI mutations included I54V (8%), V82A (7%), L76V (4%), L33F (3%), L90M (2%) and I84V (2%). HIV-1 subtype C was the most dominant (90%), followed by recombinants B/C (5%) and, 08_BC/C and CRF02_AG 3% each.
**Conclusions:** Our findings revealed high prevalence of HIVDR among patients suspected of failing 2nd-line, although most maintained susceptibility to LPV. Our findings indicate the need for routine viral load monitoring and surveillance of HIVDR and that genotyping is needed to guide selection of appropriate ARVs for 3rd-line regimens.

## THPEB066

### CONSEQUENCES OF AN ADHERENCE SUPPORT PROGRAM AND GENOTYPIC RESISTANCE TESTING FOR SECOND-LINE ART ELIGIBILITY

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**Background:** Of more than 500,000 Malawian patients on ART in 2015, around 98% are on first-line treatment. Adherence support and diligent management of ART failure are crucial to limit emergence of HIV drug resistance (HIVDR). We aimed to evaluate an adherence support program carried out by the DREAM program in Malawi, and the potential role of HIVDR testing in selecting patients for 2nd line ART.
**Methods:** Among 2,614 patients on first-line ART in 5 DREAM health centres, routine VL monitoring after 12 months of ART was conducted between August 2011 and March 2013. Non-pregnant adults with VL>1,000 copies/ml underwent genotypic HIVDR testing. They received intensive adherence support for 6 months and at 18 months VL was repeated.
**Results:** VL>1,000 at 12 months was found in 85 (3.3%) patients. 65 (76%) were female, mean age was 38 years. In multivariable analysis VL>1,000 at 12 months was associated with lower adherence, but not with age, gender, WHO clinical stage, BMI, VL, CD4 count and haemoglobin level at ART initiation. Genotyping showed 42 (49%) patients harbouring major HIVDR mutations
(8 to NRTI, 3 to NNRTI and 31 to both). Presence of HIVDR mutations was associated with lower BMI and CD4 count at ART initiation and with current ART regimen. After the adherence support program 41/82 (50%) patients had VL< 1000 copies/ml at 18 months, of whom 31 fully suppressed. 14/41 (32.6%) with mutations at 12 months had VL< 1,000 at 18 months, this was 27/41 (65.9%) for those without mutations (p=0.012), 3 VL results were missing. Independent determinants of 18 months VL>1,000 were higher VL at 12 months (OR 2.12; 95%CI: 1.02-4.47) and presence of HIVDR mutations at 12 months (OR 4.35; 95%CI: 1.59-11.1).
**Conclusions:** Similar to other experience, our adherence intervention for patients found with VL>1,000 copies/ml upon routine VL monitoring at 12 months was highly effective in re-suppressing VL to below the 2nd line ART threshold. Presence of HIVDR mutations at 12 months was strongly associated with VL>1,000 after adherence support, although an important percentage with mutations still suppressed.

## THPEB067

### HIV-1 DRUG RESISTANCE MUTATIONS AND SUBTYPES DETECTED IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA

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**Background:** South Africa forms the epicentre of the AIDS pandemic with more than 6.8 million people infected with HIV-1. More than 3.1 million individuals are currently receiving antiretroviral treatment (ART), the highest number world-wide. The HIV-1 prevalence amongst antenatal women in the Eastern Cape Province was 29.1% in 2012, but limited information is available about HIV-1 drug resistance mutations (DRMs).
The aim of this study was to characterize and sequence the HIV-1 *protease* (PR), *reverse transcriptase* (RT) and *integrase* (IN) regions of the *pol* gene.
**Methods:** We received blood samples from 527 patients during 2014. Viral RNA was isolated, the PR, partial RT and IN regions of the pol gene were amplified by RT-PCR and directly sequenced using in-house developed assays. The Stanford drug resistance database was used to identify mutations that are associated with drug resistance. Online subtyping tools, jpHMM, REGA, RIP, Comet, SCUEAL and Stanford, were used for preliminary subtyping. Multiple sequence alignments were done with MAFFT and codon aligned. Maximum likelihood phylogenetic analysis was done with Geneious R8 and MEGA version 6.
**Results:** Samples were obtained from clinics and hospitals in 33 towns in the Eastern Cape. The age of the patients ranged from 12 months to 67 years and included 65.5 % females and 34.5 % males. Eighty five percent of the patients had DRMs. PR sequences with DRMs was 4.4% and RT sequences with NRTI and NNRTI DRMs were 78.7% and 81.2% respectively. A total of 3.1% of the sequences had both NNRTI, NRTI and PI DRMs. Additionally, 15.3% of the sequences had accessory mutations in the Integrase region and 0.75% had major IN mutations. Subtyping and phylogenetic analysis indicated that the majority of the samples were subtype C. Other subtypes detected, included HIV-1 subtypes A, B and unique recombinant forms (URFs).
**Conclusions:** With a complex epidemic that is constantly evolving, it is of utmost importance to monitor continuously for DRMs amongst people receiving ART. It is a growing concern that we have detected this high number of DRMs. Keeping patients on failing regimens could complicate ART options and regimens in the future.

## THPEB068

### PREVALENCE OF RESISTANCE-ASSOCIATED VARIANTS IN LONG-TERM LOW VIREMIC HIV PATIENTS

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**Background:** Goal of each antiretroviral therapy is to suppress HIV viral-load (VL) <50 copies/ml. Despite an appropriate adherence to therapy, successful reduction of VL is not always achievable. The focus of this analysis was to estimate resistance developments under different regimens in patients with long-term low-level-viremia <1000 copies/ml.
**Methods:** Genotypic resistance data of 272 patients were selected according to quantified VLs consecutively between 50-1000 copies/ml between two relevant tests T1 and T2 (mostly < 24 months). VLs at T2 were categorized into group A with VLs of 40-100 copies/ml (n=56), group B 101-200 (n=75), group C 201-500 (n=87) and group D 501-1000 copies/ml (n=54), respectively. Newly developed resistance associated mutations (RAMs) and pre-existing variants were assessed according to HIV-Grade (at least intermediate resistance).
**Results:** In total, primary RAMs could be detected at T2 in 19/56 patients of group A (34.0%), 27/75 in group B (36.0%), 34/87 in group C (39.1%) and 19/54 in group D (35.2%). Newly diagnosed RAMs were detected in 5/56 (8.9%), 11/75 (14.7%), 13/87 (14.9%) and 11/54 (20.4%) at T2, respectively. In these patients, 2/5 (40%), 3/11 (27.3%), 11/13 (84.6%) and 9/11 (81.8%) had wildtype variants at T1. In group A, newly developed RAMs were NRTI-related (M184V/I=3/5 and M41L=2/5), although quantified VLs remained < 200 copies/ml between T1 and T2. In group B, 5 NRTI-mutations newly developed. PI-mutations occurred under 2/23 PI-based therapies (8.7%), INI-mutations in 5/10 (50%), respectively. In group C, 9 RAMs were NRTI-related (all M184V), 4/11 Integrase-RAMs were newly detected (36.4%) and 3/10 (30%) were NNRTI-related, respectively. In group D, 8 cases showed NRTI-related resistance, 6 included M184 substitutions. NNRTI-resistance occurred in 5 of 8 therapies (62.5%) and Integrase-RAMs were detected in all 6 INI-treated patients in this group.
**Conclusions:** Newly developed RAMs increased with the level of VL in this analysis. Substitutions at position M184 occurred at high prevalence and represented early events in resistance development under common 3TC/FTC-based therapies. INI-relevant mutations also occurred frequently in patients with VLs>200 copies/ml in this evaluation. In total, resistant variants derived from wildtype viruses at T1 occurred mostly in patients with VLs>200 copies/ml in this analysis.

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## THPEB069

### PROTEASE INHIBITOR RESISTANCE AFTER FAILURE OF SECOND-LINE THERAPY IN A RURAL SOUTH AFRICAN SETTING

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**Background:** Antiretroviral therapy (ART) programmes in South Africa report high on-treatment suppression rates. However, virological failure and selection of drug resistance occurs regularly leading to increasing uptake of protease inhibitor (PI)-based second line ART. This study investigates drug resistance profiles in cases of virological failure during second line ART in a longstanding cohort of patients attending a rural South African clinic.
**Methods:** Virological failure was defined as ≥2 consecutive HIV-RNA measurements of >1000 copies/ml in patients receiving second line ART ≥6 months. Genotypic drug resistance testing on Dried Blood Spots (DBS) was performed as routine clinical procedure. DBS were shipped to a WHO-reference laboratory. Population genotypic analysis of the PR-RT region was performed. Resistance mutations were determined according to 2015 IAS-USA figures. Clinicians received feedback including treatment advice based on mutational patterns, treatment history and drug availability.
**Results:** Between 2006 and 2015, 281 patients had received second line ART ≥6 months (64% female, median age 36.0 [IQR: 26.7 - 43.5]). Forty-three patients in care met the definition of virological failure on second line ART (58% female, median age 36.2 [IQR: 31.0 - 44.1]). All 43 patients received boosted lopinavir either with AZT/3TC (72.1%), TDF/3TC (18.6%) or other NRTIs (9.3%). Median time after initiation of ART was 3.9 years and median time on second line ART was 1.7 years. At failure of second line ART median CD4 was 249 [IQR: 81 - 378] cells/mm$^3$ and median log-HIV-RNA was 4.43 [IQR: 3.85 - 4.86] copies/ml.
Major resistance mutations were present in 69.7% of cases. (Partial) resistance to the current regimen was present in 55.8%. PI resistance was noted in 7 cases (6.0%). In 5/7 cases of PI resistance, encountered mutations conferred high-level resistance to lopinavir.
**Conclusions:** In this longstanding rural cohort virological failure during second line ART was frequently encountered. Although PI resistance was more frequently observed than is reported in high-income settings, almost half of the patients did not have resistance mutations to the second line regimen and a third did not harbour resistance mutations at all. These results indicate a potential role for drug resistance testing to enable clinicians to make rational treatment switches.

## ADHERENCE

## THPEB070

### ADHERENCE AND VIRAL SUPPRESSION IN PREGNANT WOMEN ALREADY ON ART WHEN ENTERING ANTENATAL CARE IN CAPE TOWN, SOUTH AFRICA

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**Background:** Prevention of mother-to-child transmission (PMTCT) services have previously focussed on HIV+ women who are newly initiating antiretroviral therapy (ART) in pregnancy. However, increasing numbers of women are already on ART when entering antenatal care. Despite the growing size of this population, there are few data on their ART adherence and HIV viral suppression. We examined self-reported non-adherence, non-suppressed viral load (VL), and factors associated with each among HIV+ pregnant women already on ART when entering PMTCT services in Cape Town, South Africa.
**Methods:** We recruited HIV+ women entering PMTCT services at a large primary care clinic for the MCH-ART study. This analysis focussed on women on ART ≥4 months. At enrolment, self-report measures of concerns about taking ART during the perinatal period (Cronbach's α: 0.77), adherence self-efficacy (α: 0.93) and ART adherence were administered; VL testing (Abbott RealTime HIV-1) was conducted. We used multivariable logistic regression to explore factors associated with non-adherence (defined as missed ART doses on ≥2 days during the preceding 30 days) and with non-suppressed VL (VL >1,000 copies/mL).
**Results:** Among 482 women (mean age: 31.2 years; mean duration of ART use: 3.4 years), 22% reported any missed ART dose in the preceding 30 days; 15% reported non-adherence; and 20% and 12% had VL >50 and >1,000 copies/mL, respectively. Non-adherence was strongly associated with non-suppressed VL (OR: 2.68; 95% CI: 1.41-5.11). Adjusting for age, non-adherence was associated with single marital status (OR: 1.80; 95% CI: 1.03-3.15), unintended pregnancy (OR: 1.75; 95% CI: 0.99-3.08) and greater concern about taking ART (OR: 1.40; 95% CI: 1.09-1.82); higher adherence self-efficacy was associated with a reduced odds of non-adherence (OR: 0.47; 95% CI: 0.26-0.82). In adjusted analyses, non-suppressed VL was associated with report of previous discontinuation of ART (OR: 6.59; 95% CI: 2.93-14.79), greater concern about taking ART (OR: 1.38; 95% CI: 1.03-1.85) and unintended pregnancy (OR: 1.92; 95% CI: 1.02-3.64).
**Conclusions:** Among HIV+ pregnant women entering PMTCT on ART, substantial levels of non-adherence and non-suppressed VL were observed. Tools for identifying women entering antenatal care already on ART with adherence difficulties and elevated VL are needed to target counselling interventions and adherence monitoring.

## THPEB071

### UTILITY AND ACCEPTABILITY OF DRIED BLOOD SPOT (DBS) AND HAIR BIOMARKERS AS OBJECTIVE MEASURES OF ANTIRETROVIRAL THERAPY (ART) ADHERENCE AMONG HIV+ ADULTS IN SOUTH AFRICA

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**Background:** Current ART adherence measures have disadvantages such as subjectivity and patient/provider burden; none in clinical use measures drug ingestion. In a "real-world" setting, we compared utility and acceptability of assays of tenofovir-diphosphate (TFV-DP) in DBS and tenofovir (TFV) in hair as objective measures of ART adherence reflecting drug ingestion.
**Methods:** In 5 monthly visits, 28 HIV+ South African adults who had started ART containing TFV in the past month and were being monitored by an electronic monitoring device, Wisepill (WP), provided DBS and hair samples. At each visit, they were interviewed on acceptability of sampling, e.g., pain and willingness for repeated collection and self-collection. DBS TFV-DP and hair TFV were quantified by validated LC-MS/MS methods. We examined correlations between DBS TFV-DP and hair TFV and between drug levels from each source and percent of 28 days prior to sampling when WP was opened. Generalized estimating equations were used to account for intra-participant repeated observations.
**Results:** Participants were 90% women; mean age, 30 years. Mean % WP openings in prior 28 days was 74% (SD=34%). In currently available matched samples (37 from 15 participants), mean DBS TFV-DP was 967 fmol/punch (SD=391), and mean hair TFV was .86 ng/mg (SD=.59). DBS TFV-DP and hair TFV were significantly correlated (r=.598, p=.002). Correlations of DBS TFV-DP and hair TFV with % WP openings were .378 (p=.040) and .148 (p=.327), respectively. Over time, participants reported high acceptance of finger-stick DBS sampling, including little/no pain and increasing willingness to do finger sticks at clinic visits and by self-collection. In contrast, over time, participants increasingly reported being unwilling to give repeated monthly hair samples as part of regular clinical care.
**Conclusions:** This is one of the first studies examining biomarkers of ART adherence among HIV+ South African adults in real-world clinical settings. Although this pilot study revealed a significant correlation between TFV-DP in DBS and TVF in hair, only TFV-DP in DBS was correlated with use of WP - another "objective" measure of ART adherence. Findings also suggest that DBS sampling may be more acceptable than monthly hair sampling for long-term use in this population.

## THPEB072

### ADHERENCE IN HIV-POSITIVE PATIENTS TREATED WITH SINGLE TABLET REGIMENS VERSUS RECOMMENDED ONCE DAILY MULTI-PILL REGIMEN IN CLINICAL PRACTICE: FINDINGS FROM THE INTERNATIONAL ISTRAP STUDY

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**Background:** People living with HIV (PLWHIV) may not adhere to antiretroviral therapy (ART) by not taking the full regimen or, if on a multi-tablet regimen (MTR), by taking only part of the regimen (selective adherence; SA). To our knowledge this is the first international study to compare single tablet regimens (STRs) to once-daily (QD) EACS V7.0 recommended MTR.
**Objectives:** To evaluate, in a European setting, how STRs, SA-free regimens, impact on adherence in HIV-1 infected patients compared to recommended once-daily MTRs.
**Methods:** iSTRAP is a retrospective, non-interventional international (Spain, Portugal, Italy and United Kingdom) study. The primary endpoint was to evaluate the probability of achieving ≥90% adherence. Patient-regimens consisting of recommended QD regimens lasting for at least 90 days between 2009 and 2013 were considered. In order to maximize homogeneity between the STR and MTR cohorts, and reduce the impact of treatment-selection bias, a propensity score matching (PSM) approach was applied (characteristics described in table 1) before applying a multivariate logistic model, adjusting for potential confounders.
**Results:** 915 patients were included, contributing 1393 patient-regimens over 5 years. After PSM, 911 regimens (453 STR, 458 MTR) remained for analysis. Patients on STRs were 2.4 (95% C.I. 1.7, 3.5, p<0.0001) times more likely to reach the ≥90% adherence threshold than patients on MTR (Table 2). Results were consistent using 95% threshold (OR 2.1, 95% C.I. (1.5, 2.9), p<0.0001).

| Variable | | STR | MTR | p-value before PSM | STR | MTR | p-value after PSM |
|---|---|---|---|---|---|---|---|
| Sex, N (%) | Males | 548 (75.4) | 456 (68.5) | 0.0003 | 333 (72.7) | 332 (73.3) | 0.8703 |
| Age (Mean/Standard error) | Years | 45.5 (0.3899) | 46.2 (0.3795) | 0.0275 | 45.2 (0.4643) | 46.1 (0.4641) | 0.1744 |
| Smoking (Yes/No), N (%) | Yes | 210 (28.9) | 264 (39.6) | <0.0001 | 158 (34.5) | 142 (31.3) | 0.3113 |
| Drinking (Yes/No), N (%) | Yes | 74 (10.2) | 108 (16.2) | 0.0009 | 62 (13.5) | 62 (13.7) | 0.9476 |
| Aids status (Yes/No), N (%) | Yes | 101 (13.9) | 139 (20.9) | 0.0006 | 76 (16.6) | 70 (15.5) | 0.6387 |
| Hepatitis C antibody (Yes/No), N (%) | Yes | 136 (18.7) | 204 (14.7) | <0.0001 | 101 (22.1) | 111 (24.5) | 0.3814 |
| Illegal drug use, N (%) | Yes | 46 (6.3) | 75 (11.3) | 0.0012 | 40 ( 8.7) | 38 ( 8.4) | 0.8523 |
| Presence of comorbidities, N (%) | No | 442 (60.8) | 326 (48.9) | <0.0001 | 257 (56.1) | 246 (54.3) | 0.5524 |
| Current opioid substitution, N (%) | None | 697 (95.9) | 607 (91.1) | 0.0005 | 432 (94.3) | 423 (93.4) | 0.5830 |

*[Table 1 Regimen population (N=1393) according to STR/MTR status before and after Propensity Score Matching (PMS)]*

| Variable | | ≥90% adherent N (%) | <90% adherent N (%) | OR | 95 %-CI | p-value |
|---|---|---|---|---|---|---|
| Regimen | MTR | 316 (69.8) | 137 (30.2) | Ref. | - | - |
| | STR | 385 (84.1) | 73 (15.9) | 2.4 | (1.7, 3.5) | <.0001 |
| Previous virologic failure | No | 622 (77.6) | 180 (22.4) | Ref. | - | - |
| | One | 46 (70.8) | 19 (29.2) | 1.0 | (0.38, 2.8) | 0.9334 |
| | More than one | 33 (75.0) | 11 (25.0) | 2.7 | (0.90, 8.1) | 0.0769 |
| Art duration (per year longer) | | | | 1.00 | (0.95, 1.0) | 0.9308 |
| HIV RNA >100,000 copies/ml | | | | 1.3 | (1.0, 1.7) | 0.0366 |
| CD4 / 100 mm3 (per cell/mm3 higher) | | | | 1.0 | (0.90, 1.1) | 0.9946 |
| CD4 nadir <100 mm3 | | | | 1.0 | (0.84, 1.2) | 0.8626 |

*[Table 2 Multivariate results for 90% adherence]*

**Conclusions:** In this real-world setting, STRs were associated with improved adherence when compared to a matched cohort of patient-regimens consisting of recommended QD regimens.

## THPEB073

### RELATIONSHIP BETWEEN HEALTH-RELATED QUALITY OF LIFE AND ADHERENCE TO ANTIRETROVIRAL THERAPY OVER TIME IN A COHORT OF PATIENTS AT TWO CLINICS IN SOUTH AFRICA

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**Background:** With the advent of antiretroviral therapy (ART), people living with HIV are not only concerned with survival, but also the health-related quality of life (HRQoL) they are able to lead while on life-long ART. Adherence to ART is key to the therapeutic success of ART and HRQoL is an important measure of treatment outcomes. The relationship between HRQoL and long-term adherence to ART is still unclear, especially in the South African resource-constrained context. This study aimed to investigate satisfaction with aspects of HRQoL and adherence to ART over time.
**Methods:** A sample of 431 HIV-positive patients were followed at four-monthly intervals, at two resource-constrained clinics, for a period of 12 months. Adherence and HRQoL data were obtained using a patient-reported adherence rating scale and WHOQOL-HIV BREF respectively. The adherence and HRQoL responses for the four study visits were pooled into a combined sample (n=1631; excluding baseline data for 93 treatment-naïve patients). Adherence and HRQoL scores were regrouped in four-monthly intervals according to the patient's actual duration on ART, ranging 1-120 months. Patients were split into adherent (≥95%) and non-adherent (< 95%) groups. The association between adherence and mean HRQoL at a specific time point on ART was investigated with a time-series analysis. Differences in mean HRQoL scores between adherent and non-adherent patients were compared with an independent sample *t*-test, with p< 0.05 considered statistically significant.
**Results:** Almost 73% of patients (n=431) reported ≥95% adherence over the 12-month study period, however only 41% of patients were consistently adherent (≥95% adherent at all study visits) throughout the study period. Time-series analysis revealed that irrespective of the time on ART, patients who reported ≥95% adherence experienced a better HRQoL in all domains, compared to non-adherent (< 95%) patients (p< 0.05 in nearly half of the four-monthly interval groups).
**Conclusions:** Results demonstrated a significant relationship between adherence and HRQoL, with higher adherence being related to better HRQoL. Achieving consistent long-term adherence to ART is still a serious concern, and requires focus and attention from health professionals and policymakers.

## THPEB074

### PATIENT-REPORTED BARRIERS TO ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG ADULTS AND CHILDREN: A GLOBAL EVALUATION

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**Background:** New global guidelines and targets call for treating all people living with HIV to reach and sustain virological suppression. Achieving these goals requires high levels of adherence to antiretroviral therapy (ART). A better understanding of barriers to adherence is required to inform the design and targeting of adherence interventions, particularly as people receive ART earlier in their disease progression.
**Methods:** We searched 3 databases up to 01 February 2015 to identify patient-reported barriers to adherence to ART word-wide. Data were pooled using random-effect models.
**Results:** 34 studies provided evaluable data on 6564 adult and 752 children on ART across 19 countries worldwide. The main patient reports barriers to adherence overall were changes to daily routine (34.2%, 95%CI 17.9-50.5%), forgetting (31.7%, 25.9-37.5%), being busy (26.3%, 20.3-32.2%), falling asleep (25.5%, 18.6-32.4%), and travel (23.5%, 18.8-28.1%). Feeling sick was a more commonly reported barrier to adherence than feeling well (16.5% vs 5.6%). The most commonly reported barrier among adults was change to routine (38.2%, 17.9-50.5%) while among caregivers of children secrecy/stigma was the most important concern (20.4%, 2.0- 38.7%).
**Conclusions:** These findings suggest that the main barriers to adherence relate to individual patient behaviour, and may be amenable to intervention, including counselling and reminder devices. Initiating ART early may result in improved adherence compared to delayed ART initiation.

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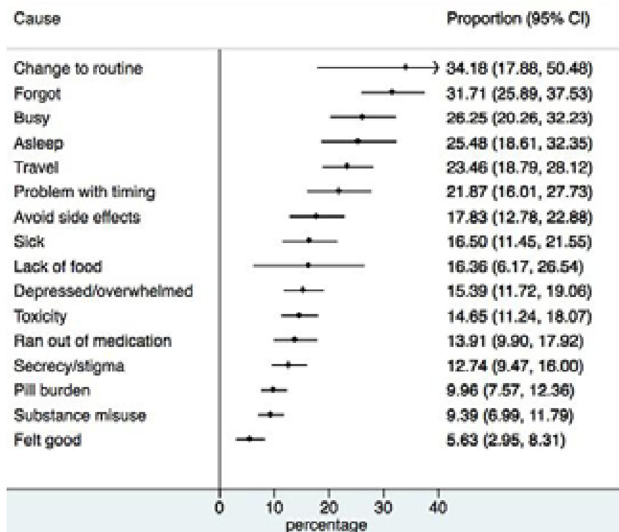


[Figure 1]

## THPEB075

### DETERMINANTS OF THE EFFICACY OF 3-MONTH REINFORCEMENT OF ADHERENCE TO MAINTAIN SECOND-LINE ART IN HIV-INFECTED PATIENTS IN TREATMENT FAILURE, ANRS 12269 THILAO STUDY

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**Background:** Third-line treatment and biological monitoring (viral load and genotype test) are limited in Sub-Saharan Africa making adherence reinforcement a critical issue. This substudy of THILAO ANRS 12269 aims to assess the effectiveness of 3-month adherence reinforcement in HIV-infected adults who failed second-line ART without knowing genotypic resistance test results.

**Methods:** Thilao is a cohort study conducted in Burkina Faso, Côte d'Ivoire, Mali and Senegal. HIV-1-infected adults with virological failure on a second-line protease inhibitor based regimen after a first-line non-nucleoside reverse transcriptase inhibitor were included.

Adherence reinforcement measures were proposed at baseline (V0). After 3 months (V3), a viral load was performed. The second-line therapy was maintained if the viral load from baseline to V3 decreases by more than 2 log or below 400 copies/ml and a third-line Darunavir and Raltegravir-containing therapy was initiated if the viral load from baseline to V3 does not decrease by more than 2 log and was higher than 400 copies/ml.

We analyse the determinants of maintenance of a second line ART regimen in a multivariable analysis.

**Results:** 201 patients were included. Women: 69%, median age: 41 years old. Median CD4 count and viral load at pre-inclusion were 242/mm$^3$ and 4.5 log/ml; median time since ART initiation was 8 years and that since second-line protease inhibitor initiation: 3 years. 86% were seeking assistance in reinforcing adherence. The main choices of adherence measures were: pill organizer (93%), weekly phone calls (86%), alarm reminders on phones (74%), involvement of a member of the circle (62%), home visits (57%), SMS (48%). 24% chose 6 out of 10 proposed measures. After 3-month adherence reinforcement, 63% were maintained on second-line ART and 35% initiated third-line therapy. Age ≥ 40, a number of adherence reinforcement measures ≥ 6 and a viral load at pre-inclusion ≤ 5 log, were independently associated with maintaining the second-line therapy.

**Conclusions:** Reinforcing adherence helped maintain 63% of patients on second-line ART. Pending baseline genotypic resistance test results, a wide choice of combined adherence reinforcement measures, a lower baseline viral load and age above 40 years were associated with maintaining of second line ART.

# ETHICAL ISSUES IN CLINICAL TRIALS AND TREATMENT STRATEGIES

## THPEB076

### WHAT IS "TOO MUCH RISK" IN HIV CURE CLINICAL RESEARCH IN THE UNITED STATES?

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**Background:** We assessed perceptions of what is "too much risk" in HIV cure clinical research in the United States. Data inform possible risk thresholds and risky features that would make participants reluctant to join studies or regulators to approve them.

**Methods:** We implemented a cross-sectional survey among 400 HIV-positive adults in the United States in 2015. The sample was ethnically diverse and 38 U.S. states were represented. We also conducted key informant interviews with 36 people living with HIV, researchers, bioethicists, members of IRBs and regulatory agencies.

**Results:** Preliminary results revealed a high degree of variability in perceptions of what constitutes "too much risk" in HIV cure research. Activation of genes that would cause cancer (49% [95% CI: 44, 54%]; n = 358) and development of resistance to ARVs (37% [95% CI: 32, 42%]; n= 358) were the clinical factors most likely to discourage participation among HIV-positive volunteers. Perceptions of "too much risk" among this group ranged from first-in-human studies without underlying proof of concept, painful procedures, significant increases in viral load and decreases in CD4, interventions that would cause viral rebound, irreversible long-term side effects, damages to vital organs, immune system shut down, anything that would cause HIV to become unmanageable, progression to AIDS, hospitalization, debilitation or risk of death. Unacceptable social risks included drastic changes in quality of life, transmission of HIV to others, and inability to work or care for family. Financial risks included loss of disability income or insurance coverage. A minority did not place an upper limit on acceptable risk. For regulators, any intervention that would result in clinical hold or high likelihood of serious adverse events would be "too much risk." Clinicians-researchers provided examples of risky modalities such as stem cell transplants in cancer-free patients, studies using PD-1 blockers or latency-reversing agents without demonstrated substantial reductions in reservoir size with treatment interruptions.

**Conclusions:** Despite challenges of making risk determinations at this juncture, knowing what risks are unacceptable is important to inform study design and accrual as well as informed consent. We should strive to maintain public confidence in the HIV cure research enterprise.

## THPEB077

### UNANTICIPATED PARTICIPANT BENEFITS IN HIV CURE CLINICAL RESEARCH: A QUALITATIVE ANALYSIS

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**Background:** Early-phase HIV cure research involves substantial and often unknown risks, with no direct participant health benefits. During informed consent and subsequent study visits, researchers emphasize this lack of benefit with the intent of

minimizing misconceptions that undermine genuine consent. We explored what, if any, social, psychological, and/or emotional benefits exist for HIV cure study participants. Accordingly, we considered the significance of these often unrecognized benefits and how they may impact responsible conduct of research.
**Methods:** We conducted in-depth, semi-structured interviews with 33 adults, including 15 HIV cure research participants, ten research staff (e.g. participant screeners, research coordinators), and eight bench scientists or physician-researchers in Chapel Hill and Durham, North Carolina, USA. Interviews were audio-recorded, transcribed, and then coded and analysed using MAXQDA® to identify themes related to participants' experiences and perceptions of research benefits.
**Results:** The 15 HIV cure participant-interviewees were all men with a median age of 48 (range: 28-62 years). Most were white (13/15); one was Black, and one Latino. Ten of 15 participants self-identified as gay. All 15 participant-interviewees reported benefits related to cure research, including improved HIV knowledge/awareness (14/15); improved healthcare (12/15); improved personal relationships (8/15); and positive behavioural changes (6/15). Fourteen participant-interviewees described psychological/emotional benefits, including a sense of helping others. Other benefits included: sense of purpose, increased self-worth, and emotional support through interactions with research team members. Five participant-interviewees expressed intent to continue in cure research for as long as possible; two indicated that only death would stop them from participating in cure research. Among researchers and staff, social, psychological, and/or emotional participant benefits were only mentioned in roughly half of the interviews - suggesting less emphasis on these benefits.
**Conclusions:** We observed substantial unanticipated social, psychological, and emotional benefits associated with HIV cure research. These are important and are often the primary reasons participants continue to take part in studies. Participants felt they were taking part in something important and larger than themselves. These benefits, while subjective and contingent, should be considered when recruiting participants and are important for informed consent processes.

## Complementary and traditional medicines

## THPEB078

### Safety and tolerability of *Moringa oleifera* Lam. leaf supplementation by HIV-infected patients on antiretroviral therapy

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**Background:** *Moringa oleifera* Lam. (Moringaceae) leaf powder is commonly taken by HIV infected patients in developing countries to enhance immunity and manage opportunistic infections. This study was conducted to assess its effect on the liver and kidney function of HIV infected patients on antiretroviral therapy.
**Methods:** A one sequence cross-over, open label, phase I/IIa study was conducted over 35 days. Nineteen HIV infected adult patients were asked to take only their antiretroviral therapy and stop taking any other herbs and supplements for 21 days. Serum biochemistries and urinalysis were performed on day 21. This was followed by administration of 2 teaspoons of moringa leaf powder daily for 14 days. Serum biochemistries and urinalysis were performed again on day 35. Adverse events were monitored by a clinician and participants were asked open-ended questions about their well being throughout the study. Pre- and post-moringa data were analyzed by descriptive statistics, paired t-tests and McNemar tests.
**Results:** Participants had a mean age of 44(±8)years. Sixty-eight percent (n=13) were female. Seventy-four percent reported an increase in appetite and an average weight gain of 0.74 kg (p= 0.03) was observed at the post moringa visit. Based on the Common Terminology Criteria for Adverse events version 4.0, there were no significant differences in the proportion of pre- and post- moringa biochemistry and urinalysis readings falling into toxicity ranges. All observed toxicities (15/296 readings) were grade 1. Eight were observed pre-moringa while seven were observed post-moringa. Exploratory sub-analysis indicated a non-toxic decrease in mean serum bilirubin (8.1 micro-mol/L, p=0.04) and total protein (10.8 g/L, p=0.02), with an increased mean estimated clearance (48.5 mL/min, p= 0.03).
**Conclusions:** *M. oleifera* leaf powder was well tolerated among HIV infected patients on antiretroviral therapy. It promoted weight gain and did not result in hepatic or renal toxicity. A larger clinical study to confirm the sub-clinical effects observed in this study and previously reported by other pre-clinical studies would be useful.

## THPEB079

### Use of non-prescription remedies by Ghanaian HIV-positive persons on antiretroviral therapy

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**Background:** Inappropriate use of non-prescription remedies by persons living with human immunodeficiency virus (PLHIV) may result in adverse events or potentiate the risk of non-adherence to prescribed medications. This study investigated non-prescription drugs use among PLHIV receiving antiretroviral therapy (ART) from four treatment centers in southern Ghana.
**Methods:** A mixed method design using quantitative and qualitative methods was used. This paper focuses on the quantitative survey of 540 respondents. Univariate analysis was used to generate descriptive tabulations of key variables. Bivariate analysis and logistic regression modeling respectively produced unadjusted and adjusted associations between background attributes of PLHIV and use of non-prescription remedies. P-value < 0.05 was considered statistical significant. All analyses were performed using IBM SPSS Statistics for Windows, Version 20.0.
**Results:** Three-quarters of the respondents were female. One out of three respondents reported the use of non-prescription medication at least once within three months of the survey. Most of these were locally made and included *concoctions from the Christian prayer centers, Garlic, and Mahogany syrups"*. These remedies were used concomitantly with antiretrovials (ARVs) (46%) or with ARVs but at different times (43%). Some of the remedies were reportedly prescribed by health workers (nurse prescribers), or self-initiated during periods of ARVs shortage or due to their perceived efficacy. Bivariate level analysis identified ART clinic site, place of residence, and ARV adherence monitoring to be significantly associated with non-prescription medication use (p < 0.05). Multiple logistic regression analysis controlling for covariates confirmed location of ART clinic as the only predictor of non-prescription medication use. Compared to clients at the large urban Teaching Hospital (Korle-Bu Fevers Unit ART center), those at the district level (Atua ART center) were 9-fold more likely to use non-prescription remedies (adjusted odds ratio [AOR] =8.84; 95%CI 2. 83 - 33.72). Those from a district level mission hospital (St Martin's ART center) were three-fold as likely to use these remedies (AOR= 2.610; 95% CI 1.074 - 9.120).
**Conclusions:** The use of non-prescription remedies by PLHIV on ART is common in Southern Ghana. Usage is mostly self-initiated because of perceived efficacy and was more common among clients attending rural ART clinics.

## THPEB080

### Exercise therapy for HIV/AIDS patients: guidelines for clinical exercise therapists: a review

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**Background:** The human immunodeficiency virus (HIV) has infected more than 60 million people since its discovery and 30 million people have died from it since the pandemic began. Antiretroviral therapy has transformed HIV infection from an acute to a chronic disease, increasing life expectancy but also adding to the potential side effects associated with drug therapy and the co-morbidities accompanying longevity. Exercise can play a valuable role in the management of HIV/AIDS patients by addressing various symptoms and improving their quality of life but the optimum mode, intensity, frequency and duration of exercises that take the different clinical stages of the disease into consideration are inadequately known.
**Methods:** Searches of MEDLINE, EMBASE, CINAHL, HEALTHSTAR, PsycINFO, Cochrane Database of Systematic Reviews and Controlled Trials, Physiotherapy Evidence Database and SPORTDISCUS were conducted between 2000 and January 2014. Searches of published and unpublished abstracts were conducted, as well as a hand search of reference lists and tables of contents of relevant journals and books. Identified studies were reviewed for methodological quality. A total of 33 studies met the inclusion criteria.
**Results:** Evidence-based research indicates that exercise training (aerobic/ progressive resistive exercises and a combination thereof) by HIV-infected individuals is safe and positively influences side effects associated with the HIV disease itself as well as the cardio metabolic and morphological complications that may accompany HAART.

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Despite this, exercise guidelines currently available are generalized with significant gaps in knowledge as to the minimal and optimal duration, frequency, mode and intensity of exercise needed to produce beneficial changes. Most studies to which we refer have not approached the exercise program from the perspective of validating commonly used prescriptions for physical activity or from a dose-response perspective.

**Conclusions:** Our research has added to the body of knowledge of literature regarding exercise training for HIV-infected individuals by considering the specific clinical stages. It provides information that clarifies the optimal mode, duration, frequency and intensity of AE and PRE prescribed to the different clinical stages of HIV patients. The exercises we recommend have the potential to provide benefit to HIV patients and should be adopted by clinical exercise therapists.

## THPEB081

### MAINTAIN STUDY: A DOUBLE-BLIND RANDOMIZED CONTROL CLINICAL TRIAL OF HIGH-DOSE MICRONUTRIENT AND ANTIOXIDANT SUPPLEMENTATION IN UNTREATED HIV INFECTION

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**Background:** Low serum micronutrient concentrations in HIV positive persons are associated with higher morbidity and mortality, but the general role of supplements as adjunctive medical management of HIV remains unproven. The objective of this study was to assess high-dose micronutrient, mineral and antioxidant supplementation(K-PAX Ultra™) compared to standard recommended daily allowance (RDA) multivitamins and minerals slows immune deficiency or disease progression or the start of ART.

**Methods:** MAINTAIN (NCT00798772, CTN 238, doi:10.1371/journal.pone.0085607) is a two-arm double-blind randomized control trial closed in 2015, to evaluate the effect of high-dose supplements on measures of HIV immunodeficiency disease progression among ART-naïve people with HIV and CD4 count > 375 cells/µL. 171 volunteers in 15 Canadian sites received either a hi-dose or an identically looking RDA supplement. Primary outcome was a composite of time to first of CD4 T lymphocyte count below 350 cells/µL, AIDS-defining illness, or start of ART over two years. A Kaplan-Meier survival analysis using the log-rank test, and cox proportional analysis using hazard ratios (HR) and 95% confidence intervals (CI) were used to assess between group differences using an intention to treat analysis.

**Results:** Of 171 enrolled, 40% (68) had at least one outcome at interim analysis: 9 reached a CD4 count below 350 cells/mL alone, 39 started ART alone, 20 reached a CD4 count below 350 cells/mL and started ART, 1 reached an AIDS-related illness and started ART. There was no significant difference in time-to-outcome between treatments (p=0.806, log-rank test; cox PHR 0.83, 95% CI:0.51-1.34). We stopped trial accrual for futility, and have completed follow-up. CD4 T cell count trajectory was analysed by treatment group with censoring after ART: Mean CD4 decline per 3-months was 7.0 (RDA) and 8.9 cells/µL (hi-dose; difference -1.9 (-3.7, 7.5) p=0.5).

**Conclusions:** This well-designed rigorous RCT has identified no significant effect of high-dose micronutrient and anti-oxidant supplement in HIV immune deficiency disease progression and ART initiation, in comparison with a standard RDA micronutrient supplement.

## THPEB082

### EFFECTS OF PROGRESSIVE RESISTANCE EXERCISES COMPARED TO AEROBIC EXERCISES ON BONE MINERAL DENSITY IN PATIENTS ON HIGHLY ACTIVE ANTI-RETROVIRAL THERAPY (HAART) AND HAART NAIVE

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**Background:** One of the most significant clinical challenges in HIV/AIDS infection is a decline in bone mineral density (BMD), suggesting a tendency towards osteoporosis/and fracture. The side effects of the anti-retroviral drugs - Highly active anti-retroviral therapy (HAART) - may add to bone demineralization and other challenges of drug-drug interactions. Moderate intensity aerobic (MIA) exercises and progressive resistance (PRE) exercises were therefore considered as useful adjunct therapy considering their known benefits in improving bone turnover at menopause

**Methods:** A single-blind randomized controlled trial of 89 patients attending the HIV clinic at Enugu State University Teaching Hospital Parklane, Enugu, used pre and post-test data to observe the response of the BMD after 6 weeks of MIA exercises, PRE exercises and no exercises (control), which constituted the treatment groups, with sub-groups comprising patients on HAART and HAART naïve, respectively. Patients gave written informed consent as approved by ethical committee. They were taught effective use of Borg Scale of the Ratings of Perceived Exertion (RPE), and exercised at an RPE of 10-13, which is interpreted as light to somewhat difficult. Group differences in the collected data were determined using repeated ANOVA, and LSD for post-hoc comparison at p< 0.05

**Results:** There was a significant "between-subject" interaction effect for exercise condition and BMD (F=6.616, df= 2,p=0.002), and for HAART and BMD (F=12.502,df=1,p=0.001), respectively. Post-hoc analysis shows a significant increase in the BMD in MIA versus PRE exercises (p=0.004,CI=0.1676-0.8329) and between MIA exercises versus control (p=0.004,CI=0.1637-0.8409), respectively. The highest positive change factor (+76.82%) for BMD occurred with PRE group on HAART. The most negative change factor for BMD (-13.49%) was recorded for control group (without exercise) on HAART, respectively.

**Conclusions:** These results suggest that BMD may be influenced by exercise or lack of it in patients on HAART and HAART naïve, such that group differences in BMD may be accounted for by the interaction of HAART and exercise in the patients. Based on the change factor, progressive resistance exercises is recommended to improve the BMD in HAART and HAART naïve patient groups. Importantly, HAART should not be commenced without complimentary exercises considering its observed adverse effects on BMD.

# CLINICAL APPROACHES TO DRUG AND ALCOHOL DEPENDENCE TREATMENT:

## THPEB083

### LOWER BLOOD ALCOHOL CONCENTRATION (BAC) AMONG HIV-POSITIVE VERSUS HIV-NEGATIVE MSM AFTER EXPERIMENTALLY CONTROLLED ALCOHOL ADMINISTRATION

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**Background:** HIV-related consequences, particularly impaired liver functioning, may result in higher levels of intoxication among HIV+ versus HIV- individuals after alcohol consumption. The present investigation entailed the first controlled alcohol administration experiment to assess whether level of objective intoxication differs by HIV serostatus.

**Methods:** HIV+ and HIV- social drinking men-who-have-sex-with-men (MSM) were recruited from a clinic in Toronto, Canada for an experiment on alcohol and sexual risk. In a specialized barroom laboratory, participants who had undergone a pre-fasting process followed a controlled alcohol administration protocol, in which those randomly assigned to the alcohol condition received 0.7g alcohol/kg body weight over a 15-minute timeframe (target blood alcohol concentration (BAC)=.080%). BAC was assessed via breathalyzer approximately 15-minutes post-consumption; followed by a series of breathalyzer tests continuing until detoxification (BAC< .040%).
**Results:** Among 283 participants (142 HIV+, 141 HIV-), 144 (77 HIV+, 67 HIV-) were randomly assigned to the alcohol condition (Mean age=43; 84% white). At the 15-minute assessment, BAC was significantly lower among HIV+ ($M$=.073, $SD$=.015) than HIV- participants ($M$=.079, $SD$=.014), $t$(143=2.71, $p$=.008. Similarly, HIV+ participants achieved a lower peak BAC ($M$=.084, $SD$=.012) than their HIV- counterparts ($M$=.089, $SD$=.013), $t$(142)=2.30, $p$=.023. In multiple regression models controlling for age, weight, race/ethnicity, and AUDIT score, HIV serostatus was the only significant predictor of both 15-minute BAC ($b$ =-.25, $t$(138)=2.99, $p$=.003) and peak BAC ($b$ =-.19, $t$(138)=2.19, $p$=.030). Time to detoxification did not differ by serostatus; with only weight being significant, $b$ =.59, $t$(138)=8.60, $p$=.000. Subjective intoxication did not significantly differ between HIV+ and HIV- participants. Among HIV+ participants, HIV viral load and taking ART were not significantly associated with BAC.
**Conclusions:** Contrary to predictions, HIV+ participants attained BACs that were 6%-7% lower than their HIV- counterparts. However, as time to detoxification did not differ by serostatus, BAC differences may therefore lie in absorption rather than metabolism or elimination of alcohol. Additional research is required to further delineate the possible mechanisms underlying this effect.

## Nutrition and HIV

### THPEB084

### Effect of a progressive resistance training program and whey protein intake on maximal strength in HIV-infected individual receiving antiretroviral therapy

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**Background:** HIV-infected patients on ART may develop complications including sarcopenia and dynapenia. Resistance training (RT) in combination with protein-supplementation containing nutrition is effective in decreasing both conditions.
**Methods:** Forty HIV-infected participants (40.8 ±7.7 yrs, 70.8 ±16 kg, BMI 30.9 ±7.2 kg.m-$^{2}$) receiving ART (≥18 months) were randomly assigned to either a whey protein/progressive resistance training (PRT) group (n=18), placebo/PRT group (n=14) or control group (n=8). Participants received either 20g whey or placebo (maltodextrin) pre and immediately post each PRT workout. Whole body PRT was performed 2/week for 3 months with the loads progressing from 40-85% of the subject's one-repetition maximum (1RM). The 1RM was done before(T1), after 3 months (T2) PRT program and 3 months following (T3) the cessation of the PRT program. Statistical analysis was done using a two-way ANOVA and Sidak's multiple comparisons test in the intervention groups and a one-way ANOVA with repeated measures in the control group. Cohen's $d$ effect sizes (ES) were also calculated and classified by Hopkins. Alpha was set at P ≤ 0.05.
**Results:** There was no significant interaction or group effect for the PRT groups. All ES from T1 to T2 and T3 indicated an increase in maximal strength. Bench press showed a medium ES (T1 to T3) for the placebo/PRT ((p = 0.02), ES: $d$ = 0.9; 95% CI -0.2 - 1.6). Squat had the largest ES (T1 to T2) for both the placebo/PRT ((p = < 0.001), ES: $d$ = 1.5; 95% CI 0.8 - 2.3) and whey/PRT ((p = < 0.001), ES: $d$ = 1.2; 95% CI 0.4, 2). Results from T2 to T3 showed positive ES for all exercises except deadlift and right/left grip strength, indicating a further increase in maximal strength in the whey/PRT group. In the placebo/PRT the majority of the ES were negative for all exercise except the squat, indicating a drop in strength during the detraining period. The control group had no significant changes.
**Conclusions:** A 3 month PRT programme increased maximal strength regardless of whey protein intake. The detraining period (T2 to T3) demonstrated minimal strength loss suggesting maintenance of strength gains particularly for the whey group.

## Streamlining ART initiation

### THPEB085

### Dramatic fall in delay in initiation of antiretroviral from 2011 to 2015 in two large public HIV treatment centres in Melbourne, Australia

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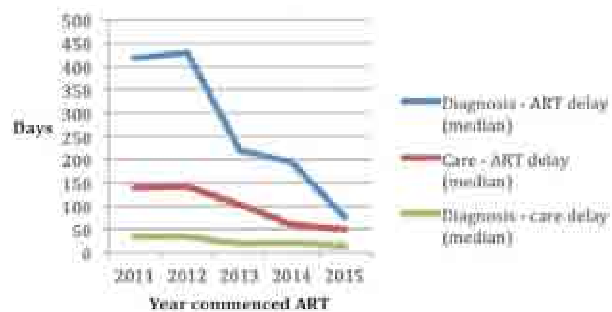
**Background:** Early linkage to care and initiation of antiretroviral therapy (ART) are targets for intervention to increase population antiretroviral therapy (ART) coverage. We examined the delay between diagnosis of HIV infection and engagement in care and ART initiation at the two largest public HIV treatment centres in Melbourne, Australia.
**Methods:** Records from patients commencing ART at the Melbourne Sexual Health Centre and The Alfred hospital from 2011 to 2015 were extracted. The intervals (in days) between date of diagnosis and first day of ART, between diagnosis and first day of entry into care, and between entry into care and ART were calculated. The median intervals were calculated and the Kruskal-Wallis test was used to compare the changes over time.
**Results:** A total of 729 patients commenced ART at the study sites. Median age was 35.7 years. 81% of those with known risk exposure reported male homosexual contact. The median delay between diagnosis and initiation of ART decreased significantly from 418 days (IQR: 91-1176) in 2011 to 77 in 2015 (IQR: 39-290) (p< 0.001). The median delay between diagnosis and entry into care decreased significantly from 34 days (IQR 9-346) to 14 (IQR 5-29) (p< 0.001) and between entry into care and ART was 140 (IQR 36-609.5) to 51 days (IQR 21-216) over time (p < 0.001).




[Delay in commencing ART 2011 - 2015]

**Conclusions:** Median delay in initiation of ART fell by more than half between 2011 and 2013 and then again between 2013 and 2015, suggesting a rapidly changing dynamics a decreasing size of the untreated population.

## Adherence among high CD4 persons

### THPEB086

### HIV-infected youth adherence through youth web-based peer support system

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**Background:** Mother to child transmission of HIV remains an important source of youth and adolescent infections. Adolescents on HIV treatment usually remain adherent to treatment while under the supervision and care of their parents and guardians while in primary schools. Once this care is lost when they go to high schools, adherence is often lost due to several reasons. To address this, a web based youth led peer support system was developed targeting adolescents and youth aged 15-24 years. The objective was to develop and implement a peer system to support adherence to HIV treatment among adolescents and youth.
**Methods:** A quasi-experimental web based peer support study was developed. The web site was led by youth who were also HIV infected. Through peer mobilisation from the HIV clinics and other social places, the youth could access the website

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from a centralized site with computers. They could also access the website from smart phones. Youth could access relevant information, ask questions and get clarification or referral.

**Results:** Ninety two HIV infected youth participated in the study with 48% being below 18 years with a mean of 18.4 years and mode of 17 years and median of 18 years. About half were girls. Reported behavior in relation to adherence improved in three months from the baseline. Importance of taking medications improved significantly. Confidence in taking medications also improved. Likelihood of missing doses of the medications reduced from 54% at baseline to 9% in three months (OR 12, 95%CI 4-42). Key external challenge was the reluctance of the parents and guardians to give consent for those below 18 years of age to participate in the study citing the need to maintain confidentiality.

**Conclusions:** Results from this pilot demonstrate the potential that the website peer support system can influence adherence to HIV treatment medications. Through this program we have demonstrated improved reported behaviour, we need to investigate whether the reported behaviour will likely translate to documented adherence, which will be the next phase of the study.

## CLINICAL ISSUES IN MEN WHO HAVE SEX WITH MEN

### THPEB087

### IMPLEMENTING UNIVERSAL ACCESS TO ANTIRETROVIRAL TREATMENT (ART) AMONG MEN WHO HAVE SEX WITH MEN IN ABUJA, NIGERIA: CHARACTERIZATION OF THE BASELINE ENGAGEMENT IN THE HIV CARE CONTINUUM

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**Background:** Nigeria has the second largest HIV epidemic in the world with the burden consistently high among key populations. Given this high burden of HIV, the National HIV Policy has made it a national priority to improve coverage of evidence-based HIV prevention, treatment, and care services for key populations including men who have sex with men (MSM). Here, we characterize the HIV treatment cascade and determinants of success in achieving viral suppression among MSM in Abuja, Nigeria.

**Methods:** From March 2013- November 2015, the TRUST cohort study used respondent-driven-sampling (RDS) to recruit 951 MSM into a treatment optimization study with clinical and community services co-located. Participants completed a structured survey instrument, HIV testing according to national guidelines, and CD4 and viral loads every three months for those testing positive (≤20 copies/ml at the latest follow-up visit was considered virally suppressed). Chi-squared test was used to compare differences between those engaged versus not engaged in the treatment cascade.

**Results:** A total of 951 MSM were recruited in this study with a median age of 24 years [IQR: 20-27]. About two thirds (73%) were tested for HIV. Among HIV testers, 44% (274) were living with HIV, 126 (46% of HIV-positive) were aware of their infection, 177 (65% of HIV-positive) were currently on or initiated ART, and 124 (70% of ART initiated) achieved viral suppression (≤20 copies/ml). Those who were not linked to HIV testing after screening were younger (16-24 years of age), less likely to have disclosed their sexual orientation to a health care worker, Muslim, and from later waves of RDS recruitment (after wave 12)($p < 0.05$). In addition, those who were Muslim and those who did not disclose their sexual orientation were less likely to initiate ART ($p < 0.01$).

**Conclusions: :** Perceived and enacted stigma continues to limit HIV testing and linkage to care even in the context of universal ART. Consequently, HIV prevalence and ultimately incidence among MSM in Nigeria is extremely high reinforcing the need to further investigate HIV treatment approaches while also scaling up novel HIV prevention approaches such as HIV Pre-Exposure Prophylaxis and improved STI management

### THPEB088

### PRIORITIZING MEN HAVING SEX WITH MEN (MSM) TO ACHIEVE ZERO HIV INCIDENCES AND ZERO STIGMA

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**Background:** The Sex Workers Outreach Program (SWOP) opened its doors to all male and female sex workers operating within Nairobi County, Kenya in 2008. Among the services offered were STI/HIV screening, HIV-positives received care and treatment and positive health, dignity and prevention (PHDP) package while the HIV-negatives accessed a risk behavior reduction package that contained condom supply and every three monthly HIV testing. The SWOP program noticed that there were high numbers of MSM and MSWs with HIV and did a baseline survey with a three monthly follow-up for HIV test.

**Methods:** Baseline data was captured at enrollment on a quarterly basis for a period of one year from Jan-Dec 2015. The MSM that had tested HIV negative were retested after every 3 months and their HIV status documented. The parameters that were captured at baseline were: HIV prevalence, status disclosure, STI in the last three months, number of sex partners, correct and consistent condom use.

**Results:** 696 MSM participated in the survey. 71.2 % (495) reported to have been treated for an STI within the last three months prior to enrollment. 97.4% (678) agreed to HIV test and 24 .2% (163) tested HIV positive. Only 36.9% (60) of the HIV positive had disclosed their HIV status to their sex partners and only 66.3 % (103) of the HIV positives had enrolled for HIV care and treatment. 97.9 % (682) had multiple sex partners of which 48 % (334) had both male and female sex partners. 88.9% (619) were practicing either receptive anal sex or both receptive and insertive anal sex. 63.8% (445) reported condom use in their last sexual act but only 2.3% (16) demonstrated correct male condom use while 1.1% (8) demonstrated correct female condom use. At the end of the year, 13.4 % (69) of the 515 who had tested HIV negative on enrollment had sero-converted to HIV positive.

**Conclusions:** MSM sex workers are a key population that needs to be prioritized in HIV prevention strategies due to high STI and HIV prevalence, a very high HIV incidence, and risky behavior with multiple sex partners both male and female.

### THPEB089

### EXTREMELY LOW HEPATITIS C ANTIBODY PREVALENCE AMONG HIGH-RISK, HIV-POSITIVE AND HIV-NEGATIVE MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN FROM COMMUNITY-BASED ORGANIZATIONS IN THAILAND

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**Background:** Globally hepatitis C (HCV) incidence is increasing among HIV-infected men who have sex with men (MSM). Whether anti-HCV should be part of the screening algorithm for MSM entering HIV treatment and prevention cascades is unclear.

This study aimed to estimate HCV antibody prevalence among MSM and transgender women (TG) in large urban centers in Thailand.

**Methods:** MSM and TG were enrolled at community-based organizations (CBOs) in Bangkok, Chiang Mai, Pattaya and Hat Yai into the Community-based Test and Treat Study during May-November 2015. Anti-HIV, anti-HCV, and syphilis serology were performed at study entry. We explored associations of anti-HCV prevalence with potential risk factors.

**Results:** Of 1025 participants (727 MSM and 298 TG), 853 were HIV-negative and 172 were HIV-positive. Median age was 25 (IQR 21-31) years; median monthly income was 280 USD. Positive anti-HCV tests were found in 7 (0.8%) HIV-negative and 1 (0.6%) HIV-positive participants. Five were MSM; 3 were TG. Compared to anti-HCV negative participants, anti-HCV positive persons were significantly older (median 34 [IQR 27-41] years; $P=0.005$), and more likely to have their highest educational attainment at or below junior high school (63% vs. 24%; $P= 0.03$). Although not statistically significant, anti-HCV-positive persons were more likely to be sex workers (50% vs. 26%; $P=0.2$) and to have used amphetamine-type stimulants in the past 6 months (25% vs. 8%; $P=0.1$). Both anti-HCV positive and negative persons

reported high rates of unprotected sex (≥80%) and multiple partners (≥58%) in the past 6 months. Syphilis infection was identified in 1 (12.5%) anti-HCV positive and 63 (6%) anti-HCV-negative participants.
**Conclusions:** Regardless of HIV status, anti-HCV prevalence was extremely low among MSM and TG who had reportedly high-risk behavior in our setting, which implies comparably low rates of chronic HCV infection. Our results do not support routine HCV testing of all MSM and TG in our setting. Targeted screening among MSM and TG who are sex workers or who have other behaviors known to be associated with HCV infection should be explored further.

## THPEB090

### RETENTION INTO CARE AND HEALTH BEHAVIOR PROGRAM: DOES WAVE OF RDS RECRUITMENT MATTER?

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**Background:** The TRUST cohort study employed respondent-driven-sampling (RDS) to recruit men who have sex with men (MSM) into HIV/STI prevention and treatment services in Abuja, Nigeria. RDS has been demonstrated to be effective in reaching more marginalized populations. Here, we evaluate waves of RDS recruitment with health care engagement and ultimate retention in the study at 6 and 12 months of follow-up.
**Methods:** 951 participants were recruited between 03/13-11/15 from 5 seeds resulting in 27 waves of accrual. Accrual waves were categorized into three groups consisting of nine waves each (1-9, 10-18, 19-27). Comprehensive structured instruments were administered at baseline and every 3 months including up to 18 months of follow-up. Differences in engagement in healthcare and 6/12 month retention by wave category were evaluated using Chi-squared test and bivariate logistic regression.
**Results:** Later waves were significantly less likely to be 20 years or older, have a prior HIV test or disclose their sexual orientation to health care providers as compared to the earliest waves(p< 0.01). The participants who were of the earliest wave category had the highest proportion of retention at 6 months and 12 months (Table 1). Specifically, at six and 12 months of follow up, those recruited at wave 10-18 [(OR, 0.53; 95% CI, 0.38-0.72), and (OR, 0.37; 95% CI, 0.25-0.54), respectively] and wave 19-27 [(OR, 0.33; 95% CI, 0.19-0.56), OR, 0.37; 95% CI, 0.20-0.67), respectively] were less likely to be retained as compared to participants recruited at wave 1-9.
**Conclusions:** These data confirm the utility of RDS to engage a more marginalized population of MSM into a study offering universal ART for all those living with HIV. However, these more marginalized MSM are also the most difficult to retain in treatment strategies necessitating novel retention approaches to achieve sustained viral suppression.

| | | 6 months | | 12-months | |
|---|---|---|---|---|---|
| Waves categories | total | n | % | n | % |
| 1 - 9 | 382 | 123 | 32% | 92 | 24% |
| 10 - 18 | 434 | 87 | 20% | 45 | 10% |
| 19 - 27 | 134 | 18 | 13% | 14 | 10% |

*[Table 1. Six and twelve month's retention of MSM into care and care health behavior change program in Abuja, Nigeria 2013 -2015]*

## THPEB091

### THE PREVALENCE OF ALCOHOL DEPENDENCE AND ACTIVE AMPHETAMINE USE ARE SUBSTANTIAL AND ASSOCIATED COMORBID MENTAL HEALTH PROBLEMS AMONG MALE SEX WORKERS IN VIETNAM

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**Background:** Male sex workers (MSW) are a particularly vulnerable group due to the stigma they experience as a result of sex work and male-male sexual behavior, and have high rates of substance use. Mental health problems are often associated with substance use, which exacerbates sexual risk for HIV infection. However, little research on this topic exists among MSWs in Vietnam.
**Methods:** A survey was administered to 300 MSWs in Ho Chi Minh City using venue-based sampling stratified by how MSWs primarily meet clients, including sauna/massage, brothels, bicycle massage, street/parks, and callboys. We performed bivariate and multivariable logistic regression procedures to examine associations between psychosocial factors (i.e., clinically significant depressive symptoms, post-traumatic stress disorder (PTSD) symptoms, active suicidal ideation, poor self-esteem, history of childhood sexual abuse, adult sexual violence, and social isolation) and current substance use (alcohol dependency and ampethamine use in the past month).
**Results:** Median age was 21 (range 15-48). Participants identified as 51% homosexual, 32% bisexual, and 16% heterosexual. HIV risk behaviors were significant, with 33% reporting condomless anal intercourse in the past month, 35% had active alcohol dependency, and 15% reported amphetamine use in the past month. Mental health problems were common, with 47% having depressive symptoms, 37% PTSD symptoms, 30% active suicidal ideation, and 33% reported social isolation. In separated multivariable logistic regression models, factors independently associated with alcohol dependency were history of child sexual abuse (adjusted odds ratio (aOR)=2.2, 95% CI 1.0-4.8), amphetamine use (aOR=2.0, CI 1.0-4.0), suicidal ideation (aOR=1.9, CI 1.1-3.4) and PTSD related symptoms (aOR=1.7, CI 1.0-3.0), while depressive symptoms (aOR=2.6, CI 1.3-5.2) and alcohol dependency (aOR=2.2, CI 1.1-4.3) were associated with amphetamine use.
**Conclusions:** Vietnamese MSWs have high rates of mental health problems, substance use, and HIV sexual risk. Mental health problems appear to have different patterns of association with substance use, such that trauma may contribute more to alcohol dependency, while mood issues may be more linked to amphetamine use among MSMs. These findings not only have implications for HIV prevention efforts, but also demonstrate the need for mental health services and substance use treatment for MSWs in Vietnam.

# CLINICAL ISSUES IN PEOPLE WHO USE DRUGS

## THPEB092

### ENGAGEMENT IN HIV/AIDS CARE AND LIKELIHOOD OF VIRAL SUPPRESSION ARE UNAFFECTED BY HIGH-INTENSITY CANNABIS USE AMONG PEOPLE WHO USE ILLICIT DRUGS LIVING WITH HIV/AIDS

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**Background:** There is a growing interest in the use of cannabis to treat a variety of health conditions including HIV/AIDS-related symptoms and antiretroviral therapy (ART) side effects. Meanwhile, efforts to reform prohibitions on non-medical cannabis use are underway in many settings, including Canada. Previous research suggests that intense cannabis use negatively impacts HIV treatment outcomes. However, it

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is unknown if high-intensity cannabis use hinders treatment-as-prevention (TasP)-based efforts to scale-up access and adherence to ART.
**Methods:** Data for this study was derived from the ACCESS study, a prospective cohort of HIV-positive people who use illicit drugs (PWUD) in Vancouver, Canada, a setting with a community-wide TasP initiative, universal no-cost medical care, and de-facto decriminalized access to cannabis. Cohort data was confidentially linked to comprehensive clinical profiles, including records of all ART dispensations and viral load (VL) tests. We used generalized estimating equations (GEE) to estimate the longitudinal bivariable and multivariable relationships between ≥ daily cannabis use and two key TasP benchmarks: engagement in care (defined as being dispensed ≥ 1 day of ART in the previous 180 days) and achieving viral suppression (plasma HIV-1 RNA VL < 50 copies/mL), adjusting for various socio-demographic, socio-structural, behavioural, and clinical factors.
**Results:** Between December 2005 and June 2014, 845 HIV-positive PWUD (286 [34%] women) were included in this study and contributed a total of 6732 observations. At baseline, 203 (24%) reported at least daily use of cannabis. In total, 752 (89%) were engaged in HIV care at least once over the study period, and a further 623 (83%) of these individuals achieved viral suppression for at least one 180-day period. In multivariable analyses, ≥ daily cannabis use did not predict lower odds of ART engagement in the full sample (Adjusted Odds Ratio [AOR]: 1.02, 95% confidence interval [CI]: 0.76-1.38) or viral suppression among ART-exposed (AOR: 0.97, 95% CI: 0.75-1.26).
**Conclusions:** HIV-positive PWUD frequently use cannabis and constitute a key target population of many TasP-based interventions. In light of current reforms to facilitate legal access to cannabis, we did not observe evidence to suggest that high-intensity cannabis use compromises progress towards TasP-related goals.

## THPEB093

### METHADONE MAINTENANCE THERAPY AND VIRAL SUPPRESSION AMONG HIV-INFECTED OPIOID USERS: THE IMPACTS OF CRACK AND INJECTION COCAINE USE

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**Background:** Enrolment in opioid substitution treatment (OST) is associated with improved HIV/AIDS treatment outcomes among people who use drugs (PWUD). However, the extent to which these benefits are sustained in the context of ongoing stimulant use, especially cocaine use, is unclear. We assessed the potential differential impacts of methadone maintenance therapy (MMT) on suppression of plasma HIV-1 RNA viral load (VL) among HIV-positive opioid users in relation to discrete patterns of cocaine use.
**Methods:** Data was drawn from the AIDS Care Cohort to evaluate Exposure to Survival Services, a prospective cohort of HIV-positive PWUD in Vancouver, Canada. Generalized linear mixed-effects modeling was used to longitudinally investigate the independent effect of MMT across strata of frequency of cocaine injection and crack cocaine smoking (≥daily versus < daily) among HIV-positive, ART-exposed, opioid users, after adjustment for potential confounders.
**Results:** The analysis included 397 HIV-positive opioid users who completed ≥ 1 study interview between 2005 and 2014. At baseline, 304 (77%) reported participation in MMT, and 37 (9%) and 158 (40%) ≥daily cocaine injection and crack-cocaine smoking, respectively. In an adjusted analysis, enrollment in MMT remained independently associated with an increased odds of VL suppression in both strata of crack cocaine smokers (Adjusted Odds Ratio [AOR] = 3.11, 95% Confidence Interval [CI]: 1.86-5.21 and AOR = 1.48, 95%CI: 1.04-2.09, for ≥daily and < daily smokers, respectively), and in those injecting cocaine less than daily (AOR = 1.88, 95%CI 1.38-2.56), but not in those injecting cocaine ≥daily (AOR = 1.37, 95%CI 0.53-3.49).
**Conclusions:** We found that while exposure to MMT was associated with increased odds of VL suppression among HIV- positive opioid users regardless of crack cocaine use, this effect was not observed among frequent cocaine injectors. Our findings highlight the need to expand access to OST and develop effective pharmacotherapies for the treatment of cocaine dependence as a means of optimizing HIV/AIDS treatment outcomes among PWUD at both the individual and community levels.

## THPEB094

### RELATIONSHIPS BETWEEN MARIJUANA USE AND OPIOID PAIN RELIEVER USE AND DOSAGE IN PEOPLE LIVING WITH HIV

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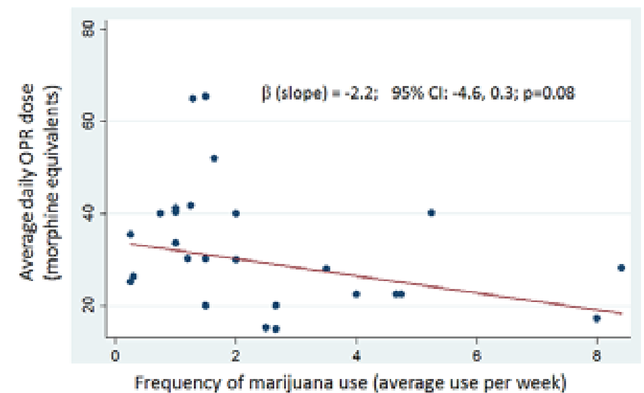
**Background:** Marijuana use and chronic pain are more common among people living with HIV (PLWH). Medical or recreational use is now legal in many parts of the US, but it is unclear how potential increases in use would impact pain treatment or the prescription opioid epidemic: marijuana may boost analgesic effects of opioid pain relievers (OPR) and availability of medical marijuana appears to reduce risks of OPR overdose. Yet past or current substance abuse is common in patients receiving OPRs, increasing risks of overdose.
**Methods:** Medical records of HIV patients engaged in care at an academic HIV clinic in 2012 were reviewed for detailed information on OPR prescriptions. Prescription date, dose (converted to morphine equivalents), frequency, and duration were used to classify patients as no OPR use, short-term OPR use, and long-term OPR use (prescribed ≥120 days of OPRs in the calendar year). Patients with documentation of OPRs prescribed outside the medical center were excluded (n=171). OPR data were compared with self-reported marijuana use obtained at each clinic visit to determine if a) marijuana was more common among OPR users and b) more frequency marijuana use was associated with lower OPR doses.
**Results:** Among 1,765 patients included in the analysis, 344 (20%) received OPRs. There was no difference in marijuana use between long-term OPR users (19%), short-term OPR users (15.6%) and non-users (16.8%) and no difference in frequency of use. Among 30 long-term OPR users reporting concurrent marijuana use, more frequent marijuana use was associated with lower OPR daily doses (Figure).
**Conclusions:** More frequent marijuana use tended to be associated with lower daily doses of OPRs, yet marijuana use did not differ by OPR prescribing status in this HIV patient population. Further research should explore whether marijuana use may prevent escalation to higher OPR doses, thereby reducing risks of overdose.




*[Frequency of marijuana use associated with average daily dose of opioid pain relievers in patients with HIV (n=30)]*

## CLINICAL ISSUES IN TRANSGENDER POPULATIONS (INCLUDING ART-HORMONE INTERACTION)

## THPEB095

### A COMBINATION CONTINGENCY MANAGEMENT AND PEER HEALTH NAVIGATION INTERVENTION TO LINK, RETAIN AND ACHIEVE VIROLOGICAL SUPPRESSION AMONG TRANSGENDER WOMEN OF COLOR

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**Background:** HIV prevalence among trans women is estimated to be 50 times greater than that of non-trans adults, and yet HIV-positive trans women exhibit low rates of linkage to and retention in HIV care. In response to this health disparity, this study

combines an innovative application of contingency management (CM), in conjunction with Peer Health Navigation (PHN), to improve linkage to and retention in HIV care, and achieve viral load suppression, among trans women of color.
**Methods:** Between February 2014 and December 2015, 112 HIV-infected trans women of color were enrolled (enrollment ends August 2016 with a target sample size of 140). During the 18-month intervention, participants earn CM rewards for confirmed linkage to HIV primary care, retention in HIV care, and reaching HIV milestones (i.e., medication adherence as confirmed by log reductions; VL suppression). If a participant attends all HIV care visits and reaches each verified HIV milestone, she can earn $500 USD in CM rewards over the 18-month intervention.
**Results:** Most participants identified as African American/black (46.5%) or Hispanic/Latina (25.0%), the mean age was 36.1 years (SD=9.7 years). 58.0% graduated from high school (and 70.5% reported at least one period of homelessness in the past six months. Participants commonly reported substance use, including marijuana (63.3%), methamphetamine (60.8%), amphetamine (35.4%), cocaine (30.4%), and crack cocaine (27.8%); 42.9% reported sex while high and 43.8% reported sex work in the previous 6 months. Seven participants were unaware of their HIV status at baseline (new HIV positivity rate=6.3%). At baseline, 27.7% had dropped out of HIV care, 37.5% were not prescribed ART, and 55.4% were prescribed ART but were non-adherent. To date, 50.0% have been linked into HIV care with an overall average enrollment-to-linkage time of 53.3 days (SD=84.4; range=0-420 days). Currently, 23.4% of the participants have achieved VL suppression. The intervention continues through August 2017.
**Conclusions:** Data indicates that the combined CM and PHN intervention is effective in linking and retaining trans women of color into HIV care. Longitudinal data on retention and ART adherence will provide further indication of whether this intervention can produce sustained VL suppression.

## THPEB096

### HIV+ TRANSGENDER WOMEN: DISPARITIES IN THE CARE CONTINUUM AT AN URBAN COMMUNITY HEALTH CENTER

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**Background:** Transgender women (TGW) are disproportionately affected by HIV infection with reported prevalence of 19% globally. Data on engagement and retention in care for HIV+ TGW is limited however studies have indicated lower ART adherence as a result of multiple structural and individual-level barriers. The Callen-Lorde Community Health Center (CLCHC) predominantly serves the lesbian, gay, bisexual, transgender (LGBT) communities, and is the largest New York community-based provider of HIV care, with approximately 3500 HIV+ clients. As part of quality improvement, we were tasked with identifying and responding to gaps in the HIV care continuum for our patients.
**Methods:** Data were extracted from the electronic health records for all HIV+ patients in care between 2/1/2015 and 2/2/2016, including demographics (race, ethnicity, age, sex at birth, gender identity) and HIV viral loads. Chart reviews ascertained antiretroviral (ART) use. Associations between viral load results and demographic factors were assessed using chi-square, student t-test. A logistic regression model was derived.
**Results:** 3485 HIV+ ethnically diverse patients, including 330 (9.5%) TGW, were engaged in care. Patient demographics: 51% white, 38% black, 4% multiracial, 6.1% Asian/Pacific Islander; 27% Hispanic/Latino ethnicity). The average age was 42 years (21-81). Overall virological suppression (< 200 copies/mL) at last laboratory measure was 88.7%. 20% of TGW failed to achieve suppression compared with 10.4% of nontransgender persons (p< 0.000). TGW had a higher mean viral load (13,168 copies vs. 3866 copies, p< 0.000). In the multivariate analysis, white race, adjusted odds ratio, (aOR) 1.39 (95% CI:1.08, 1.79), p=0.011, being transgender aOR 0.58 (0.41, 0.84), p=0.004, and increasing age aOR 1.04 (1.03, 1.06) predicted viral suppression. A chart review revealed that 57 (86%) of TGW with detectable viral loads had received a prescription for ART.
**Conclusions:** In our clinic, significant differences in virological suppression rates and mean viral load were seen between TGW and non-transgender clients. A high proportion of TGW who had been prescribed ART had detectable viral loads, possibly indicating adherence issues or drug-drug interactions that lower treatment efficacy. Cohort-specific treatment cascades are useful for identifying disparities among subpopulations that then facilitate targeted interventions to be developed.

# CLINICAL ISSUES IN OTHER KEY POPULATIONS

## THPEB097

### INDIVIDUAL AND POPULATION LEVEL IMPACT OF KEY HIV RISK FACTORS ON HIV INCIDENCE RATES IN DURBAN, SOUTH AFRICA

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**Background:** It's well documented that one of the key population groups are adolescent girls and young women with high reported HIV incidence rates. To advance our understanding of the high incidence rates in young women, we aimed to estimate the individual and joint impact of age, marital status and diagnosis with sexually transmitted infections (STIs) on HIV acquisition among young women at a population level in Durban.
**Methods:** We conducted a prospective observational analysis by combining 3,978 HIV seronegative women who were recruited for 4 biomedical intervention trials from 2002-2009. Point and interval estimates of partial population attributable risk (PAR) were used to quantify the proportion of HIV seroconversions which can be prevented if a combination of risk factors is eliminated from a target population. We particularly focused on 1 unmodifiable risk factor (age) and 2 modifiable risk factors (cohabitation status and incidence of STIs). Hazard ratios and 95% CIs for HIV incidence rates were calculated using Cox regression models. PAR and their 95% CIs were calculated for individual risk factors and their combinations using Cox regression models. We also created a "highest risk" category for "< 25 years". Analyses were performed using SAS statistical software, version 10
(SAS Inc., Cary, NC).
**Results:** Approximately 41% of women in the study population (n=3978) were < 25 years old. A total of 318 HIV incidence cases were observed. HIV incidence was significantly higher among younger women compared to older women. More than 71% of the observed HIV seroconversions (95% CI: 68, 73) were collectively attributed to 3 risk factors: younger age (< 25 years old), unmarried and not cohabiting with a stable/regular partner and diagnosis with STIs. Their partial contributions to the HIV incidence were 23% (95% CI: 18,27) for < 25 years old, 59% for unmarried and not cohabiting with a stable/regular partner and 18% for being diagnosed with an STI.
**Conclusions:** To our knowledge this study is the first to investigate the PAR of HIV risk factors in Durban, SA. An effective intervention is needed which encourages all sexually active young women to either marry or cohabit and prevent STIs through safe sex behavior.

# COVERAGE OF PREVENTION SERVICES AMONG KEY POPULATIONS

## THPEC098

### HIV TESTING AMONG MEN WHO HAVE SEX WITH MEN IN BAMAKO, MALI: IDENTIFYING FACTORS TO ADDRESS A CRITICAL UNMET TESTING NEED

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**Background:** HIV prevalence is 13.7% among men who have sex with men (MSM) in Bamako, Mali; 8 times that of men in the general population (prevalence 1.6%). Increasing HIV testing among MSM is critical for reducing the burden of HIV in this priority population. We identified correlates of HIV testing among MSM in order to inform HIV service provision and work towards the achievement of the UNAIDS 90-90-90 targets.
**Methods:** We conducted a cross-sectional survey using respondent-driven sampling among 552 MSM from October 2014 to February 2015. Eligibility criteria included age ≥18 years, residence in Bamako or its suburbs in the past 6 months, and hav-

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ing had sex with another man in the last 6 months. Participants were interviewed face-to-face and tested for HIV-1 antibodies. Weighted data analysis was conducted using RDS-A and SAS. Multivariate analyses were used to identify factors independently associated with HIV testing.
**Results:** More than a quarter (28.5%) of MSM had never tested for HIV. Only 47.1% of MSM tested in the past year and only 13.3% of HIV-positive MSM were aware of their HIV status. Factors associated with testing for HIV in the past 12 months include: having met with a peer educator in the past 12 months (aOR: 11.5, 95% CI: 5.0-26.7), ever giving something in exchange for sex (aOR: 4.1, 95% CI: 1.9-8.6), internalized homophobia (higher vs. lower than average) (aOR: 2.4, 95% CI: 1.1-5.5), and social cohesion (higher vs. lower than average) (aOR: 2.2, 95% CI: 1.0-4.8).
**Conclusions:** A significant proportion of MSM had never tested for HIV; the majority had not tested within the past year. A large majority of HIV-positive MSM in Bamako were unaware of their HIV status. Interacting with a peer educator in the last 12 months was strongly correlated with HIV testing even though peer educators do not provide HIV testing in Bamako. MSM with greater internalized homophobia may test as a consequence of their auto-stigmatization. Peer educators could boost HIV testing by tailoring messaging to build community and strengthen social cohesion. Peer educators have a pivotal role in facilitating HIV testing in Bamako and their numbers should be increased.

## THPEC099

### FACTORS ASSOCIATED WITH ANTIRETROVIRAL TREATMENT UTILIZATION AMONG HIV-POSITIVE FEMALE SEX WORKERS IN JOHANNESBURG, CAPE TOWN, AND DURBAN

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**Background:** New 90-90-90 HIV treatment targets to help end the epidemic seek to close the treatment gap among HIV-positive individuals. When the WHO recommended universal treatment in 2015, many countries faced new structural and financial challenges in expanding antiretroviral treatment (ART) to HIV-positive constituents. To better characterize the existing treatment gap among FSW in South Africa, we analyzed factors associated with the utilization of ART.
**Methods:** Using respondent driven sampling (RDS), we recruited 2,180 FSW in Durban, Cape Town and Johannesburg into an integrated biological-behavioral surveillance (IBBS) survey. The IBBS assessed HIV-testing and ART utilization history. Eligible FSW completed behavioral interviews and rapid HIV-testing, and provided blood samples for laboratory analysis. This analysis is restricted to the sub-sample analysis of 866 FSW self-reporting HIV-positive status, and used SPSS for data analysis. We present pooled, unweighted analyses, and multivariate modeling with adjusted odds ratios (aOR) and 95% confidence intervals (CI).
**Results:** Of the 866 FSW, 343 (39.6%) were from Johannesburg, 126 (14.6%) from Cape Town, and 397 (45.8%) from Durban; 43.1% of FSW were on ART of which 47.2% were 25 years and above. Bivariate associations with ART included age, hazardous drinking, substance use, physical abuse, and any birth within the last five years, whereas correct knowledge of HIV and ART was not. In multivariate analysis, FSW who were between 16-24 years old (aOR=0.34, 95%CI 0.22-0.51), were classified as hazardous drinkers (aOR=0.65, 95%CI 0.47-0.88), used any illegal substances (aOR=0.54, 95%CI 0.38-0.79), and reported any physical abuse (aOR=0.76, 95%CI 0.57-1.02) were less likely to be on ART.
**Conclusions:** Achieving optimal results across the continuum of care is premised on timely testing and linkage to care, particularly among high-risk key populations. Closing this existing treatment gap for FSW in South Africa may benefit from incorporating evidence-based brief interventions to address hazardous drinking and substance use, and by empowering FSW regarding victim rights. To further enhance ART utilization, we urge the South African government to adopt treatment at diagnosis guidelines as recommended by the WHO, in key populations in general, and FSW in particular, as soon as possible.

# PREVENTION FOR VERTICAL TRANSMISSION

## THPEC100

### GESTATION IN ADOLESCENTS INFECTED BY HIV THROUGH VERTICAL TRANSMISSION

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**Background:** Advancements in HIV treatment through new antiretroviral drugs (ARV) as well as more effective prophylactic and monitoring measures have made aging possible in the pediatric population with infectious diseases. Today, more than 80% of cases treated in infectious diseases clinics in Brazil are adolescents. Pediatricians face new challenges, such as the growing number of gestations within this group and the birth of the third generation of patients with HIV. Understanding the particularities of these patients is fundamental to assuring good care is provided.
**Objective:** Description of a cohort of gestational adolescents infected by HIV through vertical transmission.
**Methods:** Data collected by chart analysis and epidemiological data in 2015, of gestational adolescents infected with HIV by vertical transmission who received assistance at HIV/STD Clinics in São Paulo - Brazil.
**Results:** Out of the 44 adolescents in childbearing age followed up in these clinics, 23 pregnancies were identified in 14 patients (8 had 1 pregnancy, 3 had 2 pregnancies, and 3 had 3 pregnancies each, including one abortion), between 2006 and 2015 (18 of them within the last 5 years). The average age for the first pregnancy is 18.9 years (youngest being 14). 100% of them received prenatal care and ARV during pregnancy and labor. 17/22 pregnant adolescents (77.2%, excluding the abortion) presented a detectable viral load (47% of those presented over 10,000 cp/ml) and 7/22 (31.8%) had CD4 lower than 200cells/mm3. In relation to birthing methods, 20/22 were cesarean and 2/22 were vaginal. 100% were living newborns (NB), with 27.3% (6/22) premature. One adolescent and five NB (22.7% - 5/22) died, including four neonatal and one 2 month-old due to SIDS. 11/17 living babies were uninfected by HIV and 6/17 are in follow up.
**Conclusions:** This topic deserves attention from the AIDS clinics, particularly since it has not been researched within the population of seropositive adolescent females and due to the high rate of unfavorable results in our sample. Teams must be better prepared and teenagers must be educated in the subject of sexual and reproductive rights, facilitating their adequate access to contraceptive and family planning methods.

## THPEC101

### HIV TESTING AS A BOTTLENECK TO ELIMINATION OF MOTHER TO CHILD TRANSMISSION IN THE SOUTH-EAST ASIA REGION

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**Background:** Countries in South-East Asia region of World Health Organization have committed to elimination of mother-to-child transmission of HIV. All countries in the region recommend provider initiated testing and counseling for pregnant women (PW) in antenatal care (ANC) clinics. But this region is far from achieving the elimination target.
We look at the strategy for and coverage of HIV testing for PW in seven priority countries.
**Methods:** An extensive review was conducted on the prevention of mother-to-child transmission (PMTCT) programmes in seven countries in October 2015, which was based on reported data and questionnaire survey to countries. From this review, we present the HIV testing strategy for PW and latest available data on ANC coverage (one or more visits), HIV testing rates in PW, and proportion of the estimated HIV-positive PW diagnosed.
**Results:** Of the seven countries, universal HIV testing is provided in three countries (India, Myanmar, and Thailand). ANC coverage is almost 98% in Thailand; nearly all PW received HIV testing (2014) and 96% of the estimated HIV-positive PW were diagnosed. In India and Myanmar, ANC coverage is high but only 38% and 51% PW received HIV testing (2014), respectively. As a result, only 35% of the HIV-positive PW were diagnosed in India in 2014. Three countries (Indonesia, Nepal and Sri Lanka) have prioritized HIV testing for PW in high prevalence areas. Between 6-45% of PW received HIV testing in these countries and >70% of HIV-positive PW were unaware of their HIV status (2014 data). Bangladesh follows geographical prioritization with risk assessment approach for HIV testing in PW, provided in three medical colleges. Less than 1% PW were tested for HIV in 2014 and 25 tested positive, accounting for 18% of the estimated HIV-positive PW.

**Conclusions:** Regardless of the HIV testing strategy, HIV testing in ANC is low in all countries except Thailand, posing a unique challenge for scaling up of PMTCT services. Targets of elimination of mother to child transmission of HIV are unlikely to be achieved in all countries except Thailand. Urgent scale-up of HIV testing in ANC is needed to address the critical bottlenecks for ensuring a HIV free generation.

## THPEC102

### The cascade of care of pregnant women on the highly active antiretroviral therapy in South Africa: implications for elimination of mother to child transmission

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**Background:** To achieve complete elimination of mother-to-child transmission, it is important that HIV-infected pregnant women are diagnosed, linked to and remained in care, initiated and remained on the highly active anti-retroviral therapy (HAART) and reached virological suppression throughout the period of pregnancy, labour and delivery, and breastfeeding. This study aimed to evaluate the implementation of the lifelong HAART and the impact on the cascade of care of HIV-infected pregnant women attending maternal services in the Eastern Cape Province, South Africa.
**Methods:** An electronic point of care database for monitoring of treatment outcomes of HIV-infected pregnant women was implemented across three maternity services in Eastern Cape. We obtained relevant data on the demographics, time of HAART initiation, and type of HAART regimen, prior defaulting of HAART, CD4 count at booking, viral load at booking and viral load at delivery. Primary outcome measure is the peri-partum viral response categorised as suppressed viral load (VL < 20 RNA copies/ml), low viraemia (VL=20-999 RNA copies/ml) and high viral load (VL≥1000RNA copies/ml). We performed univariate and multivariate analyses to identify the significant predictors of peripartum suppression viral suppression.
**Results:** Of the total participants (n=675); the peripartum virological suppression rate was 66.9%. Significant proportions of peri-partum women had low viraemia (10.3%) and high viral load (22.8%). The majority of individuals with high viral load were 20-29 years old (27.2%), single (26.2%), live in rural residence (31.4%), unemployed (25.5%), consumed alcohol during pregnancy (29.7%), did not disclose HIV status to sexual partner (28.4%), non-adherent by self-reporting (48.7%) and failed to pick up pills on time (36.1%) and had prior history of defaulting of HAART (57.6%). After adjusting for confounding factors in the model analysis, on-time pick up of pills (p=0.03), booking CD4 count < 200 cells/mm$^3$ (p=0.000), previous VL≥1000 RNA copies/ml (p=0.000) and prior defaulting of HAART (p=0.01) were the only independent and significant determinants of high peri-partum viral load in the cohort. Of the women who chose exclusive breastfeeding (n=605); 24.3% had high viral load.
**Conclusions:** High peri-partum viral load during delivery and breastfeeding constitute significant risk of infant transmission. Complete suppression with HAART will require programmatic re-engineering by focusing on addressing the determinants.

## THPEC103

### Infant feeding practices at 14 weeks among HIV-infected and uninfected mothers in KwaZulu-Natal (KZN), South Africa

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**Background:** Exclusive breastfeeding (EBF) for the first six months of life is crucial for child development, health and survival. Previous estimates suggest that rates of EBF in South Africa are very low. For HIV infected mothers repeated changes to guidelines for prevention of mother-to-child HIV transmission (PMTCT) in recent years has led to conflicting and confusing infant feeding advice, and provision of free formula milk in government health facilities. As a result many HIV infected mothers chose to formula feed their infants. Current PMTCT guidelines strongly promote EBF for six months.
This study investigated infant feeding practises among caregivers in all 11 districts in KZN.
**Methods:** All caregivers aged >14 years attending with an infant aged 13- <16 weeks at 99 randomly selected primary health care clinics were eligible to participate. All participants provided written informed consent. Structured interviews were conducted to investigate infant feeding practices.
**Results:** 3661 interviews were conducted with mothers between June 2014 and March 2015. 3569/3661 (97.5%) reported having been previously tested for HIV. Of whom 1274 (35.7%) reported themselves HIV positive, of whom 1139 (89.4%) were on antiretroviral treatment at the time of interview. Infant feeding practises are shown in table 1.

| | HIV positive | HIV negative | P value | All |
|---|---|---|---|---|
| | n=1274 | n=2295 | | n=3569 |
| Never breastfed | 212 (16.6) | 123 (5.4) | P<0.0001 | 335 (9.4) |
| Stopped Breastfeeding | 223 (17.5) | 367 (16.0) | P=0.0347 | 590 (16.5) |
| Any breastfeeding now | 839 (65.9) | 1805 (78.7) | P<0.0001 | 2644 (74.1) |
| Mixed breastfeeding | 142 (11.1) | 635 (27.7) | P<0.0001 | 777 (21.8) |
| Currently exclusive breastfeeding | 699 (54.9) | 1172 (51.1) | P=0.425 | 1871 (52.4) |

*[Infant feeding practices among HIV positive and HIV negative mothers]*

**Conclusions:** Rates of EBF were high in both infected and uninfected mothers, but HIV infected women were more likely to choose to formula feed their infants compared to HIV uninfected women. However HIV infected breastfeeding were less likely to mixed feed. More advocacy is required to ensure optimal feeding practices for HIV exposed infants.

# Prevention for the general population

## THPEC104

### Systematic review and meta-analysis of HCV infection and HIV viral load: insights into epidemiologic synergy

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**Background:** Hepatitis C virus (HCV) and HIV infection frequently co-occur due to shared transmission routes. Co-infection is associated with higher HCV viral load, but less is known about the effect of HCV infection on HIV viral load and risk of onward transmission. Other HIV co-infections such as acute malaria, herpes simplex-2, and tuberculosis increase HIV viral load, likely through inflammatory-mediated mechanisms. HIV viral load is the key determinant of HIV transmission and consequently, these HIV co-infections have the potential to increase the probability of HIV transmission through significant increases in viral load.
**Methods:** We undertook a systematic review of articles indexed in PubMed and Embase comparing i) HIV viral load among ART-naïve, HCV co-infected individuals versus HIV mono-infected individuals and ii) HIV viral load among treated versus untreated HCV co-infected individuals. We performed a random-effects meta-analysis and quantified heterogeneity using the $I^2$ statistic. We followed Cochrane Collaboration guidelines in conducting our review and PRISMA guidelines in reporting results.
**Results:** We screened 3,337 articles and identified 16 relevant publications. Fourteen studies addressed the impact of HCV infection on HIV viral load, while two studies examined the impact of HCV treatment on HIV viral load. The majority of the studies classified participants based on HCV antibody testing alone without RNA confirmation of active viremia. Only four studies found strong evidence of association (p< 0.05) between HIV-HCV coinfection and HIV viral load, with all four pointing towards higher HIV viral load among mono-infected patients than among co-infected patients. A meta-analysis found no evidence of increased HIV viral load associated with HCV co-infection or between HIV viral load and HCV treatment with pegylated interferon-alpha-2a/b and ribavirin.
**Conclusions:** In our systematic review, HCV infection was not associated with an increase in HIV viral load among adults with HIV infection. This is a striking contrast to the increases in HIV viral load observed with other systemic infections. This finding presents opportunities to elucidate the biological pathways that underpin epidemiological synergy in HIV co-infections and may enable prediction of which co-infections are most important to epidemic control.

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## THPEC105

### EVALUATING THE ACCEPTABILITY OF HOME-BASED TESTING AS AN APPROACH TOWARDS ACHIEVING UNIVERSAL KNOWLEDGE OF HIV STATUS: FINDINGS FROM A CASE-CONTROL STUDY NESTED WITHIN THE HPTN 071 (POPART) TRIAL

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**Background:** The HPTN 071 (PopART) trial is being conducted in 21 communities in Zambia and South Africa to examine the impact of a combination prevention package including universal testing and treatment on community-level HIV incidence. Among community members consenting to the PopART intervention (and not self-reporting HIV-infection) 67% (142,922/212,819) accepted home-based HIV-testing and counselling (HB-HTC). We describe the findings of a nested case-control study to examine factors associated with acceptance of HB-HTC in the 8 intervention communities in Zambia.

**Methods:** Random samples of individuals who declined HB-HTC (cases) and those who accepted HB-HTC (controls) (equal numbers of men and women from each community), were questioned about socio-demographic and behavioural factors and asked direct questions about factors which encouraged or discouraged them from accepting HB-HTC, irrespective of whether they accepted it. Logistic regression was used to estimate odds ratios comparing cases and controls.

**Results:** The study recruited 495 participants in Zambia - 240 cases and 255 controls (52% and 46% males, respectively). There were no notable differences in demographic characteristics between cases and controls (eg. age, marital status, socio-economic status, education), nor in several behaviours examined (including sexual or health-seeking behaviour), except that cases were less likely to be mobile (recently spent nights away from home) (adjusted odds ratio (AOR):**0.64**;95%CI:0.42-0.97). The groups differed in perceptions held about HB-HTC. Cases were less likely to cite as reasons in favour of HB-HTC - convenience of testing at home (AOR:**0.36**;95%CI:0.24-0.55); accepting advice of community health-worker to test (AOR:**0.35**;95%CI:0.23-0.53); wanting to confirm HIV-negative status (AOR:**0.52**;95%CI:0.28-0.97). Cases were more likely to state recent testing (AOR:**1.76**;95%CI:1.04-2.96) and male cases, fear of an HIV-positive result (AOR:**3.23**;95%CI:1.55-6.73) as reasons against HB-HTC. Acceptance was not associated with wanting to test because of having an HIV-positive partner nor with concerns about confidentiality.

**Conclusions:** These novel data on reasons for and against uptake of HB-HCT, from a study nested within the largest ongoing trial of treatment as prevention, suggest broad acceptability across population sub-groups. They highlight perceptions which should be addressed when tailoring messaging to promote HB-HTC, in efforts towards attaining the first of the UNAIDS 90-90-90 targets and achieving universal knowledge of HIV status.

## THPEC106

### HIV INCIDENCE OVER TWO YEARS AMONG MEN WHO WERE AND WERE NOT CIRCUMCISED IN A NATIONAL VMMC ROLL-OUT IN ZIMBABWE

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**Background:** Three randomized control trials (RCTs) demonstrated at least 60% protection of voluntary medical male circumcision (VMMC) for adult male HIV acquisition. VMMC has also been shown to be protective against the acquisition of ulcerative STIs, and HPV, providing important reproductive health benefits to men. However, this positive impact may be offset by risk compensation (RC). No studies have determined whether VMMC continues to be protective under the auspices of a national Male Circumcision (MC) program, where circumcised men are not given free condoms, and are not exposed to repeated safe sex messages as they were in the RCTs. We assessed HIV incidence in a longitudinal study of circumcised vs. not circumcised men in the Zimbabwe MC Programme.

**Methods:** We enrolled a cohort of 2379 HIV-negative men age 18-40 in two urban districts in Zimbabwe, 1196 recently circumcised and 1183 not circumcised. Men were surveyed, at baseline, 6, 12, and 24-months, with HIV testing at 24-months. Men did not differ on sexual behavior at baseline, but differed on marital status, education, and income. We compared the two cohorts on HIV incidence at 24-months, also controlling for demographic differences at baseline. 134 uncircumcised arm men who got circumcised during the study were excluded.

**Results:** Mean age = 25.3; mean age at first sex = 19.3; mean lifetime sexual partners = 6.0. After excluding crossovers, 1745 completed the 24-month survey (78% of cohort). 1560 (89%) agreed to HIV testing at 24-months. There were 16 seroconversions, 12 in the uncircumcised, 4 in the circumcised group. Overall 2-yr incidence = 1.03%; 1.65% in uncircumcised men; 0.48% in circumcised men (p< .05), corresponding to a reduction of acquiring HIV of 71%. Baseline cohort group differences (marital status, income, education) were not significantly associated with sero-conversion. Analyses controlling for them still found significantly less sero-conversion among circumcised men.

**Conclusions:** These findings indicate that in Zimbabwe circumcision appears to be protective among men circumcised through the National VMMC Programme, even if there is increased sexual risk behavior. This extends the RCT findings to programmatic roll-out of MC in countries, and provides important support for continued implementation of national VMMC programs.

# PREVENTION FOR YOUTH AND ADOLESCENTS

## THPEC107

### ARE SCHOOL-BASED SEX EDUCATION INTERVENTIONS EFFECTIVE IN PREVENTING STI/HIV IN SUB-SAHARAN AFRICA? A SYSTEMATIC REVIEW AND META-ANALYSIS OF EVALUATED INTERVENTIONS

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**Background:** School-based sex education is the most comprehensive, uniform and effective way of promoting sexual health among adolescents and young adults. We systematically reviewed evaluations of school-based sex education interventions in sub-Saharan Africa to determine effectiveness of the interventions in promoting condom use and preventing sexually transmitted infections (STIs) including Human Immunodeficiency Virus (HIV). We also examined features in the design and implementation of the interventions that may be associated with effectiveness.

**Methods:** We searched electronic databases, key journals and reference lists of included studies for school-based interventions that promote condom use in sub-Saharan African schools. We extracted data on intervention characteristics, quality, implementation details and outcomes. Results were synthesized using random effect meta-analysis. The statistical difference in the occurrence of features that may be associated with effectiveness between the effective and ineffective interventions was determined using Chi-Square test.

**Results:** Thirty two evaluated interventions met our inclusion criteria. Overall, interventions had a significant effect on condom use in the short and medium term (OR = 1.62, 95% CI = 1.03-2.55,

*p* = 0.04 and OR = 1.40, 95% CI = 1.16-1.68, *p* = 0.0004 respectively). However, only few evaluations measured STI/HIV and the interventions showed no statistically significant effect in preventing HIV

(OR = 1.16, 95% CI = 0.87-1.54, *p* = 0.31) or HSV2 (OR = 1.08, 95% CI = 0.94-1.24, *p* = 0.27) infections. Only 11 out of the 32 interventions reported implementation details. 15 features that may be associated with effectiveness were identified; with "adapting programs from pre-existing interventions" and "extending activities outside the school environment" significantly differed between the effective and ineffective interventions. Interventions are more likely to be effective if six or more of the 15 features are included.

**Conclusions:** School-based sex education showed some effectiveness in promoting condom use among adolescents and young adults in sub-Saharan Africa. The effectiveness of future interventions can potentially be improved by including six or more of the features identified to be associated with effectiveness. However, more work is needed to implement and evaluate interventions with measurable effects on STI/HIV in addition to reporting details of the implementation processes.

## THPEC108

### PREPEX SAFETY AND EFFICACY STUDY FOR ADOLESCENT MALES WITH CONTRAINDICATED SUBJECTS

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**Background:** Following the WHO Framework for Clinical Evaluation of Devices for Male Circumcision the PrePex device was added to the pre-qualification list for use in adults above the age of 18. The WHO Framework also recommends studies to assess device safety in a wider range of subjects than those in previous studies, bridging studies are required to extend use of PrePex to age groups younger than those included in the pre-qualification, adolescents under the age of 18 years.
The primary objective to assess safety of device in adolescents.
**Methods:** The study was conducted at Rwanda Military Hospital between August to October 2015, recruiting adolescents ages 10-15 years. The study was evaluated and approved by the Rwanda National Ethics Committee on March 23rd, 2015, approval number 091/RNEC/2015. Nurses and physicians did the procedures and data was collected using Case Report Forms (CRFs).
**Results:** Out of the 96 participants undergoing PrePex, 50% presented one or two contraindications.
The majority contraindications presented were adhesions, 41/96 subjects, about 42% while only 8/96, about 8% presented narrow foreskin / tight phimosis.
All contraindicated subjects undergone a successfully standard PrePex placement after having their contraindication resolved in a non-surgical manner as described above.
For 12 /48 participants with contraindications oozing was observed as a result of the resolution, in all cases oozing was slight and mostly seen on the provider gloves or gauze. No compression or intervention was required before continuing with the Placement procedure, only disinfection with Povidone Iodine.
**Conclusions:** PrePex non-surgical procedure is feasible, effective and safe on men ages 10-14 that have contraindications such as phimosis or preputial adhesions. There were no AEs in our study related to the contraindication resolution methods, 5% Lidocaine cream was found to be safe and efficient pain mitigation for the contraindication resolution.

## THPEC109

### HIV PREVENTION SERVICES AND EDUCATION AMONG ADOLESCENT MEN WHO HAVE SEX WITH MEN

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**Background:** Many intervention programs have been developed to target adult men who have sex with men (MSM). However, few effective interventions targeting young MSM (YMSM) have been developed, and access for adolescent MSM may be limited due to cultural and structural barriers.
**Methods:** The National HIV Behavioral Surveillance YMSM Pilot Study was conducted among young males ages 13 -18, who were sexually attracted to or had sexual contact with other males and who resided in the New York City area. Participants were recruited using respondent-driven sampling and venue-based sampling, and interviewed using Computer Assisted Personal Interviews over a 13-month period. Survey topics included sexual behavior, sex education, and HIV prevention service use.
**Results:** Overall, 232 persons responded. Of these, 81.4% (n=189) learned about HIV in school but only 66.4% (n=138) learned how to use a condom. Furthermore, only half were instructed about condom use for oral or anal sex. About 52.6% (n=122) learned about sexual orientation in schools, with 50.8% (n=62) reporting the tone as positive. Respondents were grouped for analysis by early sexual debut (by age 15) (n=83, 35.8%) versus later or no debut (n=149, 64.2%). Those with early debut were significantly more likely to have obtained free condoms within the past 12 months (90.4% vs. 71.1%, p< .05), as well as to have obtained them from a clinic or LGBTQ organization (70.0% vs. 43.0%, p< .05). Furthermore, YMSM with early debut were also more likely to have obtained individual or group HIV prevention counseling from LGBTQ organizations (49.4% vs. 23.5%, p< .05).
**Conclusions:** While many YMSM have access to relevant sexual health services, school-based sexuality education does not adequately target specific needs of YMSM. Most YMSM with early sexual debut were able to obtain free condoms and many are connected with LGBT services. However, specific gaps remain in reaching adolescent MSM; future studies should compare needs of YMSM to other adolescents. Tailored comprehensive sexuality education in schools is needed to reduce future HIV risk in this population. Non-conventional platforms for sexual health services and information should be considered, as well as ways to reduce legal barriers to access for adolescents.

## THPEC110

### HIV RISK ASSOCIATED WITH SUICIDE ATTEMPTS AMONG A PROSPECTIVE COHORT OF STREET-INVOLVED YOUTH

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**Background:** Street-involved youth, experience elevated rates of HIV risk, infection and mortality. However, less is known about the relationship between markers of HIV risk and mental illness, particularly suicide, among this population. This study sought to longitudinally evaluate if markers of HIV-related risk were associated with recent suicide attempts among street-involved youth.
**Methods:** Data were derived from the At-Risk Youth Study, a prospective cohort of street-involved youth who use illicit drugs in Vancouver, Canada. Multivariable generalized estimating equation analyses were employed to examine risk factors associated with recent reports of attempted suicide.
**Results:** Between September 2005 and May 2014, 1050 street-involved youth were recruited into the cohort, of whom, 139 (13.2%) reported attempting to commit suicide in the last six months at some point during the study period. These participants contributed to a total of 4026 observations, with 172 (4.3%) observations involving a report of attempted suicide. The median number of study visits was 3 (interquartile range: 1 - 5). In multivariable analysis, engagement in sex work (adjusted odds ratio [AOR]=2.15; 95% confidence interval [CI]: 1.40-3.29), experiencing intimate partner violence (AOR=2.31; 95% CI: 1.36-3.93), having a history of childhood maltreatment (AOR=1.71; 95% CI: 1.03-2.86), and being depressed (AOR=2.87; 95% CI: 1.80-4.57) were all positively and significantly associated with recent suicide attempts.
**Conclusions:** Our study findings indicate a number of known HIV risk factors, including engaging in sex work and experiencing intimate partner violence, are associated with recent suicide attempts among street-involved youth. Findings point to opportunities to integrate HIV prevention and testing initiatives with mental health services that are accessible to youth. Future research should explore the gendered vulnerabilities of HIV risks on street-involved youths' mental health.

| Characteristic | Attempted Suicide Yes n (%) | Attempted Suicide No n (%) | Unadjusted Odds Ratio OR (95% CI) | p-value | Adjusted Odds Ratio AOR (95% CI) | p-value |
|---|---|---|---|---|---|---|
| Age (Per year older) | [illegible] | [illegible] | [illegible] | [illegible] | | |
| Female gender | [illegible] | [illegible] | [illegible] | [illegible] | | |
| Aboriginal ancestry | [illegible] | [illegible] | [illegible] | [illegible] | | |
| LGBT | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| High school incompletion | [illegible] | [illegible] | [illegible] | [illegible] | | |
| Homeless | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Depression | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Sex work | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Injection drug use | [illegible] | [illegible] | [illegible] | [illegible] | | |
| Daily alcohol use | [illegible] | [illegible] | [illegible] | [illegible] | | |
| Intimate partner violence | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Childhood maltreatment | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Unprotected sex | [illegible] | [illegible] | [illegible] | [illegible] | | |

[illegible]

*[Table 1. Baseline distributions, bivariable and multivariable GEE analyses of factors associated with recent suicide attempts among street-involved youth (n=1050)]*

## THPEC111

### YOUNG KEY POPULATIONS IN EGYPT: RISKY SEXUAL BEHAVIOR PATTERNS

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**Background:** Egyptian youth are estimated to be about one-quarter of the general population. Although young people represent around 14% of the newly detected HIV cases, related data are scarce (NAP, 2015). Due to the conservative society, Young Key Populations (KPs) lack knowledge about Sexual and Reproductive Health including information about HIV/AIDS, and have limited access to youth specific Harm Reduction (HR) services.
**Methods:** The Network of Association for Harm Reduction (NAHR) was established with support from Drosos Foundation, Ford Foundation, and FHI 360 to offer a package of HR services to KPs through its Comprehensive Care Centers (CCCs). Data

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regarding demographics and sexual behaviors of young KPs aged 16 to 24 were collected from six CCCs and analyzed between March 2013 and November 2015 in Greater Cairo and Alexandria.

**Results:** A number of 2857 Young KPs was outreached, while 2965 visited the centers. The males constituted the majority of the CCC visitors (93.7%). Almost 20% have received some university education. Regarding engaging in sexual activities, 97.6% reported ever having sex, and about 30% had sex with a same sex partner. As for sex exchange in the past year, 27.6% engaged in commercial sex, and 14% exchanged sex for drugs. Only around 5% reported having an STI in the last six months. As for condom use, 87% didn't use it during last sexual activity with a non-steady partner. However, about 85% expressed willingness to use condoms. Out of the visiting beneficiaries, 2798 received Voluntary Counseling and Testing. For 88.6% of the visitors, engaging in risky behavior was the reason for visiting the VCT, and around 65% were concerned about their new sexual relations. Out of the 2664 who tested for HIV, 2.5% were detected positive.

**Conclusions:** With almost all young KPs reported ever having sex, along with low condom use, there is risk of HIV transmission among them. A situation analysis integrated with the national Demographic and Health Survey to assess sexual behavior trends among young people is recommended. Additionally, there is a need to expand the HR approach of NAHR to other programs targeting the sexual health of youth.

## THPEC112

### SEXUAL LEARNING IN EAST AFRICA: IMPLICATIONS FOR HIV PREVENTION AMONG ADOLESCENTS

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**Background:** Kenya, Tanzania, and Uganda together account for 20% of the world's HIV-infected adolescents. By 2020, the United Nations aims to reduce new infections among adolescents by 75% through a four-pronged strategy that includes comprehensive sexual and reproductive health education. This effort could be informed by a synthesis of existing research about the formal and informal sexual education of adolescents in high-prevalence countries. The purpose of this study was to describe the process of sexual learning among East African adolescents.

**Methods:** Qualitative meta-synthesis, a systematic procedure for integrating the results of multiple qualitative studies of a similar phenomenon, was used. Fourteen electronic databases were searched for peer-reviewed papers that
(a) were published in English between 2003-2014,
(b) used qualitative methodology,
(c) included 13-20 year-old adolescents in Kenya, Tanzania, or Uganda, and
(d) addressed topics related to sexual health.
Through a systematic review process, 31 papers were determined to meet study criteria and were analyzed in four steps: appraisal of the papers, classification of the findings, synthesis of the findings, and construction of a framework depicting the process of sexual learning in this population.

**Results:** The framework includes four phases of sexual learning:
1) being primed for sex,
2) making sense of sex,
3) having chosen, coerced, or violent sex, and
4) living with the consequences of sex.
Adolescents were primed for sex through gender norms, cultural practices, and economic structures as well as through informal and formal instruction. They made sense of sex by acquiring information about sexual practices, relationships, and HIV - although their knowledge was often limited - and by developing a variety of beliefs and attitudes about sex. While some adolescents described having sex to meet their own wants and needs, many described having sex that was coerced or violent. Their sexual experiences had intrapersonal and interpersonal consequences for themselves, their families, and their communities.

**Conclusions:** The four phases of sexual learning interact to shape adolescents' sexual lives and their risk for HIV infection. This framework will contribute to the development of sexual and reproductive education programs that address risk within the broader context of sexual learning.

## THPEC113

### TRANSACTIONAL SEX AND RISK FOR HIV INFECTION IN SUB-SAHARAN AFRICA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Background:** Young women aged 15-24 in sub-Saharan Africa have continued to be disproportionately affected by HIV, which may, at least in part be driven by transactional sex. Despite this speculation, little has been done to understand the contribution of transactional sex to this disproportionate HIV risk. We therefore set out to systematically review studies that assess the relationship between transactional sex and HIV among men and women in sub-Saharan Africa and to summarize the findings through a meta-analysis.

**Methods:** A systematic review of cross-sectional and longitudinal studies was carried out for studies on women and men who engage in transactional sex published up to 2014. Random effects meta-analysis was used to examine the relationship between transactional sex and prevalent HIV infection across a subset of studies with the same exposure period. Analyses were conducted separately for men and women.

**Results:** Nineteen studies met our inclusion criteria. Of these, 14 provided data on women; and 10 on men. We find a significant, positive, unadjusted or adjusted association between transactional sex and HIV in 10 of 14 studies for women; and two of 10 studies for men. Unadjusted meta-analysis findings are significant for women (n=4; pooled OR=1.54, 95%CI 1.04 - 2.28; $I^2$=42.5%, p=0.156), but not for men (n=4; pooled OR=1.47, 95%CI 0.85-2.56; ($I^2$=50.8%, p=0.107).

**Conclusions:** Transactional sex is associated with HIV among women, while male findings were heterogeneous. However, there is a need for better measurement of the practice of transactional sex and; longitudinal studies to establish the causal pathways between transactional sex and HIV.

## THPEC114

### FACTORS INFLUENCING HIV DISCLOSURE BY YOUNG PEOPLE (10-24 YEARS) LIVING WITH HIV: STUDY RESULTS IN ZIMBABWE

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Young people aged 10-24 years living with HIV
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**Background:** SAfAIDS in partnership with Oxfam conducted a study to examine the factors influencing HIV disclosure to and by young people born and living with HIV and how the dynamics of disclosure affect HIV prevention, treatment adherence and the psychosocial well-being of HIV-positive young people aged 10-24 years.

**Methods:** Data was collected through focus group discussions with young people living with HIV and their primary caregivers separately, in-depth interviews with key informants, participatory exercises such as the use of mock gossip and life story telling to share one's lived experiences, and oral administration of a structured questionnaire on young people. Data was collect in Zvishavane and Bulawayo in Zimbabwe.

**Results:** 54% (107) of the young people had disclosed their HIV-positive status to someone. Disclosure rates were higher among female (65%) than male (40%). Seventy-three percent of support group members had disclosed their status compared to only 41% among non-support group members. Disclosure was also highest among respondents who had received information on disclosure (62%) compared to 32% among those who had not. 77% of the people who indicated that disclosure information received was adequate had disclosed their status. Of the 93 who had not disclosed, 76% indicated that it was due to stigma and discrimination, fear of rejection (20%) and lack of confidence (17%).Young people dominantly felt that HIV status disclosure was best timed if done on or before 14 years (79%). Attitudes towards HIV status disclosure were generally positive, with 90% of the respondents feeling more positive after disclosing than before disclosing their status. Girls and young women expressed an attitude sufficiently positive to urge others to follow their examples of disclosing their HIV at a higher rate of 61% than boys and young men (57%).

**Conclusions:** Stigma and discrimination, perceived number of youths in a similar situation, fear of rejection, preparedness of an HIV-positive caregiver to disclose own status to their children, age, knowledge on disclosure and sexuality activity were identified as the main HIV disclosure determinants.

## THPEC115

### THE SITUATION OF HIV AND AIDS IN PRIMARY, SECONDARY AND HIGH SCHOOLS AND WAYS TO LOWER NEW INFECTIONS: CASE OF DAR ES SALAAM, TANZANIA

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**Background:** HIV infection is believed to be high among adolescences and youngsters studying in schools in Dar Es Salaam, Tanzania. These adolescences and youths are more at risk of getting infected compared to their counterparts living in rural and suburban areas. We selected this particular location due to high prevalence of HIV/AIDS.
**Methods:** This study uses mixed research approach. We used qualitative method research approach to get in-depth understanding of the subject matter. An in-depth face to face interview and focus group discussion with the students in their schools compounds were applied. The project reached nearly 1070 male and female adolescents and youth in schools aged 12 - 24 year from 7 primary schools, and 2 secondary and high schools. In quantitative approach we used secondary data from Measure TDHS (Tanzania Demographics and Health Survey) of 2011/2012 that collected data on varieties of population issues including attitudes, knowledge towards HIV/AIDS, contraception usage and sexual practices.
**Results:** From auxiliary data shows that, an average of 16.8 years of girls start to engage in sexual intercourse with minimum age of 8 years. For recent sexual activities we have almost 70% had sex in the last 4 weeks, while remaining percentages 11% and 17% are not active because they are postpartum and not postpartum respectively. Percentage using condoms as means of contraceptive is only 1.8% which means exposure to STIs and HIV/AIDS is actually high.
**Conclusions:** HIV prevalence in Tanzania is about 5%. The prevalence is marginally higher among women in the reproductive age and even higher for adolescences and youths living in urban areas like Dar Es Salaam. Many have been tempted to lower infections yet there are nearly higher percentages of new infections. We propose measures like parents engagement, peer education (educate both boys and girls) to lower HIV infection rates.

## THPEC116

### VOLUNTARY MEDICAL MALE CIRCUMCISION AMONG ADOLESCENTS: A MISSED OPPORTUNITY FOR BEHAVIORAL INTERVENTION?

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**Background:** Voluntary medical male circumcision (VMMC) is one of the first venues for adolescent boys in many African countries to interact with the health care system. This study explored the messages and approaches used during VMMC counseling for adolescents and whether such strategies maximize opportunities for broader HIV prevention, adolescent sexual and reproductive health, and linkages to HIV care.
**Methods:** Ninety-two semi-structured qualitative interviews were conducted with VMMC clients ages 10-19 years in South Africa, Tanzania, and Zimbabwe 6-8 weeks post-procedure. An additional 55 interviews were conducted with VMMC counselors. Discussions explored HIV prevention counseling, HIV testing services received before VMMC, and counselors' approaches to HIV testing and disclosure of test results. Audio recordings were transcribed, translated into English, and coded by two independent coders using a thematic approach. Coders discussed discrepancies until at least 85% agreement was reached. Coded text was then assessed for themes.
**Results:** Male adolescents stated that limited information was provided to them about HIV prevention and care. While VMMC protocols require opt-out HIV testing, some adolescents discussed having blood taken without knowing the purpose, not receiving their test results, nor completely understanding the link between VMMC and HIV. Most boys interviewed assumed they had tested negative because they were subsequently circumcised. Identified themes among counselors included spending little time talking about HIV prevention with male adolescents. Counselors rarely discussed masturbation and expressed frustration over their lack of skills in counseling or disclosing HIV positive results to adolescents. Counselor discussions also revealed inconsistencies with regards to working with HIV infected adolescents, with some providers not wanting to circumcise HIV-positive adolescents, whilst others proceeding with the VMMC to avert stigmatization.
**Conclusions:** VMMC for adolescents appears to be a missed opportunity to engage in further HIV prevention and care. Counselors require training in counseling HIV positive adolescents, how to link them to care, and whether to offer VMMC to these clients. Counselors could spend more time focused on delivering prevention messages, further limiting the spread of HIV as adolescent males become sexually active.

## THPEC117

### FEASIBILITY AND ACCEPTABILITY OF THE "OUR FAMILY OUR FUTURE" INTERVENTION: A PILOT STUDY OF A FAMILY-BASED INTERVENTION FOR PREVENTING ADOLESCENT HIV RISK BEHAVIOR

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**Background:** Family-based interventions are developmentally appropriate for early adolescents (13-15 years), a key population for HIV prevention. Yet, few empirically supported family-based interventions exist in generalized epidemic settings and specifically address prevention needs linked to family mental distress. We tested acceptability and feasibility of "Our Family Our Future", an intervention integrating HIV prevention-mental health resilience, and adapted to South Africa from existing best-evidence models for HIV prevention and mental health resilience.
**Methods:** Nearly 800 families were screened for eligibility through systematic house-to-house sampling in Khayelitsha, South Africa from 2015-2016 and included if adolescents were 13-15 years, and if adolescent-parent dyads scored 9-15 on the Centers for Epidemiologic Studies Depression Scale. In total, N=76 dyads (152 participants) were randomized to intervention or wait-list control. Outcomes were collected via smartphones with audio computer-assisted self-interviewing at baseline, 1 month, and 3 months post-intervention. We examined feasibility through fidelity and retention. We examined acceptability through likert scales and open-ended responses. Descriptive data were analyzed in SPSS. Brown University and University of Cape Town provided ethical approvals.
**Results:** Adolescents were predominantly female (56%), Black African (100%), and an average of 14 years. Parents were predominantly female (96%), Black African (100%), and an average of 40 years. Adolescent lifetime sexual behavior included vaginal (17.6%) and anal sex (6.8%). Among sexually active adolescents, 24.6% tested for HIV, 35.6% had 5 or more partners, and 30.8% never used condoms. In the preceding three months, 30.8% inconsistently used condoms, and 30.0% had sexual partners of unknown HIV status. Feasibility and acceptability of a future trial is high. Facilitators were adherent (>95%) to the intervention protocol. All families (100%) were retained in ongoing post-intervention outcome assessments. All families (100%) were satisfied with intervention content and facilitators. The majority (>90%) were satisfied with intervention format and ranked material as relevant, enjoyable, and would recommend to others. Areas for refinement include addressing challenges of dyadic attendance, safe transport, hunger, and childcare.
**Conclusions:** Our Family Our Future is a promising family-based intervention for adolescent HIV prevention. High acceptability and feasibility of this developmentally tailored adolescent intervention indicates the need for a future randomized controlled trial.

## THPEC118

### INTERACTION BIAS AMONG COUNSELORS WORKING WITH ADOLESCENT VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) CLIENTS IN SUB-SAHARAN AFRICA

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**Background:** Male adolescents represent the majority of individuals seeking voluntary medical male circumcision services (VMMC) services in sub-Saharan Africa. VMMC counselors interact with adolescents of various developmental stages and sexual experience. This study assessed the counseling adolescents receive and evaluated counselors' knowledge and any biases when working with adolescent clients.
**Methods:** Qualitative interviews were conducted with 55 VMMC counselors and 92 adolescent clients in South Africa, Tanzania, and Zimbabwe. Interviews with counselors focused on describing the VMMC counseling process, their knowledge and training, and opinions and attitudes towards adolescent clients. Adolescent interviews focused on the content of counseling received, their feelings during the sessions, and perceptions of counselors' attitudes. Audio recordings were transcribed, translated into English, and thematically coded.
**Results:** Counselors expressed hesitation in communicating complete information—including HIV prevention, future sexual partners, and abstinence from sex or masturbation during the wound healing period—with younger males (< 15 years) and/or those assumed to have no sexual experience. Counselors also discussed the limitations of current guidelines and training in providing parameters on how to engage in adolescent-appropriate counseling. Many counselors discussed not assessing an adolescent client's sexual experience in order to gauge appropriate counseling content. Counselors reported giving full information, per VMMC protocols, to older adolescents since the counselors are not as hesitant in talking about sexual topics with them as compared with younger adolescents. Adolescents reported counseling content focused primarily on VMMC procedures or wound care. Finally, counselors discussed a preference for counseling younger adolescents with their parents/guardians to ensure adherence to wound care instructions. Some younger adolescents expressed reservation with this approach; they felt they would be unable to disclose personal experiences, including sexual ones, if parents/guardians are present.
**Conclusions:** VMMC counselors appear biased in how much information they communicate to younger versus older adolescent clients and sexually experienced versus inexperienced clients. VMMC may be more effective in providing complete HIV prevention and care messaging if all adolescents are given age and sexual experience-appropriate information during counseling sessions. Strengthening VMMC counselors' interpersonal communication and counseling skills requires guidelines and training to fully address the range of adolescent client needs.

## THPEC119

### GENDERED PREVALENCE AND PREDICTORS OF POTENTIALLY TRAUMATIC EXPERIENCES OF YOUNG MEN AND WOMEN IN SOWETO, SOUTH AFRICA

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**Background:** In many global settings, adolescents face high rates of HIV incidence, which has been linked with multiple exposures to traumatic experiences. We measured prevalence of exposure to potentially traumatic events (PTEs) by gender and assessed factors associated with experience among adolescents living in Soweto, South Africa.
**Methods:** We analysed baseline survey data from adolescents (aged 14-19) recruited from formal and informal townships in Soweto. "Ever" experience of trauma was assessed via an adapted version of the Traumatic Event Screening Inventory (TESI), including violent and non-violent experiences of trauma (19 items, study alpha=0.63). We assessed number of traumatic events experience, stratified by experience with violent and non-violent trauma, and by gender. Stratified by gender, multivariable logistic regression was used to assess independent correlates of high-PTEs experience (defined as ≥7 TESI-events, out of a possible score of 19).
**Results:** Of 830 participants (57.2% female; median age= 17 [IQR:16-18 ]), 767 (92%) answered all TESI scale-items. Majority of participants (99.7%) experienced at least one PTE. Median number of PTEs was 7 [Q1,Q3: 5,9], with no significant difference by gender (p=0.19). Young men reported more experiences and perpetration of violent PTEs (e.g. deliberately inflicted harm on someone), whereas females experienced more psychological PTEs (e.g. family member or someone close dying from HIV/AIDS).
High PTE score was independently associated with high food insecurity among both adolescent men and women (aOR=2.63, 95%CI=1.35-5.12; aOR=2.57, 95%CI=1.55-4.26, respectively). For young men, high PTE score was independently associated with older age (aOR=1.39/year, 95%CI=1.20-1.62); living in Soweto for < 5 years versus 'since birth' (aOR=2.84, 95%CI=1.17-6.90). Among young women, high PTE score was independently associated with probable depression (aOR=2.00, 95%CI=1.31-3.03, using CES-Depression score) and inconsistent condom use compared with no sexual experience (aOR=2.69, 95%CI=1.66-4.37).
**Conclusions:** Adolescents in Soweto experience a concerning number of PTEs. Exposure to PTEs were distributed along social and gendered axes. Among adolescent women, high PTE exposure was associated with mental health and HIV-related risks. Prevention science among adolescents in South Africa should consider structural and community-level interventions to reduce and address exposure to PTEs in young people as well as improve access to supportive mental health services post-exposure to PTEs.

## THPEC120

### ASSOCIATIONS BETWEEN SELF-ESTEEM, HIV-LITERACY AND SEXUAL BEHAVIOUR: A CAUSAL PATHWAY FOR HIV PREVENTION AMONG ADOLESCENT GIRLS IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Teenage pregnancies trap adolescent girls in poverty and increased risks of HIV infection due to discontinued education and exploitative relationships with unsafe sexual behavior. The intervention 'Star for Life' reported evidence of a 30% lower pregnancy rate in its programme schools in the UMkhanyakude district in KwaZulu-Natal (KZN) in 2013. There is little research on HIV prevention interventions that can identify behaviour change effects in individual-level data. The aim of this study was to assess a plausible causal pathway from 'self-esteem' through 'HIV literacy' to 'sexual behaviours' among adolescent girls.
**Methods:** Twenty-five percent of students (n=5556, 53% female) from 43 intervention schools in South Africa and Namibia provided self-reported data through a questionnaire in 2015. A series of correlation analyses (Pearson's *r*) were conducted with control for relevant structural and demographic variables. Comparisons were made depending on students' level of active engagement with the programme - a 'dose' effect. Indicators of 'sexual behaviour' included 'sexually active', 'condom use', 'multiple concurrent partners' and 'pregnancy'.
**Results:** The results were valid for all female students, but were particularly strong among female students in KwaZulu-Natal. For these girls, the 'dose' of the programme was positively correlated with their level of self-esteem (.204**), which was linked to their level of HIV literacy (.351**). Students' self-esteem and HIV literacy were both significantly associated with safe sexual behaviours. The intervention appears to empower also the girls who live with extreme poverty.
**Conclusions:** The research found that the notion of self-esteem was associated with HIV literacy and sexual behaviours in ways that strengthen our understanding of how to affect behaviour change for HIV prevention and a reduction in teenage pregnancies. These findings will assist efforts to formulate a best-practise model for interventions to empower individual adolescent girls and reach collective aspirational targets for HIV prevention within this key population.

## THPEC121

### INTEGRATION OF ADOLESCENT-FRIENDLY SEXUAL AND REPRODUCTIVE HEALTH (SRH) SERVICES INTO HIV PREVENTION, TREATMENT, CARE AND SUPPORT

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**Background:** Integration of HIV prevention services into reproductive health, care support and treatment programs can potentially increase the uptake of FP, dual protection and reduce vertical transmission of HIV. Pride Community Health Organization supports Adolescent Sexual Reproductive Health Services targeting young people in the age group of 10 - 19 and 20 - 24 years. An average of 65 young people each month access information and services in the "One Stop Shop" including Peer Supporter Program for Adolescents and Children Living with HIV to improve HIV treatment and care outcomes for peers.
**Methods:** To improve access to, and uptake of Adolescent Sexual Reproductive Health Services, HIV counselling and Testing, FP and referrals were integrated in the counselling process at the Youth Friendly Corner site with specific emphasis on dual protection and condom use. Peer Educators in the age group of 10 - 19 and 20 - 24 girls and boys implemented sexual and reproductive health programs at Estates Clinic which did not have youth friendly services at that time. A room was secured to be used for provision of Adolescent - Youth Friendly sexual and reproductive health services at Estate Clinic. Peer educators disseminate HIV and AIDS information and refer young people for services to the ART and TB nurses who are permanently located within the "One Stop Shop." Peer educators also conduct community awareness meetings in schools, bars and taverns.
**Results:** From January 2015 to December, 2015: 889 adolescents received HIV and AIDS information and 441 were tested for HIV, and 40 clients were referred for ART services. A total of 47 were also referred for STI screening, and 101 were referred for Voluntary Medical Male Circumcision. A total of 17, 238 condoms were distributed at the "One Stop Shop".
**Conclusions:** "One Stop Shop" provides a friendly space where young people can access information and increases uptake to ASRH services. Adolescents peer educators create demand for adherence and retention support, mitigation of stigma and discrimination. Health care providers work is easier and waiting periods reduced. Adolescents specific interventions increase access SRH and HIV services.

## THPEC122

### IS AGE REALLY JUST A NUMBER? FACTORS ASSOCIATED WITH HAVING SIGNIFICANTLY OLDER MALE SEXUAL PARTNERS AMONG YOUNG RURAL SOUTH AFRICAN WOMEN (HPTN 068)

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**Background:** AIDS is the leading cause of death among youth within sub-Saharan Africa, with South Africa reporting more new cases of HIV than any other country in the world. There are significant gender inequities in HIV infection within South Africa and young women aged 15-24 have HIV rates that are three times higher than their male counterparts. While it is clear that a combination of socio-behavioral, structural, and biological factors contribute to the African epidemic, there has been increasing attention given to sexual liaisons between older men and younger women, which have been linked to greater risk of HIV acquisition. This study aims to: 1) examine the association between partner age discordance and young South African women's sexual behavior; and 2) to identify socio-behavioral differences between those reporting age-discordant partnerships (partner ≥ 5 years older) compared with those reporting age-concordant partnerships (all others).
**Methods:** We used generalized estimating equations to analyze responses from 679 sexually-experienced females (aged 13-20 years) from rural Mpumalanga province participating in baseline data collection for an intervention trial.
**Results:** Partner age discordance was associated with greater odds of reporting both more frequent sex (adjusted odd ratio [aOR] = 1.77, 95% CI 1.20-2.60) and having a partner with concurrent partnerships (aOR = 1.77, 95% CI 1.22-2.57). Regarding socio-behavioral differences, young women reporting age-discordant partnerships were more likely to report: casual partnerships (aOR 1.50, 95% CI 1.06-2.13), having a partner with concurrent partnerships (aOR 1.71, 95% CI 1.19-2.46), 3 or more lifetime sexual partners (aOR 2.29, 95% CI 1.52-3.45), and frequent intercourse (i.e., having sex at least 2 or 3 times per month) (aOR 2.04, 95% CI 1.39-3.00). Moreover, they were less likely to report condom use at last sex (aOR 0.70, 95% CI 0.50-0.98) and less likely to report always using condoms (aOR 0.53, 95% CI 0.32-0.88).
**Conclusions:** Overall, our findings suggest that, among young South African women, the link between partner age discordance and HIV risk may be more strongly related to the characteristics of women who form these partnerships than to the young women's age-discordant partner.

## THPEC123

### BREAKING THE SILENCE ON EGYPTIAN YOUTH VULNERABILITY TO HIV/AIDS

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**Background:** Despite the fact that Egypt's conservative culture may have contributed to slowing down the progress of the HIV epidemic, traditional norms do not fully protect Egyptian youth. An increase in the number of detected HIV infections among youth was observed where 14.1 % of new cases were aged 15-24 years at the end of 2009. Youth are considered more vulnerable to HIV than other age groups being more sexually active and more likely to engage in risky behavior, however, the culture of silence around discussion of sexuality and the stigma around HIV/AIDS have limited our understanding of factors increasing vulnerability. This study offers an evidence-based description and interpretation of the HIV-related risks and vulnerabilities faced by different sub-groups of youth in Egypt and provides relevant policy recommendations.
**Methods:** The study entailed 28 in-depth interviews (IDIs) with young people practicing risky behaviors, namely people who inject drugs (PWID) of both sexes, female sex workers (FSW) and men who have sex with men (MSM) in addition to street children of both sexes and married adolescent girls. Additional 21 interviews were conducted with key informants and stakeholders. The study also included eight focus group discussions with young people aged 15-18 years, 18-24 years and HIV infected youth of both sexes.
**Results:** The study revealed that several factors increase Egyptian youth vulnerability to HIV including sociocultural, economic and legal factors in addition to limited access to SRH information and services. HIV related stigma and discrimination prevent youth from seeking HIV counseling and testing services. Poverty and unemployment prevent youth from fulfilling their sexual desires through marriage. Cultural norms forbid young people from receiving SRH information or services until after they get married. Additionally, legal barriers prevent PWID, FSW and MSM from seeking health services or disclosing their high risk behavior.
**Conclusions:** The study recommended a comprehensive approach to facilitate youth access to SRH information and services. Efforts must be made to eliminate HIV related stigma as well as creating a supportive enabling environment for youth SRH. In addition, policy and legal reforms are needed in relation to key populations.

## THPEC124

### PREP FOR YOUTH: A MULTI-DISCIPLINARY APPROACH TO REDUCE BARRIERS TO ACCESS

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**Background:** Daily oral antiretroviral pre-exposure prophylaxis (PrEP) has been shown to be highly effective in preventing HIV acquisition. In the US, high cost and access to prescribers knowledgeable about PrEP can become barriers to access for youth.
**Description:** This is an overview of PrEP experiences from a multi-disciplinary, youth-focused, urban community health center based in New York City, Health Outreach to Teens (HOTT). HOTT serves approximately 1200 individual patients/year aged 13-24 years. Aside from HIV services, we provide comprehensive transgender care, and general reproductive health services to a largely MSM population. Our PrEP program consists of clinicians, case management, nursing, outreach coordination, a PrEP specialist, and administrative staff. PrEP candidates are either self-referred or identified by one of the above providers. Patients are prescribed PrEP HIV/STD screening, risk assessment of acute HIV infection, and baseline labs. Uninsured patients are referred to the PrEP specialist who completes necessary documentation for government or medication assistance programs (MAP).

After PrEP initiation patients are seen or called in 2 weeks to assess for barriers to access or adherence and seen by the clinician in 4 weeks to repeat HIV testing and 3 monthly thereafter.
From 10/2013 to 10/2015 we have written 148 prescriptions for PrEP for patients 18-24 years. The racial breakdown (55% white, 14% black, 7% multiracial, 24% other or declined to answer; ethnicity 32% Hispanic) differs from our overall patient population (21% white, 27% black; 36% Hispanic). 87% identify as male and the rest as transgender (TG) women (9%), TG men (2%), or other (2%). Most patients identify as gay/MSM (83%). Commercially insured patients account for half of PrEP patients, government-issued insurance 27% and uninsured 23%; this also differs from our overall patient population where nearly 60% are uninsured.
**Lessons learned:** PrEP is a viable option for youth but barriers to care such as lack of insurance, cost of medication and complexity of aid programs can hinder its access and are better addressed by a multi-disciplinary team.
**Conclusions/Next steps:** We will continue to develop strategies to decrease disparities based on racial, transgender, and insurance status when accessing PrEP for patients at risk of acquiring HIV.

## THPEC125

### USE OF COMMUNITY LEVEL EVIDENCE INFORMED BEHAVIORAL INTERVENTIONS (EBIS) AS A STRATEGY FOR HIV RISK-REDUCTION IN YOUNG PEOPLE: RESULTS FROM COUNTIES SERVED BY APHIA*PLUS* KAMILI IN KENYA

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**Background:** According to KAIS 2007 and KDHS 2008- 09 surveys, young women aged 15-24 years are 4 times more likely to be HIV- infected than men (6.1% compared to 1.5%). APHIA*PLUS* KAMILI project is a five year USAID funded project in 11 counties focusing on improving quality health service delivery. The project is implementing Evidence informed Behavioral Interventions (EBIs) such as Sister to Sister and SHUGA in tertiary institutions, churches, MNCH clinics, youths out of school groups and youth friendly centers as a strategy to reduce HIV infection. Sister to Sister provides culturally sensitive health information to empower and educate women preferably clinical settings; help women understand the behaviors that put them at risk of HIV and other STDs and enhance their knowledge, beliefs, motivation, confidence, and skills. SHUGA is an innovative partnership resulting in a mass multimedia behavior change communication initiative targeting youth aged 15 to 24 with HIV prevention messages and linking them to vital services.
**Description:** The project has implemented “Sister to sister” within community setting rather than clinical setting. 64 facilitators aged 15-24 years were trained in September 2014 using the sister to sister curriculum. The facilitators had a target of reaching 5 young women aged 15 to 24 years daily. Videos were used during one on one session to build women’s self-efficacy and condom efficacy to empower them on safe sex. SHUGA is implemented in tertiary institutions and formal groups that can complete the minimum four sessions each lasting 1 and half to 2 hours.
**Lessons learned:** Between October 2014 and September 2015, 125,620 young women (3,916 and 121,704 through Shuga (October 2014 to June 2015) and Sister to Sister intervention respectively) were reached out of 105,013 targeted by the project. 96,113 received adolescent sexual reproductive health services, 1,896 received HTC services, and 423 took up a family planning method. Similarly 232,996 male and 15,002 female condoms were distributed.
**Conclusions/Next steps:** Shuga being friendly and serving both education and entertainment needs of the youngsters and Sister to sister intervention implemented within community setting rather than clinical setting are feasible, cheap approach which can be scaled up to reach the vulnerable groups.

## THPEC126

### CHURCH-BASED MARRIAGE COUNSELLORS KNOWLEDGE, PERCEPTION AND PRACTICES RELATING TO HIV COUNSELLING AND TESTING FOR INTENDING COUPLES IN IBADAN SOUTH-WEST LOCAL GOVERNMENT AREA, NIGERIA

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**Background:** This study investigated the knowledge, perception and practices concerning HCT among Church-based Marriage Counsellors (CMC) in Ibadan South-West Local Government Area (LGA), Nigeria.
**Methods:** The cross-sectional study involved the use of a three-stage random sampling technique to select 660 CMC from Christian Association of Nigeria districts, denominational categories and parishes in the LGA. A pre-tested semi-structured questionnaire which included 34-point HIV/AIDS and 13-point HCT knowledge scales as well as questions on HCT related perception and practices, was used for data collection. Descriptive statistics, T-test and F-test were used to analyse the data at p=0.05.
**Results:** Respondents’ age was 45.0±8.6 years, 60.3% were male, 84.1% had tertiary education and 65.0% performed only CMC roles; 35.0% were pastors as well. The HIV/AIDS and HCT knowledge scores were 25.6±3.3 and 9.3± 2.6, respectively. Majority (84.7%) perceived mandatory HCT as morally justifiable while 88.6% opined that churches should make HCT compulsory for Intending Couples (IC). Majority (88.0%) stated that pre-marriage courses for IC with infused HIV related topics existed in their churches. About two-third (63.2%) revealed that medical investigations which IC are advised to undergo include HCT. However, 50.0%, stated that a positive HIV test is never used to prevent marriage solemnisation. A combination of prayer and counselling (74.9%) topped the list of forms of support for IC with sero-positive status. Mean knowledge score of CMC without pastoral roles (9.2 ± 2.4) was not significantly different from the score (9.4±2.7) obtained by those with pastoral duties. Knowledge scores of females and males on HCT were 9.4±2.6 and 9.2±2.6, respectively with no significant difference. Knowledge scores on HCT by respondents with primary, secondary and tertiary education were 6.8±4.4, 8.2±2.9, and 9.5±2.4 with a significant difference.
**Conclusions:** There are HIV related educational opportunities for intending couples in many of the churches. However, inadequate knowledge and misperception of HIV counseling and testing existed among the counsellors. Training programmes aimed at upgrading respondents’ knowledge on HIV counseling and testing, implications of a sero-positive test result for intending couples and the importance of accessing treatment once a positive test is established are recommended.

## THPEC127

### ASSOCIATION OF EARLY SEX DEBUT AND SUBSTANCE USE WITH UNPROTECTED SEX AMONG YOUNG PEOPLE IN THREE COUNTRIES OF EASTERN EUROPE

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**Background:** In Eastern Europe HIV presents a significant threat for young people. There is an increasing of the role of sexual route of HIV transmission in the region. In this study we aimed to describe prevalence and correlates of sexual debut at early age among young people.
**Methods:** Data was collected by group-administered questionnaires in three countries: Russia (Saint-Petersburg and Kaliningrad), Latvia (Riga) and Warsaw (Poland). A total of 1596 participants aged 15 - 24 were recruited in vocational schools, dependency treatment clinic, social support youth and family centers and sports center. The study locations were selected to represent youth at greater risk of getting HIV, by the opinion of at least three local experts. Logistic regression models were used to find significant correlates of sexual debut before the age of 15.
**Results:** Early sex debut was twice more prevalent among males than females (17.6% vs. 8.2%; p≤0,001). In logistic regression sex debut before the age of 15 was associated with being male (AOR=2.08, 95%CI=1.46 - 2.98), living in St. Petersburg (AOR=2.25, 95%CI=1.41 - 3.60), being brought up at an orphanage (AOR=1.97; 95%CI=1.21 - 3.21), drug use prior to sexual debut (AOR=3.38, 95%CI=2.11 - 5.40) and early age of first alcohol intake (AOR=1.56, 95%CI=1.08 - 2.25). Early sex debut had more chances to be unprotected (AOR=2.23, 95%CI=1.52 - 3.27) and happen under influence of drugs (AOR = 3.18, 95%CI=1.49 - 6.79). Early sex debut in this study was independently associated with non-consistent condom use during last 12 months (AOR=2.15, 95%CI=1.38 - 3.36).

**Conclusions:** Study results might have important policy implications. Our data suggest the need for special attention to increasing the age of sexual debut since it's associated with significant immediate and postponed HIV risks, as well as adequate sex education for adolescents. Also, there is a clear need to link the prevention efforts aimed on reducing of drug experimentation and those focused on sexual behaviors which are usually run separately. Acknowledgments: National Institute for Health and Welfare, Finland; Social AIDS Committee, Poland; Baltic HIV Association, Latvia and Young Leaders Army (YLA), Russia; **Russian Foundation for the Humanities (15-03-00356).**

## THPEC128

### THE IMPACT OF THE *ZAZI* MASS MEDIA CAMPAIGN ON CONTRACEPTIVE UPTAKE AND HIV PREVENTION BEHAVIOUR AMONG 15-24 YEAR OLD YOUNG WOMEN IN SOUTH AFRICA

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**Background:** Young women aged 15-24 years old are considered among the most vulnerable groups at risk of HIV in South Africa and elsewhere. A campaign known as *Zazi* was launched in May 2012 with the aim of empowering young women with knowledge and skills to "*Zazi*- know themselves" and built their self-esteem to reduce HIV risk and increase uptake of contraception. An advertisement focused on promoting dual protection through increased dialogue and support by older women to younger women was broadcast on national television.
**Methods:** Between September and October 2015, a nationally representative survey of 3 763 men and women aged 15 years and over was conducted as part of the IPSOS Khayabus survey. Demographic, knowledge, attitudinal and behavioural outcomes (KAB), contraceptive use and exposure to the *Zazi* campaign was collected through face-to-face computer assisted personal interview (CAPI). The association between the KAB outcomes and exposure to the campaign was analysed for a subset of men young women aged 15- 24 (n=421), who are the primary audience of the campaign.
**Results:** 68.3% of young women reported condom use at last sex. Of these, 68% were at the highest level of exposure to the campaign, compared to 11.5% at no exposure. Use of contraceptives in the past 12 months was 26.9% (of whom 48.3% were in the high exposure vs. 14% with some exposure and 22.5% with no exposure). Average contraceptive plus condom use (dual contraceptive) in the past 12 months was 25%. Of these, 74% were in the highest exposure vs. 4.3% in the no exposure category. Reported discussions about contraceptives were as follows: 32.3% talked to spouse/partner, 18% grandmother, 16.2% sister and 13.3% mother. Ninety-eight percent of those using contraceptives, access them from government facilities and reported receiving 'excellent' or 'good' services.
**Conclusions:** The *Zazi* campaign plays a critical role in generating demand for HIV prevention and contraceptive (dual protection) among young women as well as promoting discussions with partners/family. With health services reported as mainly 'excellent' or 'good', there is an opportunity to engage with more young women to improve uptake of these services.

## THPEC129

### BARRIERS AND OPPORTUNITIES FOR PROMOTING CONDOM USE AMONGST YOUNG MEN IN SOUTH AFRICA

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**Background:** The 2012 South African National HIV Prevalence, Incidence and Behaviour Survey, found declines in condom use in almost all age groups and low general knowledge of transmission and risky behaviour (Simbayi et al, 2012).
This study's objectives were to explore current condom practices amongst males and females to understand patterns of condom use, and to identify barriers and enablers of condom use. Findings will inform *Brothers for Life* ongoing communication campaigns to promote condom use.
**Methods:** A qualitative approach was taken to the research. Fifteen focus groups and eight in-depth interviews were conducted with 123 participants. Participants were young people aged 18- 34 from urban, peri-urban and rural localities from KwaZulu-Natal, Gauteng, Mpumalanga and Free State.
**Results:** The study found high levels of self-reported risky sexual behavior, such as not using condoms once trust and love develops, removing condoms mid sexual intercourse and engaging in coitus interruptus during unprotected sex. Condom use was associated with being 'sick' and age disparate relationships were characterized by low condom use. Availability of antiretroviral treatment contributed to views that HIV infection is less 'scary' and perceptions that non-condom use is less risky.
Significant factors emerged that encourage condom use: acceptance of condoms to prevent pregnancy; openness by male partners to use condoms if prompted by their female partners, and both males and females supporting a shifting gender norm that normalizes women's proactive behaviour with condoms. Other factors supporting condom use included the desire to protect the main partner from diseases, and knowledge of HIV status. Medical male circumcision was identified seen as an opportunity to further promote and strengthen condom messaging.
**Conclusions:** There is a need for ongoing public communication drives and prevention interventions to increase knowledge of HIV sexual transmission and to promote condom use. Targeted campaigns and programmes that address specific barriers to condom use that drive the epidemic are needed. HIV prevention communication should address both emotional and physical aspects that lead to non-condom use and increase knowledge of sexual transmission and risky behavior. The agency of female sexual partners in facilitating and enhancing condom use should be promoted.

## THPEC130

### DOES HIV PEER EDUCATION LEAD TO PROMISING OUTCOMES AMONG OUT-OF-SCHOOL YOUTH IN THE NIGER DELTA? AN EVALUATION OF A PROGRAMME IN FOUR LGAS IN RIVERS STATE, NIGERIA

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**Background:** HIV and AIDS are among the most complex health problems in the world. Young people are at a high risk of infections and are, therefore, in need of targeted prevention. HIV peer education among out-of-school youth is an effective way to prevent the spread of HIV/AIDS infections among youth.
**Methods:** Youth PRO-FILE, a non-governmental organization (NGO) had identified and trained 85 Peer Educators who in turn, recruited 5,235 out-of-school youth aged 15-24 years in four Local Government Areas in Rivers State by snowballing over 12 months in batches/cohorts of 13-15 in 2014/2015. The FMoH National Peer Education Curriculum of six modules on HIV prevention messages was used. Each session lasted 90 minutes and was held 1-week apart in the communities. Supervisors from the NGO monitored the peer sessions. Using a quasi-experimental design, pre-/post-intervention assessments (without a control group) were conducted on behaviour intent, attitudinal change and, knowledge gained. Data was collected using a facilitated, self-administered semi-structured questionnaire.
**Results:** Findings are reported on a total of 424 matched pairs of completed pre-/post-intervention questionnaires. The mean age was 19.57±2.77 years. About half (54.25%) were males and 45.75% were females ($\chi2$=1.87, P-value=0.171). Reported sexual activity rate was 73.4% (n=311) before and 74.5% (n=316) after ($\chi2$=0.15, p=0.695). Intent to use condom at next sexual contact increased from 58.49% to 67.92% ($\chi2$=8.11, P-value=0.004), while those reporting that they would "definitely" not be pressured into having sex changed from 41.98% to 72.64% ($\chi2$=81.46, P-value=0.001). Positive attitude toward HIV issues changed from 26.65% to 96.93% ($\chi2$=310.59, P-value=0.000). Responses to each of the knowledge questions were given numeric scores on an ordinal scale; 60.38% had good knowledge at pre-intervention, and increased to 100% post-intervention (P-value=0.000).
**Conclusions:** This evaluation showed that HIV Peer Education succeeded in improving attitudes towards people living with HIV/AIDS, and showed potential to lead to change in sexual behaviour among out-of-school youths. Government and international agencies should intensify and scale up HIV peer education programmes in more areas, to increase the effects of providing opportunities to equip vulnerable youth with accurate information for informed decision-making.

## THPEC131

### UNDERSTANDING YOUNG MEN'S PERCEPTIONS OF THEIR ROLE IN TEENAGE PREGNANCY AND HIV/STI TRANSMISSION

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**Background:** South Africa has made major strides in reducing prevalence of HIV. However the HIV incidence among young women (113 000 in women aged 15-24) and persisting teenage pregnancies call for a renewed strategy and the involvement of young men. This study explores the perceptions of young men and their role in safer sex strategies.

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**Methods:** The sample was drawn using non-probability snowballing method. A total of 75 young men aged 18-25 across three provinces (Limpopo, Western Cape, and Gauteng) in South Africa were interviewed and completed a survey. A mixed method approach was adopted. In addition to analysing focus group discussions, univariate and bivariate analysis were used to test for associations.
**Results:** This study has shown the persistent nature of sexual risk taking among young men in the form of multiple sexual relations, trends to impregnate older women to prove manhood, and inconsistent use of condoms. Approximately 44% of participants reported having had one sexual partner in the last 12 months and 50.7% of the participants indicated that they always use contraceptives. Results indicate that family members are a good source of SRHR information and schools are a poor source. The focus group results reveal a missing link—despite a high level of knowledge (92%) about contraceptives, inconsistent use and sexual risk taking is persistent among young men, who believe that the responsibility for using contraceptives lies with women. The results also revealed that participants who discussed contraceptive use with their partners were significantly older (20; IQR: 19-22) than those who do not (19; IQR: 18-20) (p-value=0.003). This puts both young male and females at risk of unplanned pregnancies and contracting HIV/STIs.
**Conclusions:** This study has indicated that overall young men in this sample are aware of contraceptive use, the risk of STIs, and the responsibilities that come with impregnating a girl. However there is a gap in the application of the knowledge. There is a need to focus on younger males in future studies to distinguish the characteristics that promote consistent use of contraceptives and safer sexual practices.

## THPEC132

### GET YOUR LIFE: EVIDENCE-BASED INTERVENTION FOR BLACK AND LATINO YOUNG MEN WHO HAVE SEX WITH MEN (ADOLESCENT SEXUAL MINORITY MALES)

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**Background:** Los Angeles Unified School District (LAUSD) is the nation's second largest school district, with an annual enrollment of 655,716 K-12 students at 1,015 schools; nearly 5 million people live within the district's boundaries. Like Los Angeles County (LAC) as a whole, the LAUSD is incredibly diverse; over 90% of LAUSD students are young people of color, including 73.4% Latino and 10.0% African-American students. In 2011, 2.0% of male LAUSD HS students identified as gay, 3.0% as bisexual and 3.2% as unsure. Among HS students, 6.0% of males reported having had sexual contact with other males, including 8.1% of male African-American students and 4.7% of male Latino students. YMSM reported substantially higher risk behaviors than the general population of HS students,
**Description:** The U.S. CDC Division of Adolescent School Health funded a school-centered project in a Los Angeles school district targeting black and Latino adolescent sexual minority males (YMSM). The goal was to reduce STI and HIV infection by reducing risk behaviors, increasing resiliency through the Get Your Life evidence-based intervention (EBI). It is a sexual health intervention modified from 3MV, a black MSM EBI. The intervention was done in partnership with a community agency. The district focused on supporting specific priority schools with greatest need using several research-based core approaches and social media strategies.
**Lessons learned:** Our project completed focus groups with male youth, which gave us some interesting information about their perspective on social media and their friends. The project implemented 3 cohorts of the Get Your Life evidence-based interventions. We found the experience to be transformative for the young men. However, we have learned that recruitment for the youth into the project was much more difficult than expected and the promotional and marketing shifts needed to be made to increase participation.
**Conclusions/Next steps:** - Develop better promotional and marketing materials
- Use appropriate social media campaigns and messages
- Modification is necessary for black versus Latino populations

# PREVENTION FOR PEOPLE WHO USE DRUGS, INCLUDING HARM REDUCTION

## THPEC133

### PATTERNS OF HARM REDUCTION SERVICE UTILIZATION AND HIV INCIDENCE AMONG PEOPLE WHO INJECT DRUGS (PWIDS) IN UKRAINE: A TWO-PART LATENT PROFILE ANALYSIS

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**Background:** We describe program utilization patterns within the large network of Alliance for Public Health (APH) Ukraine-affiliated harm reduction NGOs and determine the relationship between utilization patterns and HIV incidence while taking into account oblast-level HIV incidence, ARV coverage, and syringe coverage.
**Methods:** Data for these analyses were extracted from APH-Ukraine's SyrEx database (Jan 2011-Sep 2014), with a final sample of 327,758 clients. We conducted a latent profile analysis on the mean number of condoms, syringes, and services (i.e., testing, information and counseling sessions) PWIDs received monthly over the entire period. For HIV-seronegative clients, we used data from the most recent year. For those who seroconverted to HIV during the study period, we used data from the year prior to seroconversion. Multivariable Cox proportional hazards models were used to determine the relations between HIV seroconversion and utilization class membership.
**Results:** In the final 4-class model, 34.0% of the participants are in class 1, who on average received 0.1 HIV tests, 1.3 syringes, 0.6 condom and minimal counseling and information sessions per month; 33.6% of participants are in class 2, who received 8.6 syringe, 3.2 condoms, 0.5 HIV tests, and counseling and information sessions; in class 3, 19.1% of participants received 1 HIV test, 11.9 syringes, 4.3 condoms, and 0.7 information and counseling sessions; 13.3% of participants in class 4 received approximately 1 HIV test, 26.1 syringes, 10.3 condoms and 1.8 information and 1.9 counseling sessions. In multivariable Cox proportional hazards regression models with HIV seroconversion as the outcome and latent class membership as the main exposure, class 4 clients had significantly decreased risk for HIV seroconversion as compared to those in class 1, after controlling for oblast-level characteristics.
**Conclusions:** Recent analyses of local data suggest that the Ukrainian HIV epidemic is slowing. However, injection drug use continues to be a major cause of HIV transmission. In light of the uncertain harm reduction funding environment in Ukraine, it is important to understand the role of harm reduction in HIV incidence among PWIDs. These analyses suggest that receiving more syringes and condoms was associated with decreased risk of HIV acquisition.

## THPEC134

### HIGH-FUNCTIONAL PAIN INTERFERENCE IS ASSOCIATED WITH ACTIVE INJECTION DRUG USE AMONG A COHORT OF HIV-POSITIVE PEOPLE WHO USE ILLICIT DRUGS IN VANCOUVER, CANADA

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**Background:** Despite the high prevalence of pain among people living with HIV/AIDS (PLWHA), the correlates of pain among PLWHA who use illicit drugs remains poorly understood. This study examined the relationships between functional pain interference (FPI) and illicit drug use behaviors, health service utilization, and other clinical and socio-demographic characteristics in a community-recruited cohort of PLWHA who use illicit drugs in Vancouver, Canada.
**Methods:** Bivariable and multivariable logistic regression was used to evaluate factors associated with high FPI among HIV-seropositive participants reporting major persistent pain in the AIDS Care Cohort to Evaluate Access to Survival Services (ACCESS). High FPI (>=5 versus <5) was ascertained using average interference scores from the Brief Pain Inventory.
**Results:** In total, 313 participants were eligible for this analysis, of whom 32% were female. The median age was 51 years (interquartile range: 45-55). 126 (40%) participants had high FPI. Compared to participants with low FPI, there were significantly higher proportions ($p$<0.05) of current physical disability, active injection drug use, perceived undertreated pain, recent hospitalization, recent denial of prescription

analgesia by a care provider, self-management of pain, recent non-medical prescription opioid use, and recent use of an emergency room among participants with high FPI. In the multivariable analysis, active injection drug use (Adjusted Odds Ratio [AOR]: 3.33, 95% Confidence Interval [CI]: 1.90-5.84), perceived undertreated pain (AOR: 1.82, 95%CI: 1.07-3.11), and current physical disability (AOR: 5.40, 95%CI: 2.95-9.87) remained positively and independently associated with high FPI. We did not observe FPI to be associated with differences in HIV viral load suppression, CD4 count or ART adherence.

**Conclusions:** A high prevalence of elevated FPI was observed in this cohort of PLWHA, which was associated with higher levels of acute health service utilization, illicit drug use behaviors, undertreated pain, and self-managed pain. The independent association between high FPI and active injection drug use is particularly concerning given the risks for HIV transmission, morbidity and mortality, and use of high-cost acute care services related to this high-risk behavior. These findings illustrate the need for increased efforts to improve function, quality of life, and pain management among PLWHA.

## THPEC135

### COMPREHENSIVE INTERVENTION PROGRAM HAS EFFECTIVELY DECREASED THE INCIDENCE RATE OF HIV AMONG INJECTION DRUG USERS IN PAST 10 YEARS: A CASE FROM GUANGDONG, CHINA

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**Background:** Zhongshan, a city located in the Pearl River Delta region, Guangdong, Southern China, its HIV epidemic was primarily driven by injection drug use (IDU), and it was also the earliest city which identified the HIV epidemic among IDU. The first local HIV case transmitted by IDU was identified in 1998. From 1998 to 2006, over 1000 cases infected by IDU were identified. To control the HIV epidemic in IDU, comprehensive intervention program was gradually implemented since 2007. HIV incidence rate was estimated to accurately evaluate the effectiveness of the comprehensive intervention program.

**Description:** Since 2006, in those detention places, health education about HIV knowledge and anti discrimination was administered to all the detained drug users and police officers, and the released drug users were followed for medical service and assistance. At the same time, 2 methadone maintenance treatment clinics and 7 needle change clinics were implemented to reduce needle sharing in the community. HIV screening was administered to all the detained drug users and those involved in MMT and needle change programs to identify the cases more early and sensitively. For all the identified cases, they were followed for routine medical education and CD4 test and transferred to treatment clinics if they met the treatment criteria.

**Lessons learned:** The surveillance system showed that the prevalence rate among IDU has declined from 11.4% in 2004 to 4.9% in 2014, and the annual reported number of cases from 161 in 2004 to 14 in 2014. According to the estimates form the Spectrum/EPP model, the HIV incidence rate declined from 1.25% in 2001 to 0.23% in 2014. During 2010 to 2014, among 1971 repeat HIV testers in the open cohort based on the detained drug users, 4473 person-years were followed with 4 of them became HIV sero-conversion, and the HIV-incidence was 0.09 (95%CI: 0.01 - 0.18) per 100 person-years.

**Conclusions/Next steps:** he comprehensive intervention program effectively decreased the HIV incidence among injection drug users in Zhongshan city, Guangdong China.

## THPEC136

### INTERACTION BETWEEN PROVIDERS AND CLIENTS IN METHADONE MAINTENANCE CLINICS IN CHINA

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**Background:** Provider-client interaction is an integral of clinical practice and central to the delivery of high quality medical care. This paper examines factors related to the provider-client interaction in the context of methadone maintenance treatment (MMT).

**Methods:** Data were collected from 68 MMT clinics in five provinces of China. A total of 418 service providers participated in an assessment using Computer-Assisted self-interview (CASI) method. Linear mixed effects regression models were performed to identify factors associated with provider-clients interaction measures including minutes spent with each client per day.

**Results:** It was observed that negative attitude towards drug users was associated with lower level of provider-client interaction and less time spent with each client. Other factors associated with lower level of interaction included being female, being younger, being a nurse versus a doctor and another type of provider, and fewer years in medical field. There was a trend towards higher provider-client interaction being associated with provider reported job satisfaction.

**Conclusions:** The findings of this study call for a need to address provider negative attitudes that can impact provider-client interaction and the effectiveness of MMT. Future intervention efforts targeting MMT providers should be tailored by gender, provider type, and medical experiences.

Funding source: National Institute on Drug Abuse/NIH (R01DA033130).

## THPEC137

### EXPOSURE TO VARIOUS COMBINATIONS OF HARM REDUCTION STRATEGIES IN RELATION TO HIV AND HCV INCIDENCES AMONG PWID IN MONTREAL, CANADA

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**Background:** While a decrease in HIV incidence was attributed to harm reduction (HR) approaches among people who inject drugs (PWID), HCV transmission has remained high in Montreal. A comprehensive HR approach is recommended to control HCV transmission among PWID. Evidence of its effectiveness for HCV prevention is, however, not well established. The objectives were to estimate HIV and HCV incidences (primary and reinfection), and to examine the association between HIV, HCV and exposure to various combinations of HR strategies (injection material coverage (IMC) and Opioid Agonist therapy (OAT)).

**Methods:** PWID were recruited into a prospective cohort study between 2004 and 2014. At each semi-annual visit, participants completed interview-administered questionnaires and provided blood samples. Rates of infection were estimated among initially anti-HCV negative participants (HCV primary infection), anti-HCV-positive/HCV-RNA-negative participants (HCV reinfection), and HIV-negative individuals (HIV). Among PWID eligible to OAT, exposure to IMC (100% safe sources (full) vs. no) and to OAT (0, < 60 mg methadone or suboxone, ≥60 mg methadone) were used to assess HR coverage. Full HR coverage was defined as OAT ≥60 mg methadone and full IMC, minimal HR as no OAT and < 100% safe sources IMC, and partial HR as other combinations. Time-to-event methods were used to estimate incidence rates. Time-updated Cox regression models evaluated associations between incident HCV and HR strategies.

**Results:** Overall, 1451 PWID were included in analyses (83% males; mean age 38 (SD 10.0)). Results are summarised in the following table:

| | HIV (N participants=839) | HCV Primary Infection (N participants=313) | HCV Reinfection (N participants=230) |
|---|---|---|---|
| Number of events/total years follow-up time | 19/3308 | 121/699 | 39/709 |
| Incidence per 100 p-years (95% CI) | 0.6 (0.4, 0.9) | 17.3 (14.4, 20.6) | 5.5 (4.0, 7.4) |
| **Incidences and Hazards Ratios according to Harm Reduction exposure*** | | | |
| | Incidence (95% CI) | Incidence (95% CI) / aHR adjusted for age and gender | |
| Minimal HR coverage | 0.3 (0.01, 1,2) | 24.6 (15.7, 36.9)/ aHR: 1.0 (ref category) | 11.8 (4.3, 26.3)/ aHR: 1.0 (ref category) |
| Partial HR coverage | 0.8 (0.4,1,2) | 22.3 (18.0, 27.4)/ aHR: 1.02 (0.6, 1.7) | 7.0 (4.8, 9.9) / aHR: 0.69 (0.3, 1.8) |
| Full HR coverage | 0.0 (no event) | 7.0 (3.4, 12.8) / aHR: 0.36 (0.2, 0.8) | 1.7 (0.4, 4.5) / aHR: 0.16 (0.1, 0.7) |
| *Including only visits where participants were eligible for HR strategies (excluding visits of participants who stopped injecting). | | | |

*[HIV and HCV Incidence rates and Hazard ratios of HCV according to Harm Reduction exposure]*

**Conclusions:** HIV incidence rate is low in Montreal, attesting to the positive effect of available HR strategies. HCV primary and reinfection rates remain, however, high. Relative to minimal HR, full HR coverage achieved 64% and 84% reductions of infection rates for primary and reinfection, respectively. Our data suggests that enhancing injection material coverage and OAT programs using adequate dosing treatments is essential to better control HCV.

## THPEC138

### MAPPING PEER SOCIAL NETWORKS AND HIV RISK AMONG WOMEN WHO INJECT DRUGS RECRUITED USING RESPONDENT DRIVEN SAMPLING IN THREE INDONESIAN CITIES

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**Background:** Women who inject drugs in Indonesia remain a hard-to-reach population by standard outreach methods employing professional outreach workers. National surveillance data on drug injecting and HIV prevalence is rarely gender-disaggregated, and when it is, samples of women are often too small to draw any solid conclusions. Perempuan Bersuara, a quantitative research study investigating sexual and injecting HIV risk among women who inject drugs conducted by Oxford University in collaboration with Atma Jaya University and Indonesian Drug Users Network, mapped the social networks of this population.
**Methods:** 731 women were recruited from urban locations in Jakarta, West Java and Banten provinces using respondent driven sampling (RDS) between September 2014 and May 2015. Network data and characteristics including HIV status, engagement in sex work, location, and age were recorded using a modified version of SyRex, a monitoring and evaluation database tool used by HIV prevention programmes. Social network mapping was conducted using NetDraw, an open source social network analysis and visualization software.
**Results:** Numbers of female injecting drug users recruited via peer networks significantly exceeded mapping estimates based on existing records of women reached by harm reduction services. The Greater Jakarta area, Bandung and Banten were home to approximately 60%, 30-35% and 5-10% respondents respectively. Mean age among participants was 31.3 years (standard deviation [SD]=5.1). Approximately 65.3% (N=477) of the sample had completed high school and almost half (N=324, 44.3%) were unemployed. 34.3% (N=250) of sexually-experienced study participants reported engaging in transactional sex. Self-reported HIV prevalence in the sample was 46.6% (N=341).
**Conclusions:** Peer networks can be effectively mobilised to improve access to traditionally "hard-to-reach" populations such as women who inject drugs. Existing outreach methods have limited reach among women who inject drugs in the Indonesian context. The Perempuan Bersuara study suggests that mobile RDS is an appropriate method for recruiting this population group. Further research is needed to determine how HIV prevention programmes in Indonesia can integrate social network mapping methods and peer driven outreach to attain broader reach and coverage.

## THPEC140

### OPIATE INJECTION AMONG YOUNG ADULT MULTIDRUG USERS IN THE CLUB SCENE

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**Background:** The evolving and intertwined epidemics of heroin and prescription (Rx) opioid abuse in the US have most severely impacted young adults. We examined demographic, health and social characteristics of young adult participants in the nightclub scene in Miami, Florida who inject opiates (PWIO).
**Methods:** Participants (n=498) were: enrolled in a behavioral intervention trial; ages 18 to 39; reported recent multidrug use; and endorsed regular attendance at large nightclubs. Data were collected using standardized health and social risk assessments, which included past 90 day Rx and illicit drug use history. Chi-square and *t* statistics were calculated to examine subgroup characteristics.
**Results:** Median age was 24; 45% were female; 64% Hispanic, 21% Black, 12% White. Recent opiate injection was reported by 11% (n=55) of the sample. PWIO were more likely than others to be non-Hispanic White (p< ,.001) and not non-Hispanic Black (p=,003); gender, age and education differences were not observed. Of PWIO, 44 (80%) initiated opiate use with Rx opioids, 9 (18%) with heroin, and one case was indeterminate. Heroin initiators reported much less education (8.7 vs 12.0 years; p=.009) than Rx opioid initiators. Both groups reported similar levels of current use of both Rx opioids and heroin; only 5 cases reported exclusive use of either opiate form. The primary route of access to Rx opioids was club- or street-based drug dealers. Of PWIO, 82% believed their risk of becoming infected with HIV in the future was zero or unlikely. Needle sharing was reported by 47%. Five PWIO reported infection with HCV, four cases of which were diagnosed in the prior 12 months. No cases of HIV were reported by PWIO at baseline; there was one seroconversion at 12 month follow-up.
**Conclusions:** The large majority of young adult PWIO in our sample initiated with Rx opioid abuse, and almost all PWIO reported current use both Rx opioids and heroin. Needle sharing practices are common and HIV risk perceptions are low. Although HIV in our sample was limited, HCV infection was more prevalent. Interventions to reduce needle risks and increase HIV/HCV testing are needed to prevent transmission among young adult PWIO.

## THPEC141

### END OF GLOBAL FUND SUPPORT AND ITS ASSOCIATION WITH RECEPTIVE NEEDLE SHARING AND HIV INCIDENCE AMONG PEOPLE WHO INJECT DRUGS (PWID) IN TIJUANA, MEXICO

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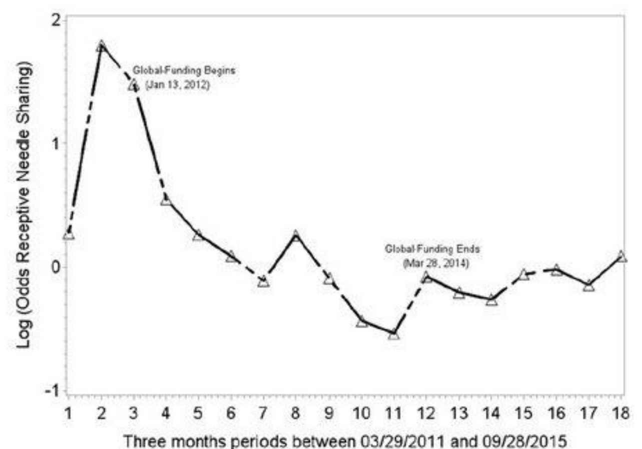
**Background:** During 2011-2013, >2.5 million syringes were exchanged in Tijuana, a Mexico-U.S. border city, through federal, state and Global Fund (GF) support. GF support ended in December 2013, when Mexico became designated as an upper-middle income country, and since then, syringe access has dramatically decreased. We studied trends in receptive needle-sharing, and risk factors associated with HIV seroconversion among PWID in Tijuana.
**Methods:** Since 2011, 734 PWID in Tijuana were recruited through street outreach and undergo semi-annual interviews and HIV testing. Mixed effects logistic regression was used to estimate the mean log odds of receptive needle-sharing during eighteen 3 month consecutive calendar time periods, with the first three corresponding to pre-GF (Mar 29, 2011 to Jan 13, 2012), next nine during GF (Jan 14, 2012 to Mar 28, 2014) and last six post-GF (Mar 29, 2014 to Sep 28, 2015). Segmented regression was then used to predict trends in receptive needle-sharing within periods and from one GF period to the next. Cox regression was used to identify predictors of HIV seroconversion through Sept 2015.
**Results:** As shown in the Figure, during the pre-GF period, there was a 60% increase in mean log odds of receptive needle-sharing (p=0.01). During the GF period, there was a 71% decrease in mean log odds of receptive needle-sharing (p=0.005). During the post-GF period, there was a marginally significant, 15% increase in mean log odds of receptive needle-sharing (p=0.07). Factors independently associated with HIV seroconversion were reporting difficulty obtaining syringes (AdjHR:3.46;95%CI:1.24-5.64), purchasing drugs in pre-loaded syringes (AdjHR:2.93;95%CI:1.04-4.11), ever experiencing forced sex (AdjHR:5.30; 95%CI:1.85-9.65) and methamphetamine as the first drug injected (AdjHR:3.26;95%CI:1.01-3.93).
**Conclusions:** Since Global Fund support ended in Mexico, limited syringe access is leading PWID to return to injecting behaviors that are fueling HIV transmission. Sustaining sterile syringe coverage in limited resource settings remains challenging.




*[El Cuete Needle Sharing]*

## THPEC142

### FACTURES THAT INFLUENCE OR IMPEDE LOW DEAD SPACE SYRINGES USE AMONG PEOPLE WHO INJECT DRUGS IN VIETNAM

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**Background:** Low dead space syringes (LDSS) may dramatically reduce HIV transmission among people who inject drugs (PWID) if used consistently. The government of Vietnam has included LDSS promotion in its national harm reduction program. The most consistently available LDSS on the market is the 1ml B.Braun Omnican. While LDSS use has been reported as high in the south of Vietnam, utilization remains limited in the north where HIV transmission persists. We sought to identify factors that encourage and impede PWID use of LDSS to inform local manufacturing of LDSS products and demand generation.
**Methods:** We conducted a cross-sectional study from April-June 2015 with 1,296 PWID across six provinces. Sample size was calculated utilizing PWID size estimations. Participants were recruited through respondent-driven sampling. Respondents were asked questions related to needle and syringe use and preferences, reasons why they would or would not use LDSS available on the market and willingness to pay (WTP) for LDSS.
**Results:** PWID interviewed averaged 9.9 years of injecting, and injected 59.7 times a month. A quarter of PWID (25.4%) used LDSS the last time they injected with use significantly weighted towards southern provinces (Ho Chi Minh City: 91.6%, CanTho: 38.6%) (p< 0.001). In the four northern provinces, use of LDSS at last injection ranged from 1.0-3.6%. For PWID that primarily used LDSS, the most important features were less pain when injecting (61.3%), delivering the maximum quantity of drug (54.7%), and a small (1ml), detachable needle (35%). Overall 35.3% of PWID preferred a 1ml syringe (primarily PWID in the south) while 26.4% preferred 2ml and 38.2% 3ml (predominately northern PWID). Primary reason for not wanting to use the 1ml LDSS was the syringe size not allowing for mixing heroin with other drugs and the needle being too small. 51.2% of respondents reported WTP for LDSS. WTP was associated with greater wealth, and having a secondary school degree or above (p< 0.001).
**Conclusions:** LDSS could play a significant role in reducing new HIV infections among PWID. For wide-scale utilization to occur, 2-3ml LDSS syringes need to be made available by local or international manufacturers at affordable prices, accompanied by intensive demand creation.

## THPEC143

### IMPACT OF OPIOID SUBSTITUTION THERAPY ON HIV PREVENTION BENEFIT OF ANTIRETROVIRAL THERAPY OUTCOMES: A SYSTEMATIC REVIEW, META-ANALYSIS AND MODELLING

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**Background:** A systematic review, meta-analysis and modelling was undertaken to assess the effect of OST on ART outcomes and the impact of the possible synergism between OST and ART on HIV prevention benefit of ART.
**Methods:** We searched multiple databases for studies between 1996-2014 that report the impact of OST compared to no OST on ART outcomes. Outcomes were: coverage and recruitment onto ART; adherence; viral suppression on ART; and attrition from ART. Meta-analyses were conducted using random effects modelling that informed two mathematical models. First, a static model evaluated the extent to which OST may increase the average efficacy of ART for reducing the infectivity of PWID, while accounting for PWID on and off ART. Second, a dynamic model projected how OST may improve the population-level effectiveness of ART for different OST and ART coverage levels.
**Results:** The systematic review identified 4685 articles and 32 studies were included. OST was associated with a 69% increase in recruitment onto ART (HR=1·69, 95% confidence interval (CI):1·32-2·15), a 54% increase in ART coverage (OR=1·54; 95%CI:1·17-2·03), a two-fold increase in adherence (OR=2·14, 95%CI:1·41-3·26), a 23% decrease in attrition (OR=0·77, 95%CI:0·63-0·95), and a 45% increase in viral suppression (OR=1·45, 95%CI:1·21-1·73).
Because OST increases the likelihood of a PWID being on ART and being virally suppressed, static modelling suggests that being on OST could increase the average relative effectiveness of ART for reducing an individual's infectivity, by 44% for a low baseline coverage of ART (20%), and 20% for a high baseline coverage of ART (60%). At the population-level, the dynamic model suggests similar impact could be achieved if OST is scaled-up to high coverage, with 60% OST coverage increasing the effectiveness of ART by 45% for 20% baseline coverage of ART, and 21% for 60% baseline coverage of ART. Although less population-level impact is achieved for lower OST coverage levels, impact at the individual level is maintained.
**Conclusions:** These findings strengthen the evidence base for the benefits of OST in HIV treatment and prevention, and support strategies to integrate OST with HIV services in order to improve the HIV treatment cascade amongst HIV-positive PWID.

## THPEC144

### IMPROVING ADHERENCE TO ART AMONG PEOPLE WHO INJECT DRUGS IN RESOURCE-LIMITED SETTINGS

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**Background:** There are an estimated 20,000 (PWIDs) in Kenya with an overall HIV 18% prevalence and who contribute 3.8% of incident HIV infection (KAIS 2012). Adherence to antiretroviral therapy (ART) among IDUs is often suboptimal estimated at 19.3%. The University of Maryland's Baltimore (UMB), with CDC-funding has been collaborating with Mathari Teaching and Referral Hospital to provide HIV prevention, care and treatment services since 2011. From December 2014, UMB began providing comprehensive 8-point harm reduction package for PWID including Medically Assisted Therapy (MAT) an intervention reducing dependence on opioid drugs, as well as improve adherence and treatment outcomes among the PWID. HIV-infected patients on ART are counselled intensely and ART provided through directly Observed Therapy (DOT).
**Methods:** The objective of this analysis was to determine the role of integrating ART services into MAT clinic, DOT approach and Methadone treatment in improving HAART adherence among HIV infected PWIDs. A descriptive analysis of routine data collected in this clinic was carried out for all clients enrolled in the clinic between December 8 2014 and 31 December, 2015. Self-reporting and viral load testing were used to assess adherence to ART.
**Results:** During this period, 554 clients were enrolled in the MAT clinic; 84% male of whom432 (78%) were retained in care. At enrolment 90 (16%) were HIV+ of who 45 (50%) had been initiated on ART previously with 37% adherence to ART. Baseline viral load ranged from 0% to 91%. Overall, 86(96%) of HIV+ clients received a CD4+ test and 71% of these were found to be eligible for ART and subsequently 67(89%) were started on HAART with 50(85%) on directly administered antiretroviral therapy (DAART). Adherence among those on DAART improved from 37% to 100% while those not on DAART remained at 37%.
**Conclusions:** The model of integrated services including ART in a one-stop shop approach to PWID led to a high uptake of adherence to ART among PWID. Prescription of methadone may have contributed to the increased adherence to ART among HIV-infected PWIDs. Reducing the negative impact of stressful life-events through psychosocial interventions should also be considered, even for those who have stopped using drugs.

## THPEC145

### INCREASED UPTAKE OF HIV PREVENTION SERVICES AMONG PEOPLE WHO INJECT DRUGS: FINDINGS FROM THE HRIDAYA IMPACT ASSESSMENT STUDY IN INDIA

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**Background:** Injecting drug use remains a significant route of HIV transmission in India. The Indian government currently reports the population of people who inject drugs (PWID) to be approximately 200,000, with an estimated HIV prevalence of 7.14% (NACO, 2011). India HIV/AIDS Alliance operates the Hridaya programme in five Indian states as part of the international, Dutch government funded Community Action on Harm Reduction (CAHR) initiative. The programme strengthens harm reduction services for PWID and their close contacts by providing additional services along with government-supported Targeted Interventions for HIV response.

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**Methods:** Cross-sectional baseline (2012) and impact assessment (2014) surveys were conducted following three years of programme implementation. PWID were selected for interviews through systematic random sampling using client information from partner NGOs at selected sites. A total of 600 semi-structured interviews and 50 case studies involving PWID were conducted.
**Results:** Respondents received services from Hridaya for an average of 12 months. Impact assessment report showed significant increases in utilization of HIV testing (76% to 88%), ART registration among HIV+ PWID (86% to 92%), education/diagnosis of TB (51% to 81%), OST (46% to 51%) and de-addiction services (47% to 57%) in the past year. Family support to PWID has increased significantly from 12% to 61% through Hridaya's added family outreach services. An association between family support and service utilisation was also observed.
**Conclusions:** Complementary services resulted in increased uptake of HIV prevention, care, support and treatment services including family support to PWID. Comparison with baseline figures shows a progressing trend; continued efforts in this direction will ensure that additional services reach those in need.

## THPEC146

### GENDER DIFFERENCES IN CHALLENGES FACING FAMILY MEMBERS OF PEOPLE WHO USE DRUGS IN VIETNAM

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**Background:** There has been widespread evidence that the negative consequences of drug abuse are not limited to People Who Use Drugs (PWUD); rather, they significantly impact the families of PWUD. Although family members of PWUD frequently have been studied, there has been little recognition of the caregiver role played by family members. In addition, limited studies have examined the impact of gender differences in challenges of family members of PWUD.
In this study, we examined gender differences in depressive symptoms, coping with stress, and caregiver burden of family members of PWUD in Vietnam.
**Methods:** This study used a cross-sectional baseline data were collected from a randomized controlled intervention trial with 600 family members of PWUD recruited from sixty communes in Phu Tho and Vinh Phuc Province, Vietnam. Depressive symptoms, coping with stress, and caregiver burden were collected at baseline.
**Results:** Family members of PWUD reported high levels of depressive symptoms (mean=19.5), sense of entrapment (mean=27.9), and caregiver burden (mean=58.85). The gender breakdown of family members was as follows: 140 male vs. 460 female. When we examined depressive symptoms, sense of entrapment, and caregiver burden by gender, we found that female caregiver reported significantly higher levels of depressive symptoms (mean=19.6), compared to male family members (mean=17.6; p=0.004). In addition, females reported higher sense of entrapment (mean=28.1 vs. 27.1; p=0.10) and higher caregiver burden (mean=59.2 vs. 57.6; p=0.10), compared to their male family members.
**Conclusions:** Family members of PWUD face significant challenges, including depressive symptoms, coping with stress, and caregiver burden. Our study underscores the importance of addressing the gender differences in family members of PWUD around these challenges. Gender differences of family members should be taken into account when developing future interventions tailored to the needs of family members of PWUD.

## THPEC147

### HIV COUNSELLING AND TESTING DECREASES RISK OF HIV SEROCONVERSION AMONG PEOPLE WHO INJECT DRUGS IN UKRAINE

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**Background:** HIV epidemic in Ukraine was estimated to be one of most rapidly growing in Europe and was driven primarily by people who inject drugs (PWID). Since 2003 Ukraine has been implementing nationwide prevention program for PWID which covers about 60% of population annually. The massive HIV counselling and testing (HCT) program among PWIDs has been launched in 2010. About 80,000 tests cover this population each year.
The study explores the impact of HCT as a part of prevention services package on the HIV incidence among PWIDs.
**Methods:** Respondent driven sampling was used in 11 regions representing different parts of Ukraine to involve HIV negative PWIDs into the cohort study. Total sample of 2157 participants was enrolled 2013. All participants had to be registered as prevention program clients prior to enrolment. Three follow-up rounds of assessment were done within the period of 6 month. Testing for HIV and HCV was conducted at each follow-up. Programmatic data collected through the client and service tracking database "SyrEx" were merged with the results of cohort study by means of unique identifier code. Bivariate analysis and Cox Regression were used to assess the influence of prevention services, including HCT on the HIV incidence.
**Results:** 52 seroconversions were registered at all follow-ups. Annual HIV incidence rate observed in the prospective cohort study among PWIDs was 1.81%. The number of new HIV positive results has been declining with each next follow- up measurement.
Average number of HIV tests received in lifetime (excluding the tests done in the study) was 2.87 for those who seroconverted compared to 3.45 among those who stayed HIV-negative (t-test p-value 0.037). In multivariate analysis, controlling for the effect of age, sex, other service use, each additional test was decreasing the risk of HIV seroconversion by 36.4% (aHR=0.636).
**Conclusions:** HCT remains one of core components of prevention services for PWIDs and should be further extended. Access of PWIDs to HCT should be properly monitored trough bio-behavior surveillance. Additional studies should be done in order to assess the quality of counseling and reasons for not being tested.

## THPEC148

### HARM REDUCTION AMONG INJECTING DRUG USERS IN SERBIA: LESSONS LEARNED AND EFFECTS FROM ENDING THE GF PROGRAMS IN COUNTRY

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**Background:** On 29 July 2002, the Médecins du Monde (MdM), France launched the first needle and syringe exchange project in Belgrade which NGO Veza continued to carry out until recently. After MdM had left, GF project overtook financing when Serbia received grants in Round 6 and Round 8. The GF project included spreading of the program to other towns in the country. On average, NGO sector provides support to 2.000 drug users annually. Approximately 1.000 of them are HIV tested. It is estimated that in Serbia there are around 13.000-30.000 IDUs. Program was carried out until the end of 2014 when it was closed down in all the towns in Serbia.
**Description:** NEP achieved a significant success in Serbia in terms of HIV prevention. Decrease in the number of HIV positive individuals among population was rapid through implementation of harm reduction program and resulted in almost totally suppressing the epidemic among IDU, a group under most risk until the end of the 90's. For that reason, in 1991, total percentage of IDU among newly infected people was 70%, 16% in 2002, while in 2014 it was 4%. (According to the 2014 Annual Report of Serbian National Institute for Public Health).
**Lessons learned:** HR program in Serbia was exceptionally successful. During more than 10 years, NEP covered over 7.000 users offering needle replacement program, advice and testing. After GF had left, these programs were not able to find an alternative source of financing by other donators, while at the same time the state did not recognize such a financing as of interest. There is a very profound conviction among professional community in Serbia that ending of harm reduction activities will lead to significant increase in the number of newly HIV infected persons among IKD in the coming years.
**Conclusions/Next steps:** It is an urgent need for Serbia to re-establish a harm reduction program for IDU, especially the NE program to prevent increase in the number of newly-infected IKD and to continue a positive trend in decrease of IDU in total number of HIV positive population in the country.

## Prevention for male, female and transgender sex workers

### THPEC149

### How might new HIV prevention products change financial incentives for risk in commercial sex work? Exploring the stated preferences of female sex workers in South Africa

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**Background:** New HIV prevention products are a priority for key populations including sex workers. In many settings, unprotected sex can attract large price premiums. To date, the impact of new HIV prevention products on the economics of commercial sex has generally not been considered. This study used a repeated discrete choice experiment (DCE) to explore how introducing an effective HIV prevention product may affect FSW preferences for pricing, sex-act and client characteristics.
**Methods:** From September to December 2015 we surveyed 122 consenting female sex workers from Ekurhuleni, South Africa using respondent driven sampling**.** All respondents were HIV negative by self-report, and were asked to choose between two unique, hypothetical commercial sex acts, over ten choice-sets. Acts were described by their price, condom use, sex-act type, and whether a client was thought to have a sexually transmitted infection (STI) or be HIV positive. Participants were subsequently asked to answer these same questions, but with the assumption that they were using a highly effective HIV prevention product. A random parameter logit model was used to analyse choice data.
**Results:** The median age was 30, 84% worked in an indoor setting, and the median amount charged for each of the last three vaginal sex acts was ZAR50. 95% of respondents chose at least one unprotected act in the DCEs. Estimates suggest that the amount of unprotected sex supplied could increase by 120% after the introduction of an effective HIV prevention product, assuming demand for unprotected acts remained constant. Results suggest that most respondents understood the framing of the DCE as client HIV status became a non-significant influence on choice (p=0.07), whilst price, condom use and the type of sex provided were all significantly influential in both DCEs (p< 0.01).
**Conclusions:** This study suggests that the price premium of unprotected sex would decrease with the introduction of a fully efficacious HIV prevention product, potentially increasing the number of unprotected sex acts supplied. With partial HIV, STI, or pregnancy prevention efficacy, product impact may be reduced. There is a need for clear messaging around the efficacy of products, alongside encouragement for continued and consistent condom use.

### THPEC150

### HIV correlates among mothers engaged in sex work, with and without children at home

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**Background:** Many sex workers are mothers, but little is known about how having children may affect HIV-related risk behaviors among female sex workers (FSW). Previous work indicates mothers may increase sexual risk behaviors, but also may adopt protective behaviors (STI care, demanding condom use) for their children's sake. Additionally, mothers who live with their children may be more likely to adopt protective behaviors. Using data from FSW in three cities in Russia, we explore the relationships between having children, the child(ren)'s residential status (with or away from the mother), and HIV-related risk behaviors.
**Methods:** FSWs (n=754) from Tomsk, Krasnoyarsk, and Kazan were recruited using respondent-driven sampling for a cross-sectional survey in 2011. Using logistic regression, we explore the HIV-risk related correlates of having children either at home or living away, and those relationships to HIV-related risk behaviors (inconsistent condom use, accepting more money for condomless anal or vaginal sex, experience of sexual or physical violence).
**Results:** 754 FSW were categorized into non-mothers (n=422) and mothers (n=332); mothers were further categorized into non-residential mothers (live separately from children, n=156), and residential mothers (live with children, n=176). Mothers vs. non-mothers were significantly older, more educated, and were more likely to be married/partnered. Overall, mothers were not significantly different from non-mothers in bivariate and multivariable analysis, with the exception of increased likelihood of lifetime HIV testing (aOR 2.12 [95%CI:1.07-4.21]). Residential mothers were protected against accepting more money for condomless vaginal (aOR 0.57 [95%CI:0.40-0.82]) and anal (aOR 0.37 [95%CI:0.15-0.93]) sex compared to non-mothers. This was also true of residential vs. non-residential mothers for anal sex (aOR 0.40 [95%CI:0.18-0.90]), though there was no statistical difference for vaginal sex (aOR 0.63 [95%CI:0.35-1.14]). Residential mothers had lower odds of having experienced sexual violence from clients (aOR 0.42 [95%CI:0.22-0.80]) relative to non-mothers, as well as compared to non-residential mothers (aOR 0.49 [95%CI:0.23-1.01]).
**Conclusions:** Having children at home had a protective effect on HIV-related risk behaviors, highlighting how the broader contexts of FSW's lives may, in part, influence their risk in the work environments. Holistic understanding of FSW's family contexts and reproductive needs can inform programmatic response to co-occurring health concerns.

### THPEC151

### What are the factors determining recent HIV testing among female entertainment workers in Cambodia?

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**Background:** In Cambodia, women account for half of all HIV infections, and female entertainment workers (FEWs) are considered a high-risk group. Reaching this population with prevention services such as regular HIV testing is a high priority in the country. This study aims to identify factors associated with recent HIV testing among FEWs in Cambodia to inform future prevention activities.
**Methods:** This cross-sectional study was conducted in May 2014 among FEWs randomly selected from a list of entertainment venues in the capital city of Phnom Penh and Siem Reap province using probability proportional to size sampling. A structured questionnaire was developed using standardized tools for face-to-face interviews. A multivariate logistic regression model was constructed to identify independent determinants of recent HIV testing.
**Results:** Data were collected from 667 FEWs, of which 81.7% reported ever having had an HIV test, and 52.8% reported having had an HIV test in the past 6 months. Of those who had ever had an HIV test, 53.0% obtained their test through community/peer-initiated testing and counseling, 22.0% at private facilities, 12.8% at public facilities, 8.6% at VCCT centers and 3.6% at other locations. Respondents who had been tested for HIV in past six months were significantly more likely to live in Phnom Penh (AOR=2.17, *p*<0.001), to have received HIV education in past six months (AOR=3.48, *p*<0.001), to report condom use in the last sex with a non-commercial partner (AOR=0.48, *p*=0.02), to agree that 'Getting tested for HIV helps people feel better' (AOR=0.31, *p*=0.02) and to disagree that 'I would rather not know if I have HIV' (AOR=2.15, *p*< 0.001).
**Conclusions:** FEWs with greater knowledge and more positive attitudes towards HIV prevention got tested for HIV more frequently than those with lesser knowledge and less positive attitudes. These findings suggest that future interventions should focus on disseminating tailored behavior change messages around testing practices as well as specific topics such as condom use with non-commercial partners. In addition, efforts to reduce stigma around HIV testing and knowing one's HIV status may improve attitudes towards HIV testing and therefore may be important areas for future programming for FEWs in Cambodia.

### THPEC152

### Not what we agreed: examining male sex workers' experiences of physical and sexual violence from their clients in Mombasa, Kenya

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**Background:** Sexual and physical violence are known risk factors for HIV infection. However, few studies have examined physical and sexual violence in male sex work in Africa. We investigated experiences of violence among male sex workers

(MSWs) in Mombasa and the circumstances under which violence occurred.
**Methods:** We conducted semi-structured interviews with 25 MSWs recruited from 18 bars/nightclubs in Mombasa. Eligibility criteria were being ≥18 years, regular patron of the venue, having solicited for anal intercourse with a client at that venue in last 3 months, willingness to be audio-recorded, and being visibly sober.
**Results:** All but two of the MSWs in our study had experienced sexual or physical violence from their clients. Rape, rough sex and being forced to engage in condomless sex were the most common forms of sexual violence reported. Physical violence took the form of beatings, non-payment for sexual services rendered and having one's phone confiscated by clients. MSWs reported that incidents of violence typically occurred when clients changed the terms of the sexual encounter, e.g., some clients refused to use condoms despite having previously agreed to their use. Other clients demanded more rounds of sex than they had paid for or they demanded more services, such as kissing, foreplay and different sexual styles than previously agreed upon or that MSWs were not comfortable performing. A number of MSWs had also been forced to have sex, for no additional payment, with men they found already waiting at a client's home. Violence typically ensued when a MSW requested additional payment or refused to acquiesce to the new demands. Most violence occurred at a client's home or at a client's hotel; hence most MSWs preferred venues that they had chosen. No MSW reported incidents of violence to the police for fear of arrest. A few, however, reported that they fought back, albeit unsuccessfully.
**Conclusions:** MSW are frequently victims of violence from their clients. These incidents often go unreported because sex work and same-sex practices are illegal and highly stigmatized in Kenya. Structural interventions that simultaneously advocate for the rights of sex workers *and* of men-who-have-sex with men should be prioritized.

## THPEC153

### DEVELOPING A TYPOLOGY OF THE LATINO SEX INDUSTRY TO IDENTIFY HIV RISK REDUCTION RESEARCH AND PROGRAM NEEDS IN AN EMERGING IMMIGRANT RECEIVING CITY IN THE UNITED STATES

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**Background:** Despite the high use of female sex workers (FSWs) and the potential implications for HIV transmission among Latino and Latina immigrants, little is known about the structure and context of sex work within this population, or the nature of HIV risk for FSWs and their clients. Efforts developed to address HIV risk within other sex industries in the U.S. may not be applicable to this population as a result of their unique political, economic, social and individual position in the U.S.
**Methods:** We conducted a total of 38 in-depth interviews (14 foreign-born Latina FSW, 18 foreign-born Latino clients and 6 key informants) to identify the range of sex industry activities and locations, the breath of lived experiences and the interactions between the social actors within the sex industry. A rudimentary typology of sex venues within the local sex industry was created. Additionally, interview transcripts were analyzed using a modified constant comparative approach to identify themes.
**Results:** The "venues" identified include brothels (*casa de citas*), weekend hotels, bars, street, online and independent casual workers. The risk environment varies between venue. Important general themes include the normalization of transactional sex in the local Latino immigrant community, the distinction between "decent women" who sell sex and "prostitutes" and low perceived risk for HIV infection. Despite past violent experiences, sex workers did not perceive themselves at risk for violence. Finally, some bar and casual sex workers perceived greater control of their life in the U.S. through participation in sex work.
**Conclusions:** Variability in the structure and context of engagement in, and with, sex work results in a spectrum of HIV risk. Although the use of directed interventions related to sex work have been demonstrated to be cost effective, developing appropriately targeted interventions requires a comprehensive understanding of the local sex industry. Our findings identify variations in risk between venues as well as common broad and venue-specific themes related to sex work. Together these serve as a first step in the development of risk reduction efforts aimed at foreign-born Latina FSWs and their foreign-born Latino clients in the U.S.

## THPEC154

### MOTHERHOOD AND HIV RISK AMONG FEMALE SEX WORKERS IN THE US-MEXICO BORDER REGION

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**Background:** The need to financially support children has been well documented as a major reason for initiating sex work among women. However, few studies have examined if motherhood also increases women's vulnerability to HIV/STIs among sex workers in this region.
**Methods:** From August 2013 to October 2014, 603 female sex workers (FSWs) >18 years of age were recruited to participate in a study assessing HIV risk environments in the border cities of Tijuana and Ciudad Juarez, Mexico. Surveys conducted via ACASI assessed FSW socio-demographics, motherhood, sexual behaviors and substance abuse.
**Results:** Findings from logistic regression models indicate that FSWs who reported having dependent children < 18 were significantly more likely to report a high client volume (adjusted odds ratio [AOR]= 1.97; 95% confidence interval (CI) 1.31-2.96), more likely to report always using alcohol right before or during sex with clients (AOR=1.87; 95%CI 1.27-2.76). In contrast to these previous findings, they were more likely to report consistent condom use for vaginal or anal sex with clients (AOR- 1.53; 95% CI 1.02-2.28), less likely to report using drugs right before or during sex with clients (AOR=0.42; 95%CI 0.20-0.88) and less likely to have tested positive for HIV/STI (AOR=0.58; 95% CI: 0.40-0.86) compared to FSWs who did not report having dependent children.
**Conclusions:** Given the high proportion of FSWs who are mothers and financially responsible for their children, HIV intervention and prevention efforts should consider the multifaceted aspects of sex workers' lives and how these aspects intersect and affect women's sex work and risk for HIV.

## THPEC156

### SCALING UP HIV TESTING SERVICES TO FEMALE SEX WORKERS: "WHOLESALE VS. RETAIL" APPROACHES

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**Background:** Zambia has high adult HIV prevalence at 13.3%. IntraHealth International implements the CDC-funded HIV Testing and Counseling (HTC) Project in high prevalence provinces: Lusaka (16.3%), Western (15.4%), and Southern (12.8%). Female sex workers (FSWs) are drivers of the HIV epidemic in Zambia. In southern Africa, FSWs have HIV prevalence 10-20 times higher than the general population (65-68%). Transactional sex is criminalized in Zambia, resulting in stigma, discrimination and reduced access to HIV prevention services for FSWs. Risk factors for HIV infection among FSWs include multiple sex partners, unprotected sex, intimate partner violence, and drug and alcohol abuse.
**Description:** Initially, FSWs were provided HTC services using a *"Retail approach"* where lay counselors (LCs) targeted individual FSWs whom they encountered. In June 2015, IntraHealth implemented an innovative *"Wholesale approach"* to reach more FSWs. This approach identified "hot spots" frequented by FSWs (e.g., truck stops, nightclubs) and engaged FSW leaders ("*Queen Mothers"*) and groups working with FSWs (*Tasintha; MARCH Zambia*) and oriented them on HIV prevention services and HTC. IntraHealth trained 13 "Queen Mothers" as peer mobilizers and 66 FSWs as LCs. The Queen Mothers mobilized fellow FSWs and the LCs provided group counseling and individual HTC in "safe spaces," along with condoms, STI/TB screening, and referral to care/treatment services.
In the first 32 months of the project, using the *"Retail approach,"* few FSWs accessed HTC services: 608 were tested, of whom 16.6% were HIV-positive; 64% of those testing HIV-positive initiated ART. In just 7 months (June - Dec 2015) after implementing the *"Wholesale approach,"* 7,490 FSWs were tested (12-fold increase), of whom 18.3% were HIV-positive. Among those testing positive, 80% initiated ART; 93% of HIV-positive FSWs were screened for TB, of whom 26% were TB-suspect and referred for further diagnosis.
**Lessons learned:** Despite legal barriers, "wholesale" peer approaches among FSWs, with HTC conducted in "safe spaces," can increase acceptability and uptake of HIV services.
**Conclusions/Next steps:** Advocacy to the government must be ongoing on the issue of provision of non-discriminatory services to FSWs.

## THPEC157

### INVOLVING TRICYCLE AND CAB OPERATORS IN LOCATING MOST-AT-RISK POPULATION FOR PROGRAMMING: EXPERIENCE FROM LAGOS, NIGERIA

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**Background:** The Most at risk population including the female sex workers (FSW), Men who have sex with men (MSM) and people who inject drugs (PWID) continue to contribute significantly to the spread of HIV in Nigeria; recording higher prevalence than the general population. Identifying the location and estimating the population of MARPs is a key consideration in planning, implementing and evaluating HIV prevention interventions tailored to the MARPs. To identify the location and estimate the population of FSWs in Lagos, the USAID-funded Strengthening HIV Prevention Services (SHiPS) for Most at Risk Populations (MARPs) project in Nigeria conducted a population-based study in Lagos and 6 other states and FCT in 2015.
**Description:** A total of 40 trained data collectors conducted 6114 key informant interviews across the 20 local government areas (LGAs) in Lagos State and the study lasted for twelve weeks. Secondary Key informants (KIIs) including drivers, petty shop owners, artisans, students, bar men, hotel operators, security guards, students were contacted for interview regarding the location of FSW hotspot and the estimate of the population size based on their experience. A list of the mentioned 5,272 hotspots was compiled. Each hotspot was visited and an FSW at each of the hotspot was interviewed to validate the information provided by secondary KIIs; FSWs were found to operate at 2,534 of the spots. It was found that 92% of the 1,320 FSW hotspots mentioned by tricycle or cab operators were active and the information provided on the number of FSW and time of operation were accurate when compared with information obtained from FSW at the venue.
**Lessons learned:** Tricycle and Cab operators are highly knowledgeable about the location and mode of operations of the FSWs and engaging them in identifying FSW hotspots will safe cost and make the initial mapping of hotspot that precedes program implementation easier for implementers.
**Conclusions/Next steps:** For comprehensive coverage of MARPs in intervention communities, HIV prevention programs should consider involving Tricycle and cab operators in locating venues of operation of FSWs. Involving them(Tricycle and cab operators) in implementation could also be explored and piloted.

## THPEC158

### USING GEOSPATIAL ANALYSES TO STREAMLINE TARGETED SAMPLING OF FEMALE SEX WORKERS

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**Background:** Targeted sampling was one of the first rigorous recruitment strategies employed to sample members of hidden populations (e.g., sex workers) at risk for HIV. This method is characterized by the use of ethnographic data, triangulated with secondary sources, to identify specific venues and times in which members of the target population may be encountered. Targeted sampling is not employed as regularly as other sampling strategies given the intensity of its methods. We aimed to describe how a series of geospatial analyses of secondary data sources were used to streamline targeted sampling efforts and reduce dependence on ethnographic data in a study examining police's role in shaping the HIV risk environment of sex workers in Baltimore, MD.
**Methods:** Geospatial data of prostitution charges were abstracted from a publicly available dataset created by the Baltimore Police Department and imported to ArcMap. Data were analyzed at the census block group- and block-level to inform ethnographic data collection. Other data were abstracted from a website where persons discussed their interactions with sex workers.
After conducting a series of optimized hot spot analyses, prostitution reports to a 911 call center were abstracted to identify specific days and times of sex work activity in the hot spots.
**Results:** Initial mapping of the prostitution charge data suggested sex work activity was racially segregated and dispersed across multiple census block groups. Given logistical constraints and to achieve a more balanced sample, a series of optimized hot spot analyses were conducted by race and sex to identify precise venues of sex work activity for each demographic. These hot spots were aggregated into a single map that was reflective of hot spots of sex work activity overall and within specific demographics, and triangulated with data from the sex work website. The prostitution reports to a 911 call center were triangulated with other data sources and formed the basis of the day and time components of our sampling frame.
**Conclusions:** Geospatial analyses can be an advantageous component of a targeted sampling strategy for HIV-related study recruitment by reducing dependence on ethnographic data and allowing for significant fiscal and temporal cost-savings by streamlining participant recruitment.

# PREVENTION FOR MSM

## THPEC159

### ACTIVE TARGETED HIV TESTING AND LINKAGE TO CARE AMONG MEN WHO HAVE SEX WITH MEN ATTENDING A GAY SAUNA IN THAILAND

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**Background:** Limited data exists on the feasibility of HIV testing and counseling (HTC) service and linkage to care among Thai men who have sex with men (MSM) in hotspots.
**Methods:** A prospective study of active targeted HTC program and linkage to care among MSM (≥18 years old) was conducted at a gay sauna in Thailand from November 2013 to October 2015. HIV risks and risk perception were evaluated through an anonymous survey. Participants were categorized as having low, moderate or high risk for HIV acquisition based on pre-defined risk characteristics. Participants who accepted HTC underwent HIV testing with result notification at the sauna. HIV care appointment for antiretroviral therapy (ART) initiation was arranged by the counselor for HIV-infected participants whose care engagement was subsequently assessed.
**Results:** There were 358 participants; median age was 30 years and 58% were at high-risk for HIV acquisition. Of the 358 participants, 148 (41%) accepted HTC, all of whom either had prior negative HIV tests [98/148 (66%)] or had not known their HIV status [50/148 (34%)]. The three most common reported reasons for not accepting HTC were prior HIV testing within 6 months (48%), not ready (19%), and perceiving self as no risk (11%). Among the 262 moderate- and high-risk participants, 172 (66%) had false perception of low HIV risk. Having false perception of low risk was significantly associated with no HTC acceptance. Of the 148 participants undergoing HTC, 25 (17%) were newly-diagnosed of HIV infection. Independent factors associated with HIV positivity included having false perception of low risk (P=0.004) and age < 30 years (P=0.02). Only 12 of the 25 HIV-infected participants (48%) had established HIV care with the median time of 24 days (range 4-255 days) since knowing HIV results, all of whom received immediate ART.
**Conclusions:** The active targeted HTC program and HIV care establishment was feasible among MSM attending the gay sauna. False perception of low HIV risk was the important factor associated with no HTC acceptance and HIV infection. Strategies to improve HIV risk perception and linkage to care are urgently needed among this high-risk population.

## THPEC160

### SEXUAL PRACTICES AMONG MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN IN THE ANTIRETROVIRAL PRE-EXPOSURE PROPHYLAXIS TRIAL IN CHIANG MAI, THAILAND

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**Background:** The study aimed to gain a comprehensive understanding of participation in a blinded antiretroviral pre-exposure prophylaxis (PrEP) clinical trial on sexual practices of men who have sex with men (MSM) and transgender women.
**Methods:** The study utilized both quantitative and qualitative methodology. Quantitative data relied on questionnaires from the parent study, Pre-exposure Prophylaxis Initiative (iPrEx) in Chiang Mai, conducted between 2009 and 2014. Data included reported PrEP medication adherence and sexual risk among all 114 study participants. Forty-six participants took part in the qualitative data collection, with 32 interviewed, and 14 participating in one of three focus group discussions. A semi-structured guide explored experiences with study medication and sexual lifestyles. For quantitative data analysis, average study medication adherence was

Tuesday 19 July
Wednesday 20 July
Thursday 21 July Poster Exhibition
Friday 22 July
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calculated. Change in sexual risk was based on number of sex partners and incidents of sex without a condom. For qualitative data, content analysis was used to identify repeated normative themes, some of which arose spontaneously from interview interaction and some in response to open-ended questioning.
**Results:** The quantitative data indicated that on the whole, participants at the Chiang Mai site reported good adherence to the study medication. The data also suggested that the sexual risks taken by these participants were reduced at their final study visit though this was unrelated to level of adherence. While the data on sexual risk related to anal and vaginal sex needs to be regarded with caution given the low number of respondents, overall the pattern appeared to be one of reductions in partners and condomless events. Nevertheless, qualitative findings described sexual practices that were highly contextual and use of risk assessments to determine safe sex practice. Condoms were, for example, used with casual partners but not necessarily with primary partners.
**Conclusions:** Findings suggest that while PrEP is an exciting new development for future HIV interventions, it must be paired with behavioral interventions to fully address sexual risk among this population - interventions that provide this population with skills to negotiate condom use with their primary partners as well as in situations in which their sexual partners do not support condom use.

## THPEC161

### APPLICATION OF THE SAN DIEGO EARLY TEST SCORE TO PREDICT HIV INFECTION AMONG MEN WHO HAVE SEX WITH MEN, BANGKOK, THAILAND

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**Background:** The San Diego Early Test score (SDET) was developed and validated to identify target populations for HIV interventions, such as pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM) and transgender women (TGW). We applied the SDET method to predict HIV acquisition among MSM enrolled in the Bangkok MSM Cohort Study (BMCS), and to consider use of the risk score for prioritizing who receives PrEP.
**Methods:** We enrolled sexually-active Thai MSM and TGW aged ≥18 years in the BMCS from 2006-2010, with follow-up every four months for 5 years. At each visit, participants answered questions on HIV risk behavior in the past four months, and were tested for HIV infection using oral fluid and a rapid test algorithm. If negative, HIV Nucleic Acid Amplification Test (NAAT) was performed. HIV infection diagnosed by either test was considered to be acute. We retrospectively randomized participants by a 2:1 ratio to a derivation and validation dataset, respectively. Using the derivation dataset, behavioral predictors reported prior to HIV acquisition were assigned a point value that was close to its hazard ratio from a multivariable Cox regression. A diagnostic odds ratio (DOR) was calculated from the validation dataset to evaluate the validity of the cutoff score.
**Results:** Among 1,372 HIV-uninfected participants, 111 (8%) were lost to follow-up, and 225 acquired HIV infection by rapid test (n=215), or NAAT (n=10). Overall, HIV incidence was 4.6 per 100 person years (PY): 4.5 and 4.7 per 100 PY in derivative (n=906) and validation (n=466) dataset, respectively (p = 0.14). Three predictors were independently associated with HIV acquisition: more than four partners; condomless receptive anal intercourse; and attendance at sex parties. We used these predictors to calculate the SDET score: 3 points for condomless receptive anal intercourse, and 2 points for the other two predictors. A cutoff score of 3 significantly predicted HIV acquisition (DOR 2.5; 95% confidence interval: 2.0-3.0).
**Conclusions:** An SDET score cutoff of 3 can be used to identify MSM and TGW at greatest risk for HIV acquisition, and may be useful in identifying those in need of PrEP in Bangkok, Thailand.

## THPEC162

### HIGH LEVELS OF PREP ENGAGEMENT AMONG MSM/TGW FROM BRAZILIAN PREP DEMONSTRATION STUDY (PREP BRASIL)

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**Background:** Clinical trial data support use Pre-exposure prophylaxis (PrEP) with FTC/TDF for HIV prevention in high risk populations. Adherence is a critical factor associated with PrEP efficacy. In low/middle income countries with concentrated HIV epidemics, both the demand for and the adherence to PrEP are unknown outside of a clinical trial setting. We characterized the spectrum of PrEP engagement at week 4 and potential predictors among MSM/TGW in PrEP Brasil study.
**Methods:** 48 weeks multicenter, open-label, PrEP demonstration project to assess the feasibility of PrEP implementation (using daily FTC/TDF) provided at no cost in high risk MSM/TGW in the context of the Brazilian public health system, enrolled at 3 sites in Rio de Janeiro and São Paulo. Engagement to PrEP was assessed testing TFV-DP and FTC-TP in dried blood spots using LC/MS/MS for all study participants at week 4. PrEP engagement was a 3-level ordinal variable classifying participants as TFV-DP < 350 (< 2 pills/week), ≥350-699 (2-3 pills/week) or ≥700 fmol/punch ( ≥ 4 pills/week; highly protective range). Predictors of engagement were assessed using ordinal logistic regression model. Only variables statistically significant at 5% in the unadjusted model were included in the multivariate analysis.
**Results:** 450 participants enrolled, 437 (97%) initiated PrEP and 425 (94%) attended week 4 visit. At week 4, TFV-DP concentrations were highly protective range (≥700 fmol/punch) among 78% of participants and 89% had FTC-TP detectable, indicating dosing within the last 48 hours. Higher educational level, unprotected receptive anal intercourse and study site were associated with higher drug levels.
**Conclusions:** Over 3/4 of the participants had drug concentrations associated with high protection levels at week 4. PrEP engagement was higher among participants reporting higher risk sexual practices which is expected to increase the impact and cost-effectiveness of PrEP. These results provide evidence of the feasibility of PrEP implementation in Brasil.

| Characteristics* | Number of Participants | Adherence Level based on TFV-DP concentrations (%) | | | OR (95%IC) | aOR (95%IC) |
|---|---|---|---|---|---|---|
| | | < 2 pills/ week | 2-3pills/ week | > 4 pills/ week | | |
| **Site Location** | | | | | | |
| FIOCRUZ-Rio de Janeiro | 170 | 10.0 | 19.4 | 70.6 | 1.00 | 1.00 |
| CRT-São Paulo | 151 | 3.3 | 13.9 | 82.8 | 2.07 (1.21-3.53) | 1.74 (0.97-3.16) |
| USP-São Paulo | 104 | 3.8 | 11.5 | 84.6 | 2.34 (1.25-4.36) | 1.66 (0.83-3.33) |
| **Color/Race** | | | | | | |
| White | 228 | 4.4 | 13.2 | 82.5 | 1.00 | 1.00 |
| Black | 54 | 9.3 | 24.1 | 66.7 | 0.43 (0.22-0.83) | 0.65 (0.33-1.36) |
| Mixed Race | 138 | 7.3 | 16.7 | 76.1 | 0.67 (0.40-1.13) | 0.98 (0.56-1.73) |
| **Schooling** | | | | | | |
| High school or less | 105 | 10.5 | 23.8 | 65.7 | 1.00 | 1.00 |
| Some college or more | 320 | 4.7 | 12.8 | 82.5 | 2.45 (1.50-4.00) | 1.98 (1.14-3.43) |
| **Unprotected receptive anal intercourse (last 3 months)** | | | | | | |
| Yes | 191 | 2.6 | 13.6 | 83.8 | 1.89 (1.17-3.06) | 1.82 (1.11-3.02) |
| No | 234 | 9.0 | 17.1 | 73.9 | 1.00 | 1.00 |

* Variables not statistically significant at 5% also tested in the unadjusted model: age (18-24, 25-34, ≥ 35), gender (male, TGW), depression Patient Health Questionnaire-2 Score (< 3, ≥3), living situation (rent own housing, other), sex with HIV positive partners in the last 3 months (yes, no), STD diagnosis (yes, no), consumption of ≥ 5 alcoholic drinks/when drinking, illicit drug use in the past 3 months (yes, no), GI symptoms (yes, no)

*[Table 1. Correlates of TFV-DP Levels in Dried Blood Spot Samples]*

## THPEC163

### EXPANDING TEST AND TREAT FOR HIV PREVENTION IN MSM IN KISUMU, KENYA. THE ANZA MAPEMA STUDY: BASELINE PARTICIPANT CHARACTERISTICS AND RISK BEHAVIOURS

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**Background:** HIV testing and treatment are among the most effective HIV prevention interventions to date and programs that specifically target individuals at increased risk of HIV, including men who have sex with men (MSM), are critical if we are to impact HIV transmission and acquisition. The Anza Mapema Study is targeting 700 MSM to be offered a comprehensive HIV prevention and care package designed to improve diagnosis, reduce treatment initiation delays, and retain patients on treatment. The purpose of this analysis is to present interim baseline characteristics and risk behaviours of a high-risk, vulnerable population in Kisumu, Kenya.

**Methods:** MSM underwent screening for eligibility followed by HIV testing, behavioural interviews as well as medical examination with collection of blood, urine and rectal swab specimen. Testing was conducted for hepatitis, gonorrhoea (NG), chlamydia (CT), syphilis and HSV-2. Additionally, CD4, viral load, haematology and biochemistry was done for all HIV positive participants. All HIV positive participants were started on ART regardless of viral load and/or CD4.
**Results:** As of December 2015, 473 participants had been enrolled. Median age was 23 (18-53), with 79% having more than primary education and 39% currently living with a male sex partner. Bisexuals were 29% while homosexuals were 49%. Those reporting transactional sex were 67% and 11% never used condoms during anal intercourse (AI). HIV prevalence was 9.1% with 64 % newly diagnosed and 74% of all HIV-positive being in WHO stage 1. Mean viral load was 39,648 copies/mL (95% CI: 15,071-64,224) and mean CD4 555.2 (95% CI: 469.2 - 641.2) with 6 individuals having undetectable viral loads and 90% of all HIV positive participants reporting being ART naïve. Among HIV positives, mean creatinine was 55.1 (95% CI: 45.8 - 64.4 and mean ALT was 44.7 (96% CI: 35.5 - 53.9). STI prevalence were; HSV-2 - 18.4%, Syphilis - 2.3%, CT - 22.2% and NG - 13.9%. Prevalence for Hepatitis B was 30% and Hepatitis C 0%.
**Conclusions:** HIV prevalence lower than expected due to eligibility exclusion and the cohort had a higher risk with high rates of transactional sex and STIs. All HIV positives enrolled in test and treat.

## THPEC164

### EQUITY OF ACCESS TO HEALTH RIGHTS: EMPOWERING MSMS TO LEAD HEALTHY LIVES, CASE STUDY OF HOYMAS, NAIROBI COUNTY, KENYA

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**Background:** In a three storey building in a middle class neighbourhood in Nairobi County, there sits a crowd of young men in a circle having a seemingly serious discussion, others are seen busy on the internet trying to network with their peers. Meanwhile, a long queue is patiently waiting to receive services from the health providers at the clinic which is on the same floor. These men share three things in common; they all identify as men having sex with men (MSM), they are all looking for a place where they can speak freely about their sexual orientation and seek HIV and other health related services. In a society that is homophobic, such a safe space is not common.
**Description:** With an estimate of about 10,000 MSMs in Nairobi county, Health options for young men against HIV, AIDs and STIs (HOYMAS) is a community led program that works with MSMs by offering MSM friendly and peer led HIV combination prevention interventions. The program uses M&E tools that helps the program to understand individual MSM HIV risks along with individualized responses. They have also contributed in developing the National guidelines for key populations in 2014 and this guides the program implementation.
**Lessons learned:** Quarterly uptake of Contacts and HIV services have increased from 62% to 84% (Mar2015 to Sept, 2015). Quarterly HIV testing and counselling improved from 3% to 18%, Quarterly STI Screening improved from 4% to 25% with the positivity rate for STIs reducing significantly from 68% - 8% during the same period. MSMs have formed a violence mitigation group and 76% of all violence cases have been addressed by them.
**Conclusions/Next steps:** It is fundamental that the right to health is made equitably accessible for all MSMs. As MSM programs scale up in Kenya and Africa, it is critical that planners and policy makers ensure that MSM programs are friendly and community led. By creating safe spaces where they can freely access HIV and other health services in a society that is still homophobic, translates to more MSMs coming out and seeking services in safe and familiar settings thus improving their health status.

## THPEC165

### AN EXPLORATORY QUALITATIVE INVESTIGATION INTO THE USES AND ROLE OF SOCIAL MEDIA FOR DESIGNING PUBLIC HEALTH INTERVENTIONS AMONG RWANDAN MEN WHO HAVE SEX WITH MEN

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**Background:** There is renewed impetus in decreasing burden of HIV and STIs amongst "at-risk" populations in Rwanda. Of particular importance are Men who have Sex with Men (MSM), who experience social stigma and discrimination, which negatively impact their rights and access to services. Information about the social milieu of Rwandan MSM is vital in designing effective interventions to address their health needs.
**Methods:** We interviewed 31 Rwandan MSM using an exploratory qualitative design. Participants, selected by purposive and snowball sampling, provided information regarding patterns of social networking including use of social media applications, dating sites, private MSM-only house parties, friendship networks and participation in LGBT organizations. Data were analyzed using standard qualitative analysis procedures.
**Results:** Respondents, equally divided between members and non-members of LGBT associations, were 18 to 40 years and had all completed primary school education. About 70% were unemployed, the rest were self-employed, but mostly low income. An environment of intense stigma pervades the daily lives of Rwandan MSM leading to strong reliance on mobile phone applications and, to a lesser extent, non-technology means for social networking, advocacy, arranging transactional sex within and outside Rwanda and to identify/access MSM-friendly sexual health services. Most Rwandan MSM are unfamiliar with popular dating websites such as "*Grindr*" but "*Facebook*", "*What's App*" and SMS were often mentioned as avenues for social interaction, educational activities and campaigning for LGBT rights. Young, single, better-educated and employed respondents are more social media savvy than older and less educated respondents. There is almost universal consensus that social media plays a vital role in enhancing social interaction between Rwandan MSM.
**Conclusions:** Knowledge of the means through which Rwandan MSM are able to organize and participate in social networks is critical in understanding their social experiences, promoting rights and spreading information about STIs including HIV/HPV. Although still limited in use, the existence of social media will facilitate the dissemination of targeted information about public health interventions aimed at promoting sexual and social wellbeing of this population and will aid government and civil society efforts to decrease the burden of diseases and increase access to services for marginalized populations.

## THPEC166

### AGE COHORT DIFFERENCES IN SEXUAL BEHAVIORS AMONG RECENTLY INCARCERATED BLACK MSMW IN LOS ANGELES

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**Background:** Many studies of Black men who have sex with men (MSM) do not differentiate between MSM only and MSM who also have sex with women (MSMW). Differences in identification and behaviors create distinct sexual health risk profiles for HIV among Black MSMW groups. Little attention has been paid to associated behavioral risk factors for HIV and STI infection for Black MSMW with respect to age. We examined the prevalence of sexual risk behaviors between two Black MSMW groups: ages 40 and under compared to over the age of 40 who represent the first two generations affected by the HIV/AIDS epidemic.
**Methods:** Analysis was conducted on baseline data from a CDC-sponsored multi-site intervention study focused on Black MSMW in Los Angeles, Chicago, and Philadelphia and limited to men who reported at least one male and one female partner in the prior 3 months (n=550). Pearson's chi-square tests were conducted to evaluate the association between age groups and selected behavioral outcomes. Logistic regression was used to evaluate the odds of behavioral outcomes by age

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group, adjusted for sexual orientation and stratified by HIV status.
**Results:** Results showed that HIV-positive MSMW over the age of 40 had 2.67 times the odds of having a casual female partner of HIV-negative or unknown status compared to HIV-positive MSMW ages 40 and under (OR 2.67, 95% CI 1.12, 6.31). Among HIV- negative MSMW, the older group was 63% less likely to have condomless IAI with most recent main male partner (OR 0.37, 95% CI=0.17, 0.81) and were 60% less likely to have a concurrent partnership while in relationship with most recent main female partner (OR 0.40, 95% CI=0.44- 0.99). Additionally, for HIV-negative MSMW, odds of condomless IAI with most recent main male partner decreased 7% for each year of age increased (OR 0.93, 95% CI=0.90, 0.97).
**Conclusions:** Older HIV-positive Black MSMW demonstrated higher risk for HIV transmission to female partners compared to the younger group; older HIV negative MSMW demonstrated lower risk for infection. Prevention efforts should consider the varying levels of exposure to HIV prevention information between these age groups of Black MSMW.

## THPEC167

### USING SOCIAL MEDIA AS A PLATFORM TO DIRECT YOUNG BLACK MEN WHO HAVE SEX WITH MEN TO AN INTERVENTION TO INCREASE HIV TESTING

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**Background:** HIV prevention and testing remain a high priority for reducing HIV infections among young black men who have sex with men (BMSM), and interventions to increase HIV testing tailored for this population are crucial (CDC, 2015). Social networking technology is a widely used feature among this population (Wilkerson, 2011). Thus, examining the utility of highly used technology and social networking sites as a method for delivering interventions to motivate HIV testing among young BMSM is a worthy endeavor. The purpose of the present study was to examine the feasibility of implementing an HIV testing intervention to motivate HIV testing uptake among BMSM delivered online using Facebook.
**Methods:** A small randomized intervention/control pilot study was conducted with BMSM (N=142) aged 18 to 30 (Mean=23, SD=3.4), who at baseline were unaware of their HIV status and had not tested for HIV in at least the past six months, residing in Los Angeles County, California. Participants were recruited online and at community-based agencies. The intervention group participants were asked to review five 60 second intervention videos, weekly, and post reflections using a chat feature. The video content was informed by findings from a formative project with young BMSM regarding barriers and challenges to, and recommendations for, motivating HIV testing uptake among young BMSM. Each video's scene included young BMSM characters delivering the content as a vignette. Participants in the control group viewed standard HIV text information. Both groups completed a baseline and six-week follow-up survey regarding last HIV test/HIV testing history and other behavioral factors.
**Results:** Retention rates were adequate for both the intervention and control groups, 71% and 78%, respectively. Logistic regression revealed that those receiving the intervention were 7 times more likely to have tested for HIV than those in the control group at six-weeks follow-up (OR=7.00, 95% CI=1.72-28.33, P=.006).
**Conclusions:** Data suggest that the video intervention was feasible for delivery using social media. Our findings also provide evidence that a peer informed online video-based intervention with chat features are useful for providing HIV prevention knowledge, knowledge about the importance of testing, and motivating HIV testing uptake among young BMSM.

## THPEC168

### ORAL HIV PRE-EXPOSURE PROPHYLAXIS (PREP) AMONG HIV-NEGATIVE MEN WHO HAVE SEX WITH MEN IN SWITZERLAND: ACCEPTABILITY ACCORDING TO CURRENT GUIDELINES AND POSSIBLE FUTURE ADAPTIONS

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**Background:** Due to the high proportion of newly diagnosed HIV-infections among men who have sex with men in high-income countries, the WHO recommended in 2014 offering oral PrEP to men who have sex with men (MSM). Although PrEP has not been approved in Switzerland, it is discussed as an additional prevention method for MSM. However, little is known about the acceptability of PrEP among MSM in Switzerland. Furthermore, the ongoing clinical research could change the current PrEP guidelines in near future. Therefore, this study tried to determine the acceptability of PrEP among HIV-negative MSM living in Switzerland according to current guidelines and possible future adaptions.
**Methods:** In a cross-sectional study, we surveyed a convenience sample of 556 MSM living in Switzerland by using anonymous, standardized self-administered online and paper-and-pencil questionnaires. Participants were gathered through different gay-specific sites. The current and future acceptability of PrEP was measured by six items about the intention to use PrEP according to current guidelines and possible adaptions (e.g. event-driven PrEP, 100% effectiveness, side-effects, etc.). Answers ranged from 1="completely disagree" to 7="completely agree". We carried out descriptive statistics and conducted Wilcoxon signed-ranks tests.
**Results:** Among the participants were 88% gay and 11% bisexual men. Mean age was 40.6 years (SD=11.9). Forty-four percent obtained a university degree. About 44% were singles. Forty-eight percent have had a sexual encounter with a casual partner during the past six months. The intention to use PrEP according to the current guidelines was moderate (Mdn=3, IQR=2-6). But the participants' acceptability increased with the possibility to obtain a drug with less side-effects (Mdn=6, IQR=4-7, Z=-13.05, p< .001) or with 100% effectiveness (Mdn=6, IQR=5-7, Z=-14.52, p< .001). Also the option of an event-driven regimen (Mdn=5, IQR=2-7, Z=-5.79, p< .001) or a full financial coverage by health insurance (Mdn=6, IQR=3-7, Z=-12.06, p< .001) significantly increased the acceptability of PrEP.
**Conclusions:** Results indicated that the moderate acceptability of PrEP increased according to future adjustments of PrEP. Especially having a drug with less side-effects and a higher effectiveness is of importance. Moreover, financial coverage by health insurance will increase the acceptability. Before implementing PrEP in Switzerland, these issues should be considered.

## THPEC169

### EXPLAINING THE INTENTION TO USE HIV PRE-EXPOSURE PROPHYLAXIS AMONG HIV-NEGATIVE MEN WHO HAVE SEX WITH MEN IN SWITZERLAND: A THEORY-BASED ANALYSIS

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**Background:** Almost half of the 500 to 700 HIV infections yearly diagnosed in Switzerland are among men who have sex with men (MSM). Although HIV pre-exposure prophylaxis (PrEP) has not been approved in Switzerland, there is a discussion about its potential and adequacy as an additional prevention method especially for MSM.
Therefore, the aim of the study was to explain the intention to use PrEP among MSM by developing and empirically testing a model based on the Unified Theory of Acceptance and Use of Technology (UTAUT). This model considering performance expectancy, effort expectancy, social influence, and age has been modified by including additional predictors, like concerns about PrEP, attitudes towards condoms, experiences in condom use, sexual risk behavior, expected stigma, income, and educational background.
**Methods:** The study design was cross-sectional. During a 9-month period, a convenience sample of 556 MSM was gathered through different channels. We collected the data using a self-administered standardized questionnaire, either online or paper-and-pencil. We analyzed the data by descriptive and bivariate statistics and conducted a three stage hierarchical multiple regression analysis of intention to use PrEP.
**Results:** The mean age of the respondents was 41 years (SD=11.9). Almost half (44%) of the participants held a university degree. The median annual income was between CHF 91'001 and CHF 104'000. About 84% have had sex with a casual partner during the past 6 month. Fifty-three percent have always used a condom when having sex with these casual partners.
The hierarchical multiple regression analysis revealed an explained variance in intention to use PrEP of 50% (F= 48.80, p<.001). Performance expectancy (β=0.23, p<.001), effort expectancy (β=-0.18, p<.001), social influence (β=0.29, p<.001), and concerns (β=-0.20, p<.001), significantly affected the intention to use PrEP, whereas the other variables showed no significant influence.
**Conclusions:** The findings indicate that a higher social influence, a higher performance expectancy, less concerns, and a lower effort expectancy, increase the intention to use PrEP among respondents. These results contribute to the discussion about the potential of PrEP in MSM.

## THPEC170

### SEXUAL PARTNER CONCURRENCY AMONG PARTNERS OF MSM WITH RECENT HIV INFECTION

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**Background:** Sexual partner concurrency indirectly exposes an individual's partners to each other, and thus may facilitate HIV transmission during recent (acute or early) HIV infection. Given that men who have sex with men (MSM) are disproportionately affected by HIV globally, we determined the prevalence and correlates of concurrency among partners of recently HIV-infected MSM.
**Methods:** From 2002 to 2015, 298 recently HIV-infected MSM (i.e., index subjects) in San Diego, California completed computer-assisted self-interviews providing information on up to 3 partners in the past 3 months, including the timing of sexual intercourse with reported partners. When the dates of sexual intercourse with different partners of an index subject overlapped, these partners were considered concurrent. We used logistic generalized linear mixed models to identify factors associated with concurrency at the partner level.
**Results:** Index subjects were predominantly White, non-Hispanic (62%), well educated (90% completed ≥some college), had a mean age of 34.4 years (standard deviation [SD]=10.2), and had been HIV-infected for a mean of 85.2 days (SD=47.0). Index subjects reported on 697 sexual partners in the past 3 months (mean relationship duration=0.8 years; SD=1.8), of which 388 (56%) were concurrent to ≥1 other partner reported by the same index subject. After adjusting for partner age, race/ethnicity, HIV status, relationship type, condomless anal intercourse (CAI), and substance use during sex, the odds of concurrency were higher among partners that index subjects met on the Internet (odds ratio [OR] = 1.8, 95% confidence interval [CI]: 1.1-2.8) and partners with whom index subjects had been in a relationship for a longer duration (in years) (OR = 1.2, 95% CI: 1.1-1.4). CAI was more frequently reported with longer (≥1 year) than shorter (<1 year) term partners (60% vs. 49%; p-value=0.04).
**Conclusions:** Indirect exposure to concurrent sexual partners is common among partners of recently HIV-infected MSM, suggesting that concurrency may be critical to sustaining HIV transmission among MSM. The impact of concurrency may be minimized via enhanced risk reduction counseling for MSM who meet partners on the Internet and MSM with long term partners who may not perceive themselves to be at risk of HIV.

## THPEC171

### PREP AWARENESS, ATTITUDES AND UPTAKE AMONG RACIALLY/ETHNICALLY DIVERSE YOUNG MEN WHO HAVE SEX WITH MEN IN CALIFORNIA

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**Background:** The World Health Organization now recommends that all people at substantial risk of HIV should be offered pre-exposure prophylaxis (PrEP). While PrEP awareness has generally increased, actual PrEP usage among young men who have sex with men (YMSM) has been limited. The present study seeks to understand PrEP awareness, attitudes, and uptake among racially/ethnically diverse YMSM.
**Methods:** An online survey was conducted using several popular geosocial networking applications and websites to understand PrEP awareness and usage, attitudes, and perceived barriers and facilitators to PrEP uptake among YMSM in California (ages 18-29). The majority of respondents (n= 602) were YMSM of color (40% Latino, 30% African American) and the majority were low income. Multivariate regression was used to assess awareness, usage, and likelihood of using PrEP across demographic categories, and included measures for accessibility, affordability, health coverage, and sexual risk.
**Results:** About 1 in 10 respondents reported having used PrEP (9.6%). PrEP use was significantly higher among whites (13.9%) compared to Latinos (6.6%). Among those who had not used PrEP (n=544), the majority were aware of PrEP (73.0%). African-Americans were less likely to report PrEP awareness compared to their white counterparts (OR=0.41). Latinos were less likely to report *having enough information* about PrEP and *knowing where to get PrEP* compared to whites. Over half of participants indicated being extremely (or very) likely to take PrEP if it were made available to them (55.9%). Ethnicity, income, region, employment status, condomless anal sex, having enough information about PrEP, knowing where to get PrEP, and some attitudes were significantly associated with the likelihood of taking PrEP. Social media (56.7%), online or the Internet (49.4%), and friends (46.6%) were primary sources for PrEP information.
**Conclusions:** PrEP usage remains limited among YMSM. Among African Americans and Latinos, lack of awareness and access to information are barriers to using PrEP. Education efforts should be tailored to African American and Latino YMSM and include information about where to access PrEP, particularly for those without a regular health care provider. Social media may be an especially useful tool for increasing PrEP awareness among YMSM of color.

## THPEC172

### INTEGRATED SERVICE DELIVERY MODEL WITH HIGH-RISK MEN WHO HAVE SEX WITH MEN

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**Background:** Black MSM is the only population that continues to see increases in new HIV infections. This group has the most barriers to accessing prevention and care services. To reduce the number of HIV infections among Black MSM a multifaceted approach that includes effective HIV prevention programs designed to reduce risk behaviors, increase knowledge of HIV status, promote successful use of anti-retroviral medications (ARV) for those who are already positive must be integrated into a single model.
**Description:** A CDC-funded safe space specific to Black MSM in the southern region of North Carolina was created by using an integrated HIV service delivery model. Quality Home Care Services used this model to enhance HIV prevention and care techniques among Black MSM. Members of the target population were vital in the conception, development, and implementation of the program. Data was collected on venue selection, use of new technology, community spaces, and social networks to inform the potential barriers of prevention and care access.
**Lessons learned:** An integrated service model is essential to providing HIV services to young Black MSM. These young men are sometimes socially rejected which creates barriers for health care engagement. Addressing stigma, homophobia, and racism in a multifaceted approach is important for eliminating barriers for Black MSM. Comprehensive health programs should not only educate young MSM about HIV risk, but also address sexuality in the context of young men's lives. Venue spacing, marketing, and technology are also critical to reaching the target population. Community resources are important for organizations using this model, as cost can be a barrier for HIV service organizations.
**Conclusions/Next steps:** Moving forward, Quality Home Care Services will use these data to strengthen the integrated model. Continuous quality improvement will be incorporated into the service model, in addition to bi-annual assessments from members of the target population. It is important to address the structural barriers of this population, improve access to prevention and care services, decrease new HIV infections, and continue to provide safe spaces for Black MSM.

## THPEC173

### BARRIERS, ASSETS, AND PATHWAYS TO HIV PREVENTION FOR MEN WHO HAVE SEX WITH MEN IN GHANA: PERSPECTIVES FROM PATIENTS AND HEALTHCARE PROVIDERS

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**Background:** The overall prevalence of HIV in Ghana is 1.3%, compared to 17% among men who have sex with men (MSM). There is currently limited empirical data on the current healthcare climate for MSM and its impacts on the HIV crisis. We sought to understand MSM perspectives regarding the healthcare system and service providers. We also explored healthcare providers' (HCP) attitudes towards MSM, and the perceived roles of both groups in meeting HIV prevention needs for MSM.
**Methods:** We conducted focus groups (n=22) with peer social networks of MSM and conversational interviews (n=25) with individual HCP between March and June 2012 from a cross-sectional non-probability sample. The study was conducted in three Ghanaian communities (Accra, Kumasi, Manya Krobo). Qualitative content analysis was performed using NVivo 10 software.

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**Results:** We identified four main themes:
1) HCP understanding of HIV prevention needs are framed by broader social views towards same-gender sexual practices between men,
2) HIV prevention for MSM is impeded by low access to basic prevention tools and by negative attitudes towards HIV risk-reduction and testing behaviors,
3) MSM avoid healthcare interactions in which they anticipate that they will be stigmatized and
4) improving HIV/STI knowledge must be the foundation of HIV prevention strategies for MSM.
Although HCP sought to provide optimal patient care, their behaviors reflected views and misconceptions in the general population that MSM find to be stigmatizing. Limited accessibility (cost/availability) and poor condom quality (easily broken/non-pleasurable) were frequently cited as barriers to use. Fear or indifference towards knowing one's HIV status were common reasons for avoiding HIV testing. Stigmatizing interactions with the healthcare system were disincentives to establishing relationships with HCP for individual MSM, as well as their peer social network.
**Conclusions:** MSM in Ghana are exposed to negative healthcare climates, where condom utilization, HIV testing rates, and sexual health education for MSM are undermined by a generally unsupportive cultural and social context. These findings contribute to community stakeholder knowledge to inform development of HIV prevention interventions for MSM in Ghana, such as culturally appropriate sexual health education, and digital technology to connect individuals with resources supportive of MSM.

## THPEC174

### DELAYED HIV TESTING AMONG MEN WHO HAVE SEX WITH MEN IN AUSTRALIA HAS IMPROVED BUT REMAINS AN ISSUE

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**Background:** Guidelines in Australia and other countries recommend regular HIV testing for men who have sex with men (MSM) and up to 3-monthly for MSM at higher risk of HIV transmission. We determined trends and factors associated with delayed HIV testing in among MSM attending Australian sexual health clinics.
**Methods:** Longitudinal data from MSM attending 42 sexual health clinics in the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance (ACCESS) from 2007-2014 were analysed. Patients were assigned "high-risk" status if they had >5 partners in the past 3 months or >20 partners in 12 months or a sexually transmissible infection in the past 2 years. Delayed testing status was defined as having no retest or re-testing outside of the guideline time intervals (6 months for high-risk men, 12 months for non-high-risk men). Mixed effects logistic regression models were used to determine factors associated with delayed testing status.
**Results:** A total of 54,139 MSM had 102,317 HIV tests during 2007-2014. At first visit, 35.9% (19,416) of men were categorized as high-risk. The proportion of high-risk MSM assigned delayed HIV testing status decreased from 73.3% in 2007 to 63.2% in 2013 (p for trend< 0.001). The proportion of non-high-risk MSM with delayed HIV testing also decreased year-on-year (p-trend< 0.001). Delayed HIV testing was more likely in men who lived in regional and remote areas (OR=2.00, 95% CI: 1.76-2.28); were Indigenous (1.44, 1.04-2.00); and older (>29 years vs ≤29 vs: 1.98, 1.82-2.15). Delayed test was less likely in men born overseas (0.72, 0.65-0.79); and categorised as high-risk (0.39, 0.36-0.42).
**Conclusions:** Delayed HIV testing is common among MSM in Australia, although declining over the past 8 years. Efforts are needed to further decrease delayed HIV-testing among MSM, particularly men who are Indigenous and those living outside of urban areas.

## THPEC175

### HOW TO USE SOCIAL MEDIA CELEBRITIES AND INFLUENCERS TO MOBILISE HIGHLY ENGAGED ONLINE MSM COMMUNITIES

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**Background:** A survey commissioned by Variety magazine in 2014 revealed that social media celebrities are more influential to young audiences than mainstream celebrities. YouTubers- popular online personalities who upload regular video content to YouTube- can have millions of highly engaged followers who value their opinions and trust their recommendations. Many of these YouTubers are gay/bisexual (MSM) or have large followings in those communities. Terrence Higgins Trust recognised the potential YouTubers have in promoting HIV testing and HIV prevention messages and initiated a strategy to engage them for England's National HIV Testing Week in 2015.
**Description:** THT began by reaching out to the LGBT+ YouTube personalities with the largest MSM audiences by engaging with these influencers on social media. This was then followed up by sending them a comprehensive influencer pack highlighting the need for HIV prevention campaigns and the ways in which they can help make a difference. It also included a t-shirt, stickers and a message board which could be used in videos. Ongoing support was given to help them create content which delivered the key messaging of the event in a genuine and impactful way.
**Lessons learned:** 31 YouTubers provided social media support during National Testing Week 2015, providing 92 pieces of photo and video content which the campaign promoted through Facebook, Twitter and YouTube. This generated over 170,000 views on YouTube, had a potential reach of over 15,000,000 highly engaged people, and generated a large amount of media interest and multiple pieces of press coverage. All of this significantly increased the number of HIV postal home sampling tests ordered, increased our reach on YouTube by 126% and further raised the profile of National HIV Testing Week which achieved 89% audience recognition in a post event evaluation.
**Conclusions/Next steps:** Engaging YouTube influencers can be an extremely efficient, impactful and cost effective way to reach MSM. It must be done collaboratively and be mutually beneficial to both the campaign and the personality. This should be done as part of a larger and more holistic approach alongside other pre-existing marketing methods to achieve maximum impact.

## THPEC176

### STRUCTURAL VIOLENCE REDUCES QUALITY OF LIFE AMONG GLOBAL SAMPLE MSM: COMMUNITY ENGAGEMENT MODERATES SOME NEGATIVE IMPACTS

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**Background:** Structural violence (SV), (childhood sexual abuse, sexual stigma, violence, discrimination, and provider stigma) significantly increases psychological distress, which has been shown by other researchers to be associated with HIV risk, use of HIV services and adherence to HIV treatment among men who have sex with men (MSM). Less well understood are how SV impacts various facets of quality of life among MSM globally, and the role of community engagement in ameliorating negative associations between SV and QoL. We sought to evaluate the impact of SV on physical, psychological, social and environmental indicators of quality of life (QoL), and explore the role of community engagement in ameliorating negative impacts.
**Methods:** Data were collected from MSM who completed the online Global Men's Health and Rights survey between July and October 2014, in seven languages. We fitted GEE logistic regression models with robust standard errors, accounting for clustering by country, among 2316 MSM. We used World Health Organization's (WHO) standardized measures of QoL.
**Results:** Table 1 indicates that MSM who experienced higher levels structural violence had significantly lower QoL (physical, psychological, social and environmental QoL) and higher odds of suicide attempts and suicidal ideation.

| *Quality of Life Measures* | Physical* | Psychological* | Social* | Environment* | Suicide Attempts | Suicidal Ideation |
|---|---|---|---|---|---|---|
| ***Structural Violence Measures*** | Coef.; (95%CI); *p* value | Coef.; (95%CI); *p* value | Coef.; (95%CI); *p* value | Coef.; (95%CI); *p* value | OR; (95%CI); *p* value | OR; (95%CI); *p* value |
| **Childhood Sexual Abuse (CSA)** | -1.07; (-1.58 to -.56); <.001 | -.64; (1.27 to -.018); <.05 | -.68; (-1.12 to -.239); <.003 | -.73; (-1.14 to -.31); <.002 | 3.16; (2.48 to 4.04); <.001 | 2.03; (1.35 to 3.05); <.001 |
| **Sexual Stigma** | -1.17; (-1.48 to -.86); <0.001 | -.93; (-1.34 to -.53); <0.001 | -1.38; (-1.65 to -1.10); <0.001 | -1.74; (-1.98 to -1.50); <0.001 | 1.46; (1.26 to 1.70); <0.001 | 1.93; (1.45 to 2.58); <0.001 |
| **Violence** | -1.11; (-1.30 to -.92); <0.001 | -.64; (-.83 to -.45); <0.001 | -.995; (-1.15 to -.84); <0.001 | -1.18; (-1.39 to -.98); <0.001 | 2.09; (1.75 to 2.50); <0.001 | 1.84; (1.46 to 2.31); <0.001 |
| **Discrimination** | -1.57; (-1.99 to -1.15); <0.001 | -.64; (-.99 to -.30); <0.001 | -1.08; (-1.50 to -.66); <0.001 | -1.36; (1.68 to -1.04); <0.001 | 2.18; (1.75 to 2.70); <0.001 | 1.89; (1.42 to 2.51); <0.001 |
| **Health Provider Discrimination** | -2.00; (-2.59 to -1.41); <0.001 | -1.27; (-2.12 to -.41); <0.005 | -1.17; (-1.89 to -.45); <0.002 | -2.05; (-2.79 to -1.31); <0.001 | 2.40; (1.62 to 3.56); <0.001 | 1.98; (1.41 to 2.78); <0.001 |
| ***Measures are from the World Health Organization's WHOQOL-BREF Assessments** | | | | | | |

*[Structrual Violence and Quality of LIfe of MSM iglobally]*

Community engagement moderated the associations between 1) violence and: psychological QoL (Coef.=.32; 95%CI=.10 to .53; *p*< .005); and social QoL (Coef.=.37; 95%CI=.03 to .72; *p*< .04); and 2) CSA and: overall QoL (Coef.=-.18; 95%CI=-.34 to -.02; *p*< .03); and environment QoL (Coef.=-.59; 95%CI=-1.18 to -.00; *p*< .05).
**Conclusions:** Structural violence significantly reduces quality of life of MSM globally across all four QoL domains. Community engagement moderated the negative associations between SV and QoL across a few domains and warrants further exploration. In addition to offering services that addrss QoL needs, reducing SV should be a priority toward improving QoL and reducing barriers to sexual and HIV health of MSM.

## THPEC177

### NETWORK VIRAL LOAD: A CRITICAL METRIC FOR HIV ELIMINATION

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**Background:** An aggregate viral load measure, the community viral load (CVL) is associated with increases in new HIV infections. The CVL, however, is prone to ecologic fallacy due to the presumption that transmission is geographically bounded. In this paper, we develop a more precise metric, the Network Viral Load (NVL) that accounts for the composite viral loads of the risk partners of an HIV- individual. We test its association with HIV infection among a cohort of Young Black Men who have sex with Men (YBMSM).
**Methods:** We examined the relationship between NVL and HIV infection among YBMSM in Chicago. Networks were generated using Respondent Driven Sampling. NVL, the sum of the viral loads in one's risk network, were calculated and divided into 3 categories, 100% HIV- network, NVL of 0-99k copies/mL, NVL of 100k+ copies. Multiple logistic regression was used to assess the relationship between NVL and individual HIV seroprevalence. A generalized structural equation model was fit to account for potential measurement error in the NVL calculation due to the possible incomplete assessment of one's personal network.
**Results:** Of the 409 respondents, 100% were Black, median age was 23, and 32% were unemployed. HIV prevalence was 34%. After controlling for network size, age, substance use during sex, and # of anal sex partners in the past 6 months, we found increased odds of HIV infection with increased NVL score. The odds of HIV infection with a NVL of 0-99k copies/mL were 2.04 times that of a network with all HIV- members (OR 2.04; 95% C.I. 1.26-3.30), the odds for a NVL of ≥100k copies/mL were 2.85 times that of a HIV- network (OR 2.85; 95% C.I. 1.31-6.22).

| | | OR | 95% CI | p-value |
|---|---|---|---|---|
| Age | (Continuous) | 1.13 | 1.05-1.22 | 0.002 |
| # Male anal sex partners (6 months) | (Continuous) | 1.23 | 1.06-1.44 | 0.008 |
| Sex Drug Use | No<br>Yes | 1.00<br>1.60 | 0.99-2.55 | 0.051 |
| NVL | 0 | 1.00 | - | - |
| (copies/mL) | 1-99K | 2.04 | 1.26-3.30 | 0.004 |
| (copies/mL) | 100k+ | 2.85 | 1.31-6.22 | 0.009 |
| Degree | | 0.99 | 0.83-1.14 | 0.70 |

*[Multiple Logistic Regression, Association between HIV Serostatus and NVL: uConnect Study (n=409)]*

**Conclusions:** NVL could have substantial public health implications as it could be used for targeting HIV prevention interventions, such as PrEP, towards those who would benefit most.

## THPEC178

### HIV-DISCLOSURE AND UNKNOWN HIV-STATUS AMONG GAY COUPLES IN LIMA, PERU

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**Background:** HIV sero-disclosure is an important part of HIV prevention, especially between established couples. We conducted a study with gay couples in Lima, Peru to explore HIV disclosure and its relationship to HIV status.
**Methods:** This study was conducted in 2015 at a gay community center, which also participates in research studies. Recruitment used posters, a facebook page, and word of mouth. All participants completed a computer-based survey and provided a blood sample for HIV testing. Couples were encouraged to participate with their partner, though this was not mandatory only data from participants where both members of the couple participated are included herein. Unknown HIV-status was evaluated for couples, based on comparing self-reported HIV status and HIV testing results. Characteristics associated with couples being of unknown HIV-status were evaluated using multivariable poisson regression to estimate adjusted prevalence ratios (aPRs).
**Results:** Our study included 93 gay couples (n=186 individuals). The median relationship duration was 1.9 years (interquartile range 4 months to 2 years). Among the couples with complete HIV testing results (91 couples, n=182), 52% were HIV-concordant negative, 29% were HIV-discordant, and 19% were HIV-concordant positive. Among the couples, 152/186 (82%) reported that both had disclosed their HIV status to one another. However when based on HIV testing, 78% of the couples were unaware of their HIV-status as a couple, this was true for 100% of the HIV-discordant couples, 59% of the HIV-concordant positive couples, and 32% of the HIV-concordant negative couples. In multivariable regression, unknown couple HIV-status was significantly associated with having sex outside of the partnership vs. not (aPR 0.70, p-value=0.029), being HIV-discordant (aPR 3.03, p-value< 0.001) or HIV-concordant positive (aPR 1.76, p-value=0.002) vs. HIV-concordant negative; and never having an HIV test (aPR 2.33, p-value< 0.001). Most participants (63%) were highly supportive of couples HIV testing and counseling (CHTC).
**Conclusions:** HIV prevention in Peru focuses on individuals; existing partnerships between gay men are not taken into account. The high prevalence of unknown HIV sero-discordancy and unknown HIV-status warrants interventions to improve HIV testing and CHTC to address gay couples should be explored.

## THPEC179

### ASSOCIATION BETWEEN DEPRESSION AND ANXIETY AND ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG NEWLY DIAGNOSED HIV-INFECTED MEN WHO HAVE SEX WITH MEN IN CHINA

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**Background:** Adherence to antiretroviral therapy (ART) is crucial to achieve successful viral suppression. Depression and anxiety are potential barriers to adherence to treatment. Little is known about their effects on adherence to ART among Chinese men who have sex with men (MSM) with newly diagnosed HIV infections.
**Methods:** Of 367 Chinese MSM participants in a randomized clinical trial, 228 initiated ART during 12 months follow-up, and were included in this analysis. The Hospital Anxiety and Depression Scale (HADS) was used to measure depression and anxiety at baseline, 6 months, and 12 months. ART adherence was self-reported once every three months (perfect or no missing dose in the past three months vs. imperfect adherence or at least one missing dose in the past three months). Mixed-effect logistic regression assessed the effects of depression and anxiety on ART adherence over time while adjusting for age, intervention, site, education, social support, substance use, and HIV stigma in the model 1. We excluded substance

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use in the model 2. Because substance use can have an impact on depression and anxiety, vice versa.

**Results:** Adherence to ART declined from 92% at 3 months to 88% at 12 months. A one-unit increase in depression score was associated with a 16% increase in the odds of reporting imperfect ART adherence (adjusted odds ratio [aOR] 1.16; 95% confidence interval [CI] 1.02-1.32). A one-unit increase in anxiety score was associated with a 17% increase in the odds of reporting imperfect ART adherence (aOR 1.17; 95% CI 1.03-1.33). When depression and anxiety were categorized at suggested cut-points, associations with imperfect ART adherence were large but non-significant, except for likely anxiety (aOR 4.79; 95% CI 1.12-20.50).

**Conclusions:** Depression and anxiety are risk factors for imperfect ART adherence among Chinese MSM with newly diagnosed HIV. Intensive intervention on depression and anxiety beyond regular post HIV-testing counseling may increase ART adherence and improve HIV treatment outcomes.

| Depression | Adjusted odds ratios (95% confidence interval) | Adjusted odds ratios (95% confidence interval) |
|---|---|---|
| | Model 1 | Model 2 |
| Continuous score (0-21) | 1.16 (1.02, 1.32) | 1.13 (0.99, 1.29) |
| Categories | | |
| Normal (0-7) | 1.00 | 1.00 |
| Borderline depression (8-10) | 1.74 (0.48, 6.29) | 1.68 (0.47, 5.97) |
| Likely depression (11-21) | 1.77 (0.43, 7.37) | 1.80 (0.43, 7.50) |

*[Association of depression on antiretroviral therapy adherence among Chinese men who have sex with men with newly diagnosed HIV infections]*

| Anxiety | Adjusted odds ratios (95% confidence interval) | Adjusted odds ratios (95% confidence interval) |
|---|---|---|
| | Model 1 | Model 2 |
| Continuous score (0-21) | 1.17 (1.03, 1.33) | 1.15 (1.01, 1.31) |
| Categories | | |
| Normal (0-7) | 1.00 | 1.00 |
| Borderline anxiety (8-10) | 1.85 (0.56, 6.13) | 1.85 (0.56, 6.13) |
| Likely anxiety (11-21) | 4.79 (1.12, 20.50) | 4.83 (1.12, 20.71) |

*[Association of anxiety on antiretroviral therapy adherence among Chinese men who have sex with men with newly diagnosed HIV infections]*

## THPEC180

### COMMUNITIES AND FAMILIES CONSTRUCT HIV TREATMENT SCHEMAS, ENABLING GAPS IN HIV CARE FOR MSM IN MPUMALANGA, SOUTH AFRICA

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**Background:** Men who have sex with men (MSM) in general and especially rural and peri-urban MSM in South Africa were largely neglected in HIV prevention efforts until 2007 when the national government designated them as a key population. However, there is limited understanding of their HIV prevention and care seeking behaviors since this new HIV prevention strategy was implemented.

**Methods:** We conducted a 16-month research project with 61 MSM in two districts in Mpumalanga Province, South Africa. The study was designed to understand the social, behavioural and knowledge factors that influenced HIV prevention and care decision-making. Focus group discussions and individual interviews utilized semi-structured protocols. All focus groups and interviews were audio-recorded, transcribed and translated into English. We used the cultural schema theory to analyse the data.

**Results:** There are distinct cultural schemas that influence MSM's health and health-seeking behaviours in Mpumalanga that are developed within families and in communities. These schemas reflect a history of previous HIV deaths in the MSM community and previous HIV education efforts that were directed towards the general, heterosexual population. There were three major schemas found that delayed HIV care-seeking behaviour: MSM were not considered to be at elevated risk for HIV transmission, self-diagnoses processes involved family; and traditional healers remain a part of the healthcare seeking process.

**Conclusions:** The prevailing cultural schemas around HIV and STIs in Mpumalanga negatively affect the route of healthcare seeking for MSM. This creates a gap in HIV care for MSM that is based on community and family informed healthcare decision-making processes that involve predesignated ideas about when an illness lasts too long and whether to go to traditional healers before going to a clinic. Community- and family-based education about HIV risk for MSM may shorten the time between a positive HIV diagnosis and HIV care-seeking behaviours, improving HIV health outcomes for MSM in these settings.

## THPEC181

### SUPPORTIVE VERSUS STIGMA-BASED COMMUNICATION REGARDING SEXUAL HEALTH TOPICS INCLUDING PREP: YOUNG BLACK GAY/MEN WHO HAVE SEX WITH MEN TALK WITH THEIR CLOSE FRIENDS IN TWO U.S. REGIONS

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**Background:** HIV infection rates among young Black gay/men who have sex with men (YBGMSM) in the United States of America are critically high. It is important to better understand how YBGMSM talk with their close friends about sexual health topics related to HIV since perceptions of peer norms influence their safer sex beliefs and behaviors.

**Methods:** We conducted 48 dyadic qualitative interviews (N=96) in Los Angeles, California and Birmingham, Alabama (a state in the "Deep South" in which high HIV infection rates are increasing). The interviews explored how YBGMSM and their close friends discuss sexual health topics. Interviews were coded and analyzed using a modified grounded theory approach, reaching at least 80% inter-rater reliability.

**Results:** We found that YBGMSM and their close friends do support peer norms for safer sex and HIV testing. However, conversations about safer sex topics often were characterized by what we coined as stigma-based communication, or communication that is based in judgmentalism. At the same time, some conversations contained what we identified as support-based communication or communication that supported the friend and peer norms on safer sex in a non-judgmental manner. YBGMSM tended to shut-down and stop talking about their sexual experiences if their friend used stigma-based conversations, while supportive conversations led to more productive conversations. Participants had widely divergent levels of knowledge about Pre Exposure Prophylaxis (PrEP), a new biomedical intervention that may help reduce HIV infections. We specifically noted PrEP-related stigma as a theme in those conversations that addressed PrEP.

**Conclusions:** The findings suggest a need for working with YBGMSM and their close friends to increase supportive sexual communication and to counter judgmental sexual communication, especially PrEP-related communication. Using interventions to counter misconceptions and address barriers could reduce HIV infections and support sexual health, while helping YBGMSM and their friends make informed decisions about HIV prevention options.

Further research is needed to examine how supportive versus stigma-based communication may influence YBGMSM's beliefs and behaviors related to sexual health topics such as condom use and PrEP.

## THPEC182

### "YOU HAVE TO ALMOST LIKE BE ME TO UNDERSTAND": YOUNG BLACK MEN WHO HAVE SEX WITH MEN'S EMIC STRATEGIES FOR MAINTAINING AN HIV-NEGATIVE STATUS

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**Background:** Young (age 13-24) Black men who have sex with men (MSM) in the United States account for 54% of all male-to-male acquired HIV; 3x higher than White and 2x higher than Hispanic peers (CDC,2014). Despite the continued deployment of targeted prevention interventions, their effectiveness in this population appears to have plateaued. Additionally, PrEP uptake has been particularly slow among Black MSM in the US. In order to develop new and complimentary prevention strategies for those most at risk, the perspectives of sexually active HIV-negative young Black MSM (YBMSM) must be understood.

**Methods:** 31 HIV-negative YBMSM were recruited from community-based organizations and health clinics in New York state. Subjects were required to have engaged in sexual intercourse within preceding 12 months and test negative for HIV within the

preceding 3 months. Data were generated through semi-structured individual interviews (n=24) and one focus group (n=7). Quantitative measures (a demographic/behavioral health inventory, and the HIV-Knowledge Questionnaire for Young Men of Color who have Sex with Men) were administered to provide complementary data. Qualitative data were analyzed using content analysis, while descriptive statistics were used to analyze quantitative data.
**Results:** YBMSM (N=31; African=1, African American=22, Caribbean=3, Afro-Latino=3, and Mixed Race=2) ranged between 16 - 24 years of age (mean=20.06), and demonstrated a mean HIV knowledge score of 76% correct. Mean sexarche was 14.81 years (range= 5-18years) and mean number of partners was 2.19 partners over 3 months and 4.55 partners over 12 months. Among the thematic findings were: 1) YBMSM were consciously engaged in a process of self-preservation facilitated by integration of racial and sexual identities and the tensions that arose from resolving bi-cultural expectations, 2) YBMSM who actively pursued self-preservation saw themselves as role models and were working to alter the image of BMSM, and 3) Exposure to pornography in early adolescence was integral to the sexual socialization of YBMSM.
**Conclusions:** Existing and future behavioral-based prevention interventions, as well as efforts to encourage PrEP awareness and uptake among Black MSM should be mindful to include elements that acknowledge and affirm young Black MSM's innate strategies for remaining HIV-negative.

## THPEC183

### VIOLENCE AGAINST MEN WHO HAVE SEX WITH MEN IN CAMEROON: CORRELATES WITH HIV RISK, INFECTION AND ACCESS TO HEALTH SERVICES AND JUSTICE

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**Background:** Men who have sex with men (MSM) are recognized as a high-risk population for discrimination and violence, in addition to HIV. Little is known about how physical and sexual violence may affect HIV risk behavior, and access to health care and justice among MSM. Qualitative reports highlight severe violence, stigma, and discrimination in Cameroon, where the policy environment enables violence and discrimination against MSM.
**Objectives:** We describe physical and sexual violence among MSM in Cameroon, and associations of violence with HIV risk behavior, self-reported HIV infection, and barriers to accessing health services and justice.
**Methods:** In 2014, a total of 1,606 MSM were recruited via snowball sampling in seven cities, and completed a cross-sectional survey. Physical violence and sexual violence were evaluated separately. Following descriptive analysis, logistic regression evaluated associations of physical and sexual violence, respectively, with each outcome.
**Results:** Overall, 13.67% of participants reported physical violence due to MSM status, and 27.29% reported sexual violence. Physical violence was associated with self-reported positive HIV status (AOR 2.05, 95% CI 1.17, 3.60). Both physical violence, and sexual violence, respectively were associated with having been denied health service due to MSM status (AOR 2.90, 95% CI 1.71, 4.90); (AOR 1.75, 95% CI 1.08, 2.83), respectively. Physical violence was associated with reporting police failure to protect (AOR 3.63, 95% CI 2.32, 5.66), and having been jailed (AOR 6.05, 95% CI 3.55, 10.30).
**Conclusions:** MSM in Cameroon experience prevalent physical and sexual violence, which is associated with HIV risk, and barriers to accessing health services and justice. Same sex relations are currently criminalized in Cameroon, and laws against rape in Cameroon are not inclusive of male victims. Decriminalization of consensual, adult, same sex relations has been recommended globally. However, decriminalization alone will not be effective, and must be accompanied with legal protection for MSM against discrimination and violence, and removal of barriers to accessing health services. The high prevalence of violence and associated HIV risks indicates the need to address violence within HIV programming.

## THPEC184

### SOCIAL NETWORKS OF MEN WHO HAVE SEX WITH MEN IN LARGE AND SMALL CITIES IN TANZANIA

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**Background:** Men who have sex with men (MSM) in sub-Saharan Africa remain hidden and hard to reach for involvement in HIV and STI services. The aim of the current study was to investigate MSM network size, homophily and complexity in a large and a small Tanzanian city.
**Methods:** Data were collected in 2012 (Dar es Salaam) and 2013 (Tanga) from a cross-sectional survey of 200 MSM in Dar es Salaam and 100 in Tanga, using Respondent Driven Sampling. Five seeds were recruited and in total six waves in Dar es Salaam and seven in Tanga were conducted during a period of nine respectively two months.
**Results:** Mean network size was 11.3±14.1 in Dar es Salaam and 7.6±8.1 in Tanga. Most participants reported that the person from whom they received the recruitment coupon was a sexual partner, close friend or acquaintance (195 [98%] in Dar es Salaam; 91 [92%] in Tanga), that they typically saw their recruiter at least once per month (192 [97%] Dar es Salaam and 97 [98%] Tanga), and that they had known their recruiter for at least six months (168 [85%] Dar es Salaam; 96 [97%] Tanga). Homophily was significant for age (1.29; 1.07), "gay openness" (0.042) and HIV status (0.018) in Dar es Salaam, while it was significant for sexual identification (0.019), solely, in Tanga.
**Conclusions:** HIV networks are probably transmission-related since 92% were unaware they were HIV positive. In the large city, some organization of networks around personal characteristics had developed. The personal network sizes and existence of moderately connected networks make it possible to use peer-driven interventions to reach MSM for HIV/STI interventions in large and smaller Sub-Saharan African cities.

## THPEC185

### CLIENT CENTERED CARE COORDINATION (C4) UTILIZATION AND PREP ACCEPTANCE AMONG BLACK MEN WHO HAVE SEX WITH MEN IN 3 CITIES IN THE U.S.

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**Background:** The HPTN 073 Study utilized a client-centered care coordination (C4) model to support initiation of PrEP as part of comprehensive risk reduction plans individually-tailored for Black men who have sex with men (BMSM) in three US cities.
**Methods:** The HPTN 073 Study enrolled 226 HIV-uninfected BMSM in three US cities, including Los Angeles, CA, Washington DC, and Chapel Hill, NC, between August 2013 and September 2014. All study participants were offered once daily oral FTC/TDF combined with C4, and followed-up for up to 12 months, with scheduled clinical visit at 13 week intervals. At each visit, participants were evaluated for C4 utilization and PrEP acceptance, in addition to side effects, renal toxicity, adherence, risk behavior and HIV seroconversion.
**Results:** Among the total 226 enrolled participants, 221 (97%) participants had at least one C4 encounter, with an average encounter length (minutes) 29 (95 %CI 28-30). For those who initiated PrEP, 176 out of 178 (99%) participants had at least one encounter with an average encounter length 31 (95 %CI 29-33). For those who didn't initiate PrEP, 42 out of 48 (88%) participants had at least one encounter with average an encounter length 32 (95 %CI 27-38). Compared to those who declined PrEP, participants who initiated PrEP were more likely to use C4 (OR = 12.6; 95% CI: 2.45-64.5, p=0.0024). A logistic regression model, including additional predictors, employment, sex with a male partner, shows an adjusted OR to be 9.6(95% CI:1.7-48.15 p= 0.0087).

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**Conclusions:** Most HPTN 073 participants used C4 on at least one occasion. Client-centered care coordination was acceptable to Black MSM and highly associated with their initiation of PrEP. Use of a culturally appropriate, theory driven, client-centered approach can support PrEP uptake and adherence within highly vulnerable BMSM populations.

## PREVENTION FOR TRANSGENDER PERSONS

### THPEC186

### LEVERAGING EXISTING SOCIAL NETWORKS TO INTRODUCE AND DISSEMINATE PREP AMONG TRANSGENDER WOMEN IN LIMA, PERU: A QUALITATIVE INQUIRY

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**Background:** Improved understanding of social network structures can contribute to the introduction and dissemination of new HIV prevention technologies within socially marginalized populations. This formative study explored social network formations and patterns of communication, trust, and behavioral influence among transgender women (TW) in Lima, Peru to inform future roll-out of HIV bio-behavioral prevention efforts.
**Methods:** Between May-July 2015, semi-structured in-depth interviews were conducted with 15 TW community members and 5 TW community leaders. TW leaders were identified during previous ethnographic research. Community members were recruited through snowball sampling within existing social networks from diverse geographic areas. Interviews were conducted in Spanish, recorded, transcribed, and analyzed using an immersion-crystallization approach.
**Results:** Participants described various layers of social influence from multiple actors within their social networks. The majority identified a single close relative (e.g., mother, sibling) as their primary source of trust and support with whom they discussed emotions, desires, and personal secrets. However, key issues related to transgender identity, sexual intimacy, relationship issues (primarily with male partners), and sex work were typically avoided with this individual. Participants described close circles composed of 2-3 TW friends that formed the core of their social network structure, with whom they would socialize regularly and share both private and practical information about gender identity, body modification, and sexual partners, but would not discuss potentially stigmatizing issues like an HIV diagnosis. Density of links and number of nodes within networks was greatly influenced by occupation (e.g., whether participants engaged in sex work and frequented commercial sex venues) and living arrangements (e.g., communal housing arrangements among groups of TW). Narratives regarding organization of TW communities broadly differentiated between political leaders/activists (who advocated for TW rights) and social leaders (who introduced young women to norms and practices of the trans community, commercial sex--if applicable, hormone therapy, and body modification techniques).
**Conclusions:** TW in Lima described highly influential, diverse social networks composed of a range of social and familial ties, with corresponding differences in patterns of interaction, communication, trust, and influence. Detailed qualitative and quantitative analysis of these networks will contribute to implementation and acceptability of new HIV prevention technologies like PrEP.

### THPEC187

### LOCAL CONTEXT IS EVERYTHING: A STUDY OF TRANSVESTITE, TRANSSEXUAL AND TRANSGENDER WOMEN IN NORTH-EAST BRAZIL

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**Background:** There is growing recognition that transgender populations do not fit any simple characterization. In Brazil, the terms transvestite, transsexual, and transgender are commonly used by the communities themselves and can describe having an assigned sex at birth that differs from their current gender identity or expression. Though fluid and dependent on context, 'transvestite' can relay differing levels of performance as a woman whereas 'transsexual' and 'transgender' can relay different degrees of transitioning. And recently, some prefer to be identified as 'women' to reflect their completed transition from their sex assigned at birth. It remains unknown if the disproportionate burden of HIV and other STIs varies among these self-identified groups. Therefore we describe preliminary results of a study on rates of HIV/STIs among these groups in Northeast Brazil.
**Methods:** We mapped spaces/venues where they meet: street locations, bars, nightclubs, gay parades, community based organizations and virtual media (Facebook, Skype, Whatsapp), to conduct a cross-sectional survey utilizing Respondent Driven Sampling (RDS) to test for HIV and syphilis.
**Results:** To date 126 participants were recruited and 46.8% identified as transvestites, 39.7% transsexual, 3.1% transgender, 10.3% women. Though the demographics did not differ by gender identity, HIV status differed substantially: 57% transvestites, 28% transsexuals, 7% transgender women and 7% women were HIV-infected. Further, 49% transvestites, 38% transsexuals, 13% women, and no transgender women tested positive for syphilis.
**Conclusions:** Differences in terminology may have implications for addressing HIV/STIs and other health problems among these groups. The desire for universal nomenclature may not capture realities of local culture. While terms such as 'transvestite' and 'transsexual' may have negative connotations in some contexts, the local context in which this research has been conducted highlighted the importance of engaging with a range of terms that participants themselves used to define a diversity of preferences and experiences.

### THPEC188

### TRANS INCARCERATION EXPERIENCES, CYCLE OF VIOLENCE AND INCREASED RISK OF HIV INFECTION: RESULTS FROM MURIEL PROJECT, SAO PAULO, BRAZIL

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**Background:** Transgender people are subjected to constant discrimination and violence in different social contexts. In Brazil, the penal system is being reported as a major player in the denial and violation of basic human rights. Historically, among inmates, transgender people are one of the main targets for arbitrary arrests and physical violence. Being in prison poses several risks, including HIV infection. Our objective was to analyze the experience of imprisonment in a study among transgender people in Sao Paulo, Brazil.
**Methods:** A consecutive quota sampling of transgender people was implemented in health care or social welfare services. A semi-structured questionnaire was used in face-to-face interviews. Socio-demographic characteristics, education, employment status, migration, access to health care, violence and discrimination experiences and self-reported HIV status among transvestites and transsexuals (FtM/MtF) were assessed in 7 municipalities of the State of Sao Paulo. Descriptive statistics and Chi-square tests were performed to analyze selected variables.
**Results:** Among the 673 participants, 19.6% (N=132, 129 MtF and 3 FtM) self-reported having been imprisoned. Those who experienced imprisonment are older (33.6±10.1 *vs.* 31.6±9.8, p=0.042), less educated (91.7% *vs.* 79.3%, p< 0.001) and more frequently self-reported as black/multi-racial (68% *versus* 56%, p=0.016), compared to those who were not incarcerated. Also, they are more likely to be unemployed (37% *vs.* 22%, p=0.001) and less prone to have a formal employment (3% *vs.* 13.3%, p< 0.001). 43.5% self-reported HIV-infection (*vs.* 22.8%, p< 0.001) and 81.1% reported physical violence. Excluding the 3 FtM, 75% of the transwomen

reported being incarcerated with men, 58.3% could not dress accordingly to self-identified gender, 22% had their hair cut, 78% suffered physical violence by other inmates and 77.3% were assaulted by guards or other employees of the correctional system.
**Conclusions:** Compared to the general population in Brazil, transgender people were 36 times more likely to be incarcerated. Elevated frequencies of imprisonment experiences in the transgender community, aggregated to other determinants, such as physical violence and reduced work opportunities, strengthen a cycle of violence, reinforcing vulnerabilities and increasing risk of HIV-infection. Health policymakers should address attention to trans incarceration in order to warrant human rights and access to integral health care.

## PREVENTION FOR MIGRANTS, MOBILE AND DISPLACED POPULATIONS

### THPEC189

### UNDERSTANDING/ADDRESSING HIV/AIDS WITH YOUNG ASYLUM SEEKERS FROM KP IN MENA

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**Background:** UNHCR Global Appeal 2015, the humanitarian living conditions of migrants/refugees have implications for the region's HIV epidemic responses, these groups are subject to abuse/ assault/ sexual harassment/violence. Data show that 2 million fled Syria,1.1 million of which have located in Lebanon.
SIDC USAID - LMG Project, assessed the knowledge, attitudes, and practices related to sexual health, HIV, STIs/drug use among Syrian asylum (15-30yrs) from LGBT communities among which Sex workers and Drug Users, to develop appropriate HIV prevention interventions.
**Methods:** Data was collected analyzed/validated with key informants&group of professional.
**Results:** Despite good knowledge on HIV/STIs, responses confirmed that LGBT perceived themselves at risk of contracting STIs due to their sexual practices (90%) during their asylum period; MSM engage in SW (up to 30%) among which 30% aged between 15-21 years old, use social media sites to meet clients and selling sexual services; others consume drugs (up to 10%) and exchanging sex for drugs; condom use is low and negotiations skills insufficient. 60% of Syrian LGBT are not aware about services & don't benefit from any. Respondents stated have faced problems due to their sexual orientation or sexual activity, 39% subjected to psycho, violence and 49% abused in Lebanon.
**Conclusions:** The growing numbers of Syrian LGBT demanding services from SIDC and other civil society organizations when they are approached through outreach activities, confirms the need for an urgent response, adding the challenge of providing access to quality health care for Syrian refugees especially when it comes to areas related to sexuality and harm reduction that are considered taboo, and considering that asylum seekers have less access to health care settings and are reluctant to disclose these issues. Despite ongoing HIV-prevention efforts by national and humanitarian partners, it is important to ensure that needs of the Syrian KP are prioritized in the humanitarian and national HIV response. This requires a tailored strategic response where sexual health, HIV, and STI care are positioned and integrated within the humanitarian agenda for this population. This would not be possible without integrating peer education, tailored care services and specific training for providers & promotion activities enhancing a tolerant environment.

### THPEC190

### CHANGING THE PARADIGM: HIV RISK AND VULNERABILITY OF LOCAL COMMUNITIES DUE TO MINING AND INTERNAL MIGRATION IN UGANDA

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**Background:** Mining communities in Uganda experience rapid population influx and internal mobility dynamics rendering them vulnerable to ill health including HIV and AIDS. We examined social and behavioral dynamics that increase vulnerability to HIV among mine host communities.
**Methods:** mix-methods cross sectional study was among 228 randomly selected migrants and members of the host communities conducted from February to December 2015 in extractive industry sites across 3 regions of Uganda. Qualitative interviews were held with migrants and members of the host communities, health care workers and other key stakeholders. Logistic regression for association between migrant status and HIV risk behavior/outcomes was performed using STATA 13..[MM1] Qualitative data were analyzed using a content and thematic approach.
**Results:** Migrants compared to local mining community members were of a better socioeconomic status -higher education level, higher qualified jobs and employed in larger industrial mines. Only 15% of participants reported condom use during last sex in the past 12 months. Migrants were twice as likely to report sexually transmitted infections (OR 2.7, 95% CI 1.19-6.22, p=0.01) and had more knowledge of where to access an HIV test (0.11, CI 0.02-0.55) than community members. Migrants identified themselves 2.9 times more at HIV risk than mining communities (OR 2.97, 95% CI 1.62-5.44, p< 0.001). , non-migrants overall had more risky behaviours than the general population (Uganda DHS data).- Vulnerability to HIV among local host community members stems from emergence of sex-work activities in areas surrounding mining sites; inconsistent condom use; alcohol and substance abuse; and poor access to HIV prevention and treatment services in mining communities. Whereas miners and extractive industry workers display high-risk sexual behaviors known to predispose people to HIV, migrants seem largely aware of the risk, have access to information and better health services (including health insurance) and are of higher social status than the mine host communities.
**Conclusions:** Current prevention efforts should be more focused to addressing internal mobility dynamics and reducing HIV vulnerability in local communities in mining sites while embracing a "space of vulnerability" approach to migration-affected areas.

### THPEC191

### A PROFILE OF AFRICAN, CARIBBEAN AND OTHER BLACK PEOPLE IN HIV CARE IN ONTARIO

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**Background:** In Canada, people from countries with generalized HIV epidemics in Africa and the Caribbean have higher rates of HIV compared to the general population. From 2009 to 2013, African, Caribbean and Black (ACB) people represented about 5% of the population of Ontario but 25.2% of new HIV diagnoses. The objective of this analysis was to establish a socio-demographic profile of ACB people living with HIV in care in Ontario, Canada.

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**Methods:** The Ontario HIV Treatment Network Cohort Study (OCS) is an open, observational and voluntary cohort collecting data on people living with HIV through clinical chart reviews and annual questionnaires. ACB participants who had completed at least one questionnaire between 2008 and 2013 were included in this analysis. We compared socio-demographic characteristics between ACB participants and other OCS participants using chi-square tests. We conducted similar comparisons between ACB women and men.
**Results:** There were 3898 people in the sample, of whom 674 (17.3%) were ACB people. Compared to non-ACB participants, ACB people were more likely to be female (50.2% vs. 11.7%) (p< 0.0001), heterosexual (75.6% vs. 26.9%) (p< 0.0001), seeking employment (13.7% vs. 4.3%) (p< 0.0001), and be parents (62.4% vs. 26.1%) (p< 0.0001). They were also more likely to have completed college (27.6% vs. 20.02%) but less likely to have a university education (18.9% vs. 28.9%) (p< 0.0001), be Canadian-born (8.9% vs. 81.2%) (p< 0.0001), and reside in Canada for 10 years or more (52.4% vs. 85.2%) (p< 0.0001). Compared to ACB men, women were more likely to be parents (75.1% vs. 49.7%) (p< 0.0001) and have completed college (32.9% vs. 22.3%) but less likely to have a university education (12.2% vs. 25.6%) (p< 0.0001), be Canadian-born (5.0% vs. 12.8%) (p< 0.0001), and reside in Canada for 10 years or more (46.2% vs. 59.3%) (p< 0.001).
**Conclusions:** This is the first project establishing a profile of ACB people living with HIV in care in Ontario. Our results show that ACB people differ from other Ontario residents receiving HIV care. Additionally, some heterogeneity was found between ACB men and women. These results reinforce some of the programmatic work targeting ACB communities in Ontario.

## THPEC192

### EXPLORING HIV VULNERABILITY AMONG MIGRANT WORKERS AND THEIR SPOUSES IN EGYPT

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**Background:** Egypt sends more than two million migrant workers to work abroad apart from internal migration from rural to urban areas. Research from other countries showed an increased vulnerability of migrant workers to HIV infection due to increased stressors and lack of social support. In the Middle East North Africa region, most women who are infected with HIV reported not engaging in risky behavior of their own suggesting contracting the infection through having unprotected sex with their husbands. The study aimed to understand risk factors faced by migrant workers and women married to migrant workers in Egypt.
**Methods:** In- depth interviews were conducted with 20 external migrant workers, 20 internal migrant workers and 20 women married to migrants (external or internal). This study examined the perception of HIV risk for themselves and wives, disclosure of risky behavior to wives, experience with the health system and dynamics of the marital relationship. The study was implemented in a number Egyptian Governorates that send men to work in Western or Gulf countries in addition to touristic attractions with prevalent internal migrants.
**Results:** Migrant workers (specifically internal ones working in touristic attractions and external migrants in Western countries) were practicing multiple risky behaviors, having limited HIV related information and negative attitudes towards condoms. None of them knew about HIV testing services available in Egypt and were afraid to approach such services because of HIV related stigma. Women married to migrant workers did not perceive themselves at risk for acquiring HIV. Their vulnerability was further exacerbated by prevalent gender norms and economic dependence on their husbands that render them powerless to discuss their husbands' risky behavior or negotiate condom use.
**Conclusions:** Targeted interventions should be directed at both internal and external migrants and should focus on HIV awareness-raising, safer sex through consistent and correct condom use, and creating a cadre of peers that could provide psychosocial support and HIV counseling to migrant workers. Concurrently, efforts should be made to raise HIV awareness of women and empower them (eg. micro-loans, vocational training) as well as addressing inequitable gender norms among both men and women.

## THPEC193

### LESSONS LEARNED FROM A CROSS-BORDER COOPERATION FOR HIV/AIDS PREVENTION AND IMPACT MITIGATION, SOUTHERN CAUCASUS AND RUSSIAN FEDERATION

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**Background:** The project was initiated in response to the alarming situation of high migration rates contributing to the spread of HIV/AIDS in the Southern Caucasus. It was implemented from April 2012 to May 2014. Among other things, the project aims at strengthening HIV/AIDS services, especially to migrant workers, All the four countries have experienced increasing problems concerning HIV and migration e.g. Armenia has estimated 50-60,000 seasonal migrants every year and 75% of new cases of HIV are reported from seasonal migrants.
**Description:** The project's main activities included: establishing a regional working group with the participation of Government, NSA's and international organizations; facilitate capacity building training's, review a set of existing HIV/AIDS education materials before distribution and facilitate the development and implementation of regional action plan and the design and implementation of 23 advocacy campaigns.
**Lessons learned:** The project address the link between HIV and migration involving countries where migrants are coming from and the country serving as a destination. This helped to find a joint solution for a regional problem. The project was effective in reaching families of migrant workers that resulted in an increase in testing levels. One notable contribution of the project was its influence in the inclusion of migrants as vulnerable groups in the Azerbaijan National AIDS strategy. The project produced several documents, such as Policy and Service Gap Analysis, which helped to address the problems of HIV and migration in the region. Some of the hindering factors addressed by the project include:
(1) the high cost of travel to testing centres and stigma associated with HIV in Armenia and elsewhere in the region.
(2) Migrants in the Russian Federation often avoided getting tested officially, for fear of losing their legal residential status in the event of a positive test results.
**Conclusions/Next steps:** Government and civil society should utilize the regional network created within this project in future programmatic plans, since strong ties have already been established and the network can be extremely powerful in mobilizing communities and channeling their experience in delivering programmatic goals. Regional cooperation among nations for HIV prevention will significantly contribute to access to health services to migrant workers.

# PREVENTION FOR HIV SERODISCORDANT COUPLES

## THPEC194

### SEXUAL NETWORKS AND GENETIC LINKAGE OF HIV TRANSMISSION FOR HIV SEROCONCORDANT COUPLES FROM A RURAL PREFECTURE OF EASTERN CHINA

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**Background:** A large number of HIV infections occur within married couples in China. The aim of this study is to combine information of both epidemiological and genetic scales to characterize and analyze the potential HIV transmission within married couple among treatment-naïve HIV infections.
**Methods:** A total of 27 HIV seroconcordant positive couples were investigated in Taizhou prefecture, China. HIV transmission pairs within-couples were determined by the combination of both sequences of the protease and reverse transcriptase coding regions based on HIV *pol* gene and behavioural analysis.
**Results:** Of 27 spouses first diagnosed, 12 were defined HIV late diagnosis, 26 were identified through HIV testing during medical care or HIV testing before surgery. Male spouses were more likely to report having two or more sexual partners in the past year prior to HIV diagnosis than female spouses (88.9% vs. 37.0%). 24 of 27 sexual networks were determined to be HIV transmission pairs (20) or potential transmission pairs (4), three couples were subtyped with discordant HIV subtypes or large genetic distance and thus had different sources of HIV transmissions.
**Conclusions:** The findings of this study underscore the importance of integration of behavioral and molecular evidence to identify HIV transmission pairs and reconstruct the HIV transmission network within married couples.

The results provide enhanced evidence for urgently developing tailored prevention strategies for network-based preventive measures, such as couple based HIV counseling and testing (CHCT) services for HIV-discordant mixed couples to reduce HIV secondary transmission.

## THPEC195

### THE POWER HEALTH PROGRAM: A NOVEL, ONLINE, MULTI-MODAL EDUCATIONAL INTERVENTION FOR HIV-NEGATIVE WOMEN AND THEIR MALE PARTNERS

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**Background:** Many women and men in HIV serodifferent relationships want to experience parenthood. Advances in HIV treatment and prevention, such as pre-exposure prophylaxis and treatment as prevention, can facilitate safer conception within the context of serodifferent relationships. Despite these advances, many couples are unaware of and/or are unable to navigate medical systems to gain access to safer conception options.
**Description:** The Positive Outcomes for Women Engaged in Reproductive (POWER) Health program consists of a web-based, multi-modal educational curriculum catering to HIV-affected male/female couples and aims to empower couples to take control of their reproductive and sexual health.
Harnessing the growing number of technological tools now available, the POWER Health team reaches their audiences using a web portal [www.hiveonline.org] containing an array of materials such as patient and provider educational brochures as well as leveraging social media outlets e.g., Facebook, Twitter, Google+ Hangouts in novel ways.
We routinely film videos depicting interviews with sexual and reproductive health experts including providers and researchers as well as filming videos with patients, writing blogs, and creating brochures using accessible language. All patient materials are reviewed by consumers and published in both English and Spanish.
**Lessons learned:** From February 2015 - January 2016, 47 unique POWER Health educational "pieces" were developed and posted online. These pages reached 4079 views across 5 continents (North/South America, Africa, Australia, Europe). The most widely accessed pages included: "My TasP Conception Story" (420 views), "Ben Banks Thriving and Fatherhood with HIV" (860 views) and "Sex Workers in Nigeria Need PrEP" (387 views).
As the year progressed, the number of viewers grew exponentially signaling gaining in popularity. For example, one viewer wrote "This gives me hope…" - a sentiment expressed in the comments that viewers offered in reaction to blogs, videos or social media conversations.
**Conclusions/Next steps:** The POWER Health project is reaching its intended audience of HIV-affected male/female couples. We do so by championing the voices and stories of people that are often silent or hidden. POWER Health educational materials are raising awareness about reproductive health options as well as breaking down social isolation often felt by members of serodifferent couples.

## THPEC196

### ANTIRETROVIRAL THERAPY INITIATION IS NOT ASSOCIATED WITH RISKY SEXUAL BEHAVIOR AMONG EAST AFRICAN HETEROSEXUAL HIV-1 INFECTED PERSONS IN SERODISCORDANT PARTNERSHIPS

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**Background:** Few prospective studies have assessed whether antiretroviral therapy (ART) use is associated with changes in sexual risk behavior of HIV-1 infected persons in known HIV serodiscordant partnerships.
**Methods:** We conducted a longitudinal analysis of 4747 HIV-1 infected persons with known uninfected partners from Kenya and Uganda enrolled in the Partners PrEP Study. ART use and self-reported sexual behavior were ascertained every 3 months. Urine pregnancy testing for HIV-1 uninfected women was performed monthly. Testing for sexually transmitted infections (STIs) was performed at enrollment, annually, and when clinically indicated. We assessed the effect of ART use on sexual risk behaviors using zero-inflated negative binomial regression. Primary outcomes were condomless sex acts, pregnancy incidence and new STI diagnoses.
**Results:** Of 1,817 partners who initiated ART during follow-up, 58% were women, the median age was 34 years, and most (98%) were married. At enrollment, HIV-1 infected partners reported a median of 4 sex acts (IQR 2-8) with HIV-1 uninfected partners in the prior month and 6% of HIV-1 infected men reported condomless sex with other partners. *Trichomonas vaginalis* was the most prevalent STI, detected in 10% of women and 2% of men. HIV-1 infected partners were followed for 864 person-years before ART initiation and 771 person-years after ART. Median CD4 and plasma viral load at ART initiation were 277 cells/µL and 4.18 $\log_{10}$ copies/mL, respectively. ART use was associated with a significant decrease in condomless sex acts with HIV-1 uninfected partners (0.8 vs. 0.4 per month; adjusted decrease 36%; 95% CI: 25%, 45%; p< 0.001), but not condomless sex acts with other partners (1.6 vs 1.1 per month; adjusted change 6.2%; 95% CI: -27%, 20%; p=0.62). Pregnancy incidence was lower after ART (13.2 vs 8.4 per 100 person-years; HR 0.71, 95% CI: 0.60-0.84, p< 0.001). Incident STI diagnoses were similar (8.3 vs 8.7%; OR 1.05; 95% CI: 0.86-1.29; p=0.63).
**Conclusions:** Risky sexual behavior, as indicated by unprotected sex and pregnancy incidence significantly decreased after ART initiation among East African HIV-1 infected persons with known HIV-1 uninfected partners. These data are reassuring that substantial risk compensation does not immediately follow ART initiation.

## THPEC197

### PREVALENCE AND FACTORS ASSOCIATED WITH DISCLOSING HIV STATUS TO WIFE AMONG MARRIED HIV-POSITIVE MEN WHO HAVE SEX WITH MEN AND WOMEN IN CHINA

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**Background:** Men who have sex with men and women (MSMW), functions as the bridge in transmitting HIV from high-risk group (MSM) to low-risk group (general female). A large proportion of them would enter into marriage eventually, especially in the Chinese Setting. Due to the double-stigmatized identity, few of them disclosed HIV status to their wives. To date, factors associated with disclosing HIV to wife are highly under-investigated among HIV positive MSMW in China. We aimed to investigate factors associated with HIV disclosure to wife among HIV positive MSMW in China.
**Methods:** We conducted a cross-sectional anonymous survey among HIV positive MSMW, who ever married with a female, and aged 18 years or older from four cities of China between January to August, 2015. Participants' recruitment was facilitated by local collaborators. After telephone screening by CDC staffs and MSM peers, all eligible participants were invited to join. Formal written consent was obtained before the face-to-face interview. We used individually structured questionnaire to measure characteristics of the HIV positive MSMW and their wives, as well as factors about their relationship and backgrounds.
**Results:** Our analysis included data for 259 HIV positive and married MSMW. Prevalence of disclosing HIV status to wife was 61.4%. For the HIV positive MSMW, the majority were older than
35 years old (74.0%) and on antiretroviral therapy (ART) (84.7%). With regard to wife, very few were HIV positive (6.6%); 68.3% kept this relationship for over four years; half (44.8%) had inconsistent condom use in the past month; one fifth (22.8%) already disclosed homosexual identity to wife. After adjusting for significant backgrounds (living with wife), participants were more likely to disclose HIV to wife, with clinical symptoms related to HIV/AIDS (AOR=2.59, P< 0.05), on ART
(AOR=4.65, P< 0.001), already disclosing homosexual identity (AOR=12.69, P< 0.001), known HIV status of wife (AOR =4.70, P< 0.001). No association was found between inconsistent condom use and disclosing HIV.
**Conclusions:** Less than half of the HIV positive Chinese MSMW still hide their HIV status from their wives. Interventions to encourage HIV status disclosure should target at identifying HIV related symptoms and promoting partner to do HIV testing.

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## THPEC198

### PRE-EXPOSURE PROPHYLAXIS CAN BE COST-SAVING FOR HIGH-RISK HETEROSEXUAL HIV SERODISCORDANT COUPLES

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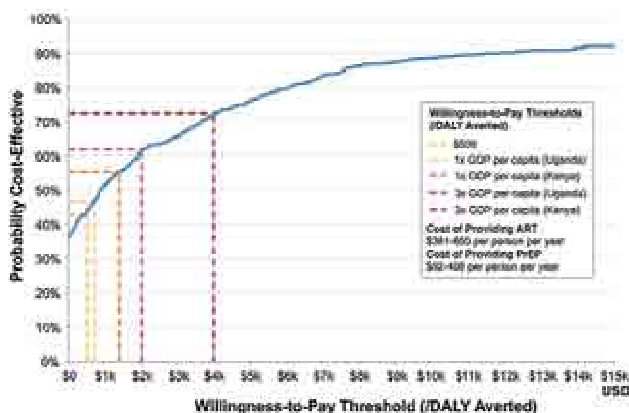
**Background:** For HIV-serodiscordant couples, providing pre-exposure prophylaxis (PrEP) for the HIV-uninfected partner as a "bridge" to antiretroviral therapy (ART) initiation for the HIV-infected partner reduced incidence by 96% in the Partners Demonstration Project. The cost-effectiveness of PrEP has not been estimated given realistic adherence, which was high but imperfect in the Demonstration Project.
**Methods:** We used an individual-based mathematical model of HIV transmission among serodiscordant couples in Kenya and Uganda that includes HIV transmission according to viral load, daily PrEP adherence from electronic monitoring data, tenofovir pharmacokinetics/pharmacodynamics, external sexual partners, and empirical cost estimates. PrEP use was simulated for the HIV-uninfected partner until six months after the partner's ART initiation under three scenarios (ART at CD4 counts <350 cells/µl, <500 cells/µl, or universal ART). We estimated the incremental cost-effectiveness ratio (ICER) for a PrEP intervention over the couples' lifetimes and constructed a cost-effectiveness acceptability curve to determine the probability of cost-effectiveness under a range of circumstances and the potential cost to identify each couple for PrEP use.
**Results:** Our best estimates are that PrEP targeted to high-risk couples is cost-saving (ICER <$0/disability-adjusted life-year [DALY] averted) when implemented with ART <500 cells/µl or universal ART and cost-effective ($371/DALY averted) with ART <350 cells/µl. PrEP use in conjunction with ART <500 cells/µl has an estimated 36% probability of being cost-saving and up to a 72% probability of being cost-effective, depending on the willingness-to-pay threshold. To maximize impact, couples must be found early, and PrEP use would remain cost-effective (at a threshold of $500/DALY averted) if an additional $58-148 was required to identify each couple.




*[Cost-effectiveness acceptability curve for PrEP use in conjunction with ART at CD4 counts <500 cells/µl]*

**Conclusions:** Providing PrEP for the HIV-uninfected partner in a high-risk serodiscordant couple as a bridge through six months after ART initiation for the HIV-infected partner has a high probability of being cost-effective in Kenya and Uganda.

## THPEC199

### COMMUNITY-BASED PARTNERS HIV TESTING AND SERODISCORDANCY IN NAMIBIA'S HIGHEST PREVALENCE REGION, 2014-15

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**Background:** Partners HIV testing and counseling (PHTC) can facilitate informed decisions about HIV treatment, prevention, and reproductive health. Immediate antiretroviral treatment (ART) of the HIV-positive partner in a serodiscordant couple can prevent imminent transmission. We estimated community-level rates of couples PHTC and serodiscordancy in the highest prevalence region of Namibia.
**Methods:** A cross-sectional, household-based survey was integrated into the routine activities of a community-based HIV testing and case management program from 12/2014 - 7/2015 in five selected sites of Namibia's Zambezi region. Adults (age ≥ 15 years) completed behavioral interviews and received HIV testing if they were not previously diagnosed. Previous HIV diagnosis was measured through self-report and verified in patient-carried health records. Participants who were married or cohabitating were invited to PHTC. The serostatus of each participant's partner was captured on that partcipant's survey form, but not all partners participated in the study. Therefore, the individual participant, not the couple is used as the unit of analysis.
**Results:** We enrolled 2,163 adults, 503 (23.2%) of whom received PHTC. Among those who received PHTC, 333 (66.2%) were seroconcordant negative with their partner, 91 (18.1%) were seroconcordant positive with their partner, 44 (8.7%) were seronegative discordant with a seropositive partner and 35 (7.0%) were seropositive discordant with a seronegative partner. Serodiscordant partnerships were significantly higher among urban participants (AOR: 1.96, P = 0.05). More than half (59.6%) of positive partners in serodiscordant relationships were not on ART.
**Conclusions:** Approximately 15% of individuals who received PHTC in our survey were serodiscordant with their partner. More than half of seronegative adults with a seropositive partner were at high risk for infection because their partner was not on ART. If rapid linkage to treatment for seropositive partners can be ensured, PHTC can have substantial prevention benefit to seronegative partners. Community-based approaches - which in our study reached nearly 25% of adults with PHTC - may facilitate rapid linkages to treatment and prevention interventions for serodiscordant couples. Our results also suggest that many serodiscordant couples may benefit from temporary pre-exposure prophylaxis (PrEP), which is given to a seronegative individual until the positive parnter initiates ART and achieves viral supression.

# PREVENTION FOR OTHER VULNERABLE POPULATIONS

## THPEC200

### COMMUNITY LEADER'S ENGAGEMENT TO BRIDGE THE GAP OF PMTCT IN POST CONFLICT ZONES OF BAKASSI IN THE SOUTH-WEST REGION OF CAMEROON

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**Background:** With a population of 19.4 million inhabitants, Cameroon faces one of the most severe HIV epidemics in West and Central Africa with prevalence amongst pregnant women being 7.8%, and much higher prevalence in hard to reach post conflict communities. In Bakassi, the prevalence amongst women is reported to be above 20% and thus a call for concern. We sought to pilot a project which engages community leaders as pace setters to influence, educate, and bridge the gap of PMTCT between the community and health facilities in Bakassi.
**Description:** A community centered approach was used in the project. The project areas were; Bamusso, Isangele and Kombo Abedimo councils and entailed (1) conducting a qualitative research in 21 communities to ascertain the difficulties faced by women in post-conflict areas in accessing PMTCT services; (2) training of community leaders; (3) raising community awareness on PMTCT through educative and home visits; and (4) creation of community health task forces (CHTF). The project ran from April 2014 - December 2015

**Lessons learned:** The research results revealed the presence of constant threat of kidnapping attacks, difficulty in accessibility to health facility causing pregnant women to give birth at home or in churches, poor communication network, cultural/religious beliefs that impede PMTCT access. 100 community leaders were trained to become leaders in PMTCT. A total of 10,718 persons were reached with education on different PMTCT topics. Of this number, 835 were pregnant women (PW), 5,046 men, and 4,837 women of child bearing age. Of the PW sensitized, 518 attended ANC 1 with 505 tested for HIV. All HIV positive PW were linked to care and treatment. 15 exposed babies had their PCR information documented at six weeks; of whom two tested positive. 66 male partners attended ANC with their spouse. 3 CHTF were created to serve as watch dogs in the community and assist in overseeing project activities.
**Conclusions/Next steps:** Community leaders form an indispensable cadre within communities having a vital role to play in the HIV response. Thus a need to strongly involve them in preventing mother to child transmission of HIV in post conflict zones.

## THPEC201

### ASSESSING THE IMPACT OF A VIDEO-BASED MODEL TO ENGAGE AN URBAN PSYCHIATRIC INPATIENT COHORT IN THE PROCESS OF HIV TESTING AND EDUCATION

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**Background:** Several studies have shown that a large proportion of mentally ill adults exhibit high risk factors for contracting HIV. However, testing rates and knowledge about HIV among this population are low. This project was implemented to develop a new model to engage high-risk patients in an urban inpatient setting in the process of HIV testing and education using a behavioral skills video.
**Description:** During weekly small group sessions held by a staff nurse and trained PHA (Public Health Advocate), psychiatric patients were given a pre-video survey to determine baseline HIV knowledge, risk factors, perceived risk, and HIV test acceptability. A short behavioral skills video developed by Project B.R.I.E.F was then screened. After watching the video and participating in a small group discussion, patients were asked to complete a post-video survey asking the same questions as at baseline.
**Lessons learned:** 17 psychiatric inpatients participated in the educational video screening. 53% of participants were male, and 41.2% of patients were homeless in the past six months. Risk factors, as per CDC criterion, were: multiple sex partners (35.3%), injection drug use (17.6%), sex for commodities (17.6%), or having a sexually transmitted disease (23.5%). Common psychiatric diagnoses were: Schizophrenic/Psychotic/Affective (41.2%), Depression (17.6%), and Bipolar (17.6%). HIV testing acceptability increased from a baseline of 50% to 61% after the video screening. Participation in the group session was associated with improved HIV knowledge (as shown by the survey indicators in the table).

| | Baseline | Post-Intervention |
|---|---|---|
| Measure* (N=17) | Mean | Mean |
| HIV-related knowledge questions | 5.41 | 6.11 |
| Intention | | |
| To use condoms during every future sexual occasion | 4.88 | 5.05 |
| To use condoms after drinking | 5.12 | 5.00 |
| To insist on condom use with resistant partners | 4.53 | 5.12 |
| To discuss HIV/AIDS with sexual partners | 5.06 | 5.35 |
| To use condoms during the next sexual occasion | 4.82 | 5.12 |
| *Scores on knowledge about HIV were based on the number of correct responses to 9 true or false questions. Intention responses were on a 6 point scale ranging from 1, strongly disagree to 6, strongly agree (adapted from Kalichman et al., 1992). | | |

*[Mean Survey Scores of HIV Knowledge and Intention to Reduce HIV Risk Behavior]*

**Conclusions/Next steps:** A video-based HIV educational intervention, in conjunction with targeted group sessions, can be implemented in an inpatient psychiatric setting to promote HIV testing and improve HIV knowledge among a mentally ill cohort. These preliminary findings support further continuation of the program to target a larger inpatient audience. Future analysis should include prospective evaluation of the model in its ability to change behavior in this high-risk population.

## THPEC202

### PTSD SYMPTOMS AND HIV RISK BEHAVIORS IN A MARGINALLY-HOUSED, MENTALLY ILL POPULATION: FINAL ANALYSES

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**Background:** PTSD and trauma have been consistently associated with increased risk for HIV, including increased sexual acts, sexual partners, and proportion of unprotected/protected sex (Radcliffe et al., 2011; Sikkema et al., 2009). Recent literature suggests that specific symptoms of PTSD are associated with HIV risk. Specifically, Criterion C (avoidance/numbing) symptoms are predictive of increased risk behaviors (Berna et. al, 2012; Myers & Wyatt, 2010). In our midtrial analysis we found that Criterion B symptoms were positively associated with risky sex acts and IDU use with in a 3-month period and findings for other variables associated with PTSD were trending toward significance.
This current study looks at the relationship between PTSD symptoms and HIV risk behavior on our final dataset.
**Methods:** As a sub-study of a larger NIH-funded HIV prevention study (NIH-NIMH R01 MH 084696-01-A2 PI: Brady), we used a cross-sectional design and regression analyses to examine baseline data for relationships between PTSD diagnosis and several measures of HIV risk behaviors. Data represent 240 participants (109 female [45%], 61% heterosexual, 64% homeless/marginally-housed), mean age of 42.6 (42% African American, 34% Caucasian, 9% Hispanic/Latino), and 18% known to be HIV+. Instruments included a Demographic Inventory, the Timeline Followback (TLFB; Sobell & Sobell, 1992) to assess sexual activity, sex trade, drug/alcohol use, and the Structured Clinical Interview for the DSM-IV (First et al., 2010) to assess PTSD symptoms.
**Results:** Criterion B symptoms were positively associated with the following HIV risk behavior in a 3-month period: total sex (t=3.08, p=.002), total unprotected sex (t=3.23, p=.001), total vaginal sex (t=2.03, p=.04), total oral sex (t=2.54, p=.01), total unprotected oral (t=2.69, p=.008). In each case, those individuals meeting criterion B participated in approximately one additional sex act per 90-day period compared to those not meeting for criterion B. PTSD diagnosis, as well as Criterion C (Avoidance) and D (Negative Mood/Cognitions), were not associated with risky sex and IDU acts in a 3-month period.
**Conclusions:** This relationship suggests that sex can lead to re-experiencing for a population with a trauma history. This finding has clinical implications for HIV prevention and mental health care.

## THPEC203

### SEXUAL RISK REDUCTION INTERVENTION FOR PSYCHIATRIC PATIENTS: OUTCOME OF A LARGE, MULTI-SITE, RANDOMIZED CONTROLLED TRIAL IMPLEMENTED WITHIN A LOW-RESOURCE PUBLIC MENTAL HEALTH SYSTEM

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**Background:** Implementing behavioral interventions in low-resource settings is challenging, especially when targeting vulnerable, high-risk populations like people with mental illness. HIV prevention trials have been conducted outside psychiatric treatment settings in high-resource countries, with small samples and weak control groups. We conducted a large, multi-site, HIV prevention RCT among adults with mental illness in the public mental health system of Rio de Janeiro to examine changes in sexual risk behaviors over time.
**Methods:** 3,811 outpatients were screened at 4 community mental health clinics and 4 psychiatric hospitals in low-resource settings. Among the 1,348 who were sexually active in the last 3 months, 464 underwent randomized treatment assignment (HIV Prevention vs. Control-Health Promotion). Participants were assessed for diagnoses (Mini International Neuropsychiatric Interview-PLUS) and sexual risk behaviors (Sexual Risk Behavior Assessment Schedule); a sexual risk index (SRI) composite score of past-3-months unprotected sex occasions with steady, casual and exchange partners was calculated. SRI ranged from 0 to 6 and was recoded into a

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categorical variable: No-risk (0); Moderate-risk (>0 and ≤1); and High-risk ≥2). We compared the intervention and control groups on SRI change from baseline to 3 months FU by bivariate analysis at baseline and 3-Month FU ($\chi^2$ test), and linear growth model (LGM; Mplus 7.4) using Maximum Likelihood with Robust standard error (MLR) estimator.
**Results:** Demographic and clinical characteristics and HIV-risk behaviors of the two arms did not differ (successful randomization). Participants were female (56.0%), with a mean age of 43.3 years; multiracial (47.4%), white (32.8%), or black (20.3%); 46.1% married/long-term relationship, 34.7% single, and 18.5% separated/divorced/ widowed. The majority (72.4%) of participants had diagnoses consistent with severe mental illness: schizophrenia (35.3%); bipolar disorder (21.1%); depression with psychosis (9.3%); schizoaffective disorder/psychosis NOS (6.7%); and common mental disorders (27.6%); 1.9% had comorbid substance use disorders. At 3-Month FU, the proportion of High-risk was lower in the HIV compared to the control group. The LGM showed that patients in the HIV group were less likely to report High-risk compared to the control group (Beta=-.27, p=.03).
**Conclusions:** Investing in behavioral interventions in low-resource settings is feasible and worthwhile. Our findings highlight opportunities for global implementation.

## THPEC204

### USE OF DENTAL DAMS AMONGST WOMEN WHO HAVE SEX WITH WOMEN (WSW) COMMUNITIES IN BOTSWANA, LESOTHO, MALAWI, NAMIBIA, SOUTH AFRICA, SWAZILAND, ZAMBIA AND ZIMBABWE: A QUALITATIVE STUDY

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**Background:** Despite the pervasive belief that WSW are a low-risk group, WSW are vulnerable to HIV/STI infection through sexual and gender based violence, sex with men, and to a lesser extent, sexual contact with HIV positive WSW. Barrier methods remain the most effective method of reducing HIV risk during sexual intercourse. Dental dams are the barrier method marketed to WSW. This pilot study sought to explore motivation for use or non-use of dental dams amongst WSW communities in 8 Southern African countries.
**Methods:** .Thirteen LGBTI organisations in Southern Africa, distributed 10,000 dental dams to approximately 5% of their existing WSW clients. IEC material on dental dam use was also provided. Convenience sampling was used to recruit individuals who access the organisation's services, who identify as lesbian, bisexual, transgender or gender non-conforming women, and who agreed to participate in the pilot study. Data was collected via a self-report questionnaire (n=100). Furthermore, a self-report questionnaire was administered to outreach workers who distributed the dental dams (n= 13). Data was analysed using thematic content analysis with a set of a priori concept-driven codes.
**Results:** The majority of participants reported feeling motivated to use dental dams out of a desire to protect themselves and use them for oral sex. Many cited difficulties in using dental dams, dams being too small, a desire for pleasure and intimacy weighted above safety needs, knowing a partner's status, and trusting a partner as reasons motivating non-use. Most indicated hearing about dental dams from LGBTI organisations but that widespread unavailability and not knowing where to get one from are issues prohibitive to use.
**Conclusions:** Southern African LGBTI organisations should consider inclusion of dental dams in WSW programmes and should lobby government for inclusion of dental dams in national WSW interventions. Interventions should simultaneously provide mechanisms for WSW to learn about dental dam use and modes of HIV transmission amongst WSW. Further research is needed to improve product design of dental dams and to ascertain levels of use amongst MSM.

# POPULATION-BASED INTERVENTION STUDIES

## THPEC205

### MEASURES TO ASSURE QUALITY AND ACCURACY OF COMMUNITY-BASED HIV TESTING ON A LARGE SCALE: LESSONS LEARNT IN THE HPTN 071 (POPART) TRIAL IN ZAMBIA

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**Background:** Community-based HIV testing must be expanded if we are to reach the UNAIDS target of 90:90:90 by 2020. However to ensure the accuracy of test results, quality assurance (QA) programmes must be scaled up and monitor all aspects of HIV testing. Zambia had no guidelines for monitoring the quality and accuracy of HIV testing in community settings, and so a comprehensive QA programme was developed within the Zambian HPTN 071 (PopART) sites. This analysis presents details of that programme and the lessons learned so far in its implementation.
**Methods:** A comprehensive QA programme for community HIV provider (CHiP) HIV testing was developed which included: training and supervision of CHiPs in HIV testing; temperature monitoring of test kits; quality control (QC) of test kits; and annual HIV proficiency testing using blinded samples. Standard Operating Procedures (SOPs) were developed to guide HIV counselling and testing, with checklists for monitoring.
**Results:** Training- 412 CHiPs and 19 CHiPs supervisors were trained and certified in finger-prick HIV rapid testing. Quarterly refresher training of HIV testers was conducted.
Supervision- Each CHiP supervisor performed up to 3 accompanied visits per week in order to observe HIV counselling and testing procedures, and ensuring that each CHiP was observed at least 12 times per year.
***Temperature Monitoring***- When temperatures rose above the recommended storage temperature of 27°C for more than 3 consecutive days, QC of test kits at the affected sites was performed. In the 3 (of 8) sites where this occurred during the review period, the pass rate was 100%.
QC- QC was performed on 4,534 HIV test kits with 100% pass-rate (Table 1).

| District (No. communities) | Started performing QC of test kits | Determine (100 tests per kit) | | Unigold (20 tests per kits) | |
|---|---|---|---|---|---|
| | | Tests performed/kits received | Number of lots | Tests performed/kits received | Number of lots |
| Central store | September, 2013 | 228/4555 | 10 | 1163/385 | 13 |
| 1(2 communities) | February, 2014 | 429/398 | 5 | 306/467 | 8 |
| 2(1 community) | January, 2014 | 234/90 | 7 | 227/407 | 7 |
| 3(1 community) | January, 2014 | 281/74 | 8 | 207/140 | 9 |
| 4(2 communities) | January, 2014 | 1215/794 | 10 | 871/1918 | 14 |
| 5(2 communities) | March, 2014 | 247/479 | 7 | 173/539 | 12 |
| Total | | 2634/6377 | | 1900/7888 | |
| QC score - Total tests passed QC for both Determine and Unigold was 4534 tests with 100% pass | | 2634/2634 (100%) | | 1900/1900 (100%) | |

*[Table 1: QC of HIV Testing Kits per District]*

***Proficiency testing***- Internal proficiency testing was passed by 426/442 (96.4%) CHiPs, while external QA by national reference laboratory was passed by 424/439 (96.6%). TheCHiPs who failed HIV proficiency panel testing were retrained and subjected to second test which recorded 100% pass
**Conclusions:** Developing, implementing and sustaining a quality assurance programme for HIV rapid testing under field conditions in resource-limited settings is feasible. Success depends on high-quality materials and training, adherence to SOPs, excellent supervision and communication, and dedicated staff.

## THPEC206

### PRELIMINARY EVALUATION OF A PARENTAL HIV DISCLOSURE INTERVENTION AMONG PARENTS LIVING WITH HIV/AIDS IN CHINA

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**Background:** Disclosing parents' HIV serostatus to children (parental HIV disclosure) can benefit HIV-infected parents in term of medicine adherence and mental health and also improve children's psychosocial adjustment to parental disease. However, parental HIV disclosure is still a big challenge for parents living with HIV/AIDS (PLH). There is a dearth of evidence-based disclosure interventions to assist PLH in making appropriate disclosure plan and strategies. We have launched a theory-based HIV disclosure project for PLH in China in 2013. The current study aims to report the effectiveness of the intervention based on preliminary evaluation.
**Methods:** A longitudinal randomized controlled trial among 791 PLH with children aged 6-15 years was implemented in Guangxi, China. The intervention for parents included five 2-hour sessions with focuses on positive coping to HIV and self-care, decision-making of disclosure, developing appropriate disclosure plan and strategies, and accessing social support and post-disclosure counseling. The participants were asked to complete an assessment each 6 month. The data come from baseline and two follow-ups with average follow-up rate of 91%. Mixed regression models were used to track the change of disclosure-related variables over time and examine the effect of intervention in the trajectories.
**Results:** Intervention group reported decreasing level of worries about disclosure, increasing level of self-efficacy in planning and conducting disclosure to children, and higher score of developing disclosure strategies, while the control group showed a stable trajectory or mixed trends in the three variables. Controlling for demographic characteristics, the coefficient of intervention group-by-time interaction suggested that rate of decline in worries was faster in intervention group (β=-.179, p< .0001). Similarly, intervention group showed a faster rate of increasing in disclosure-related self-efficacy (β=.111, p=.044) and development of disclosure strategies (β=.122, p=.012). The intervention might also increase the medicine adherence although the coefficient did not reach the statistical significance (β=-.032, p=.071).
**Conclusions:** In near future, we need to examine the impacts of the intervention on parents' mental health and clinical outcomes. However, the positive effect of the intervention on disclosure-related variables and medicine adherence may imply a promising approach for future intervention among PLH.

# MALE CIRCUMCISION

## THPEC207

### THE ROLE OF INTERPERSONAL COMMUNICATION IN VMMC KNOWLEDGE ACQUISITION AND MOBILIZATION

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**Background:** Voluntary Medical Male Circumcision (VMMC) has been identified as a priority by the South African Government in the combination HIV prevention strategy. Demand creation remains a major challenge in achieving the goal of 4.2 million circumcisions by 2017. To maximize impact of demand creation activities, the most effective strategies to mobilize men for circumcision should be identified and prioritized.
**Methods:** From May-July, 2015, VMMC knowledge acquisition and mobilization data were routinely collected from men presenting to the PEPFAR VMMC program. For this analysis we examined only available data from one of five NGO's in five provinces: KwaZulu Natal, Mpumalanga, Gauteng, and Free State. Descriptive statistical analysis was conducted using Microsoft Excel.
**Results:** Among 10,476 overall participants, 69.4% reported hearing about VMMC through NGOs, with 6,267 (59.8%) learning through community-based social mobilizers and an additional 1,008 (9.6%) through other NGO activities. Patients also reported knowledge acquisition of VMMC from a friend (13.6%) or family member (5.6%). Less than 2% reported hearing about VMMC either from TV or radio,. A subset of patients (n=8,252), were asked what motivated them to come in for VMMC on their procedure day. The majority reported externally motivating factors: encouragement by an NGO social mobiliser (47.2%), encouragement by a friend or family member (8.1%), or having the financial means for transport and missed work (6.4%). Fewer patients reported internal motivations: 12.6% reported either "I was ready today" or "I just decided to come," and 25.7% reported various other factors.
**Conclusions:** Our results show that interpersonal communication, particularly through community-based social mobilizers, remains the predominant means by which men learn about and are prompted to seek VMMC and should be prioritized in program planning. Patient communication with family and friends also served as an important motivator, and additional exploration of how this support can be utilized to promote VMMC is needed. Despite ongoing national multimedia VMMC campaigns during this timeframe, these were rarely cited as the predominant motivating factor for men presenting to VMMC clinics. More investigation is warranted to examine the role of media in VMMC patient decision-making, as an additive effect of internal and external factors is likely.

## THPEC208

### FACTORS ASSOCIATED WITH UPTAKE OF EARLY INFANT MALE CIRCUMCISION BY MOTHERS AND FATHERS IN WESTERN KENYA: MTOTO MSAFI MBILI STUDY

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**Background:** As countries in sub-Saharan Africa scale up medical male circumcision (MMC), they are considering long term sustainable strategies, including early infant male circumcision (EIMC). This study tests two models of integrating EIMC with existing maternal child health structures in Kenya.
**Methods:** A standard delivery package (SDP) included training health providers in four health facilities to deliver safe EIMC and all health facility staff to educate, promote and mobilize mothers in antenatal, maternal child health and immunization clinics and surrounding communities. A SDP-PLUS model included all SDP activities in four facilities plus provision of EIMC services in the community by trained domiciliary midwives. A weighted random sample of mothers over age 15 years bringing sons to facilities for OPV-1 were interviewed and, with mother's consent, fathers were contacted and interviewed. Parents whose sons were circumcised and not circumcised were compared on demographic variables, reasons for choosing or declining EIMC, involvement of spouse in the decision, and circumcision status of the father in univariate and multivariate analyses.
**Results:** Among 987 mothers, 255 (26%) had their sons circumcised. There were no differences between mothers who had their sons circumcised and those who did not in age (median=24 yrs), ethnic origin (96% Luo), primary reason for circumcising the baby (HIV/STI prevention) nor HIV status (30% positive). Mothers with post-secondary education (PR=1.5; 95%CI:1.1-2.1), who were unmarried (PR=1.6; 95%CI:1.3-2.0), received prior information about EIMC (PR=10.6;95%CI:3.5-32.6), had a circumcised husband (PR=1.7;95%CI:1.4-2.1), and were in the SDP-PLUS community (PR=1.3;95%CI:1.1-1.6) were more likely to have their son circumcised. In multivariable analyses, unmarried mothers (PR=1.5), those with circumcised husbands (PR=1.3) and those in the SDP-PLUS community (PR=1.3) were significantly (p< 0.01) more likely to have their sons circumcised. Among 634 fathers, after adjustment for age, marital status and education, those who were circumcised (PR=2.3;95%CI:1.8-2.9) and in the SDP-PLUS community (PR=1.3;95%CI:1.1-1.6) were more likely to have their sons circumcised.
**Conclusions:** A community-based versus facility-based education and services model results in greater uptake of EIMC. Acceptance of EIMC is likely to increase as more adult men in a population become circumcised. These results contribute evidence needed as countries transition from adult toward infant circumcision.

## THPEC209

### SEQUENTIAL CROSS-SECTIONAL SURVEYS IN ORANGE FARM, A TOWNSHIP OF SOUTH AFRICA, REVEALED A LOW VOLUNTARY MEDICAL MALE CIRCUMCISION UPTAKE AMONG ADULTS DESPITE MASS CAMPAIGNS AND HIGH ACCEPTABILITY

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**Background:** WHO recommends a male circumcision (MC) prevalence higher than 80% to have a substantial impact on the HIV-AIDS epidemic in Eastern and Southern Africa. Orange Farm, a township in South Africa, has a voluntary medical male circumcision (VMMC) clinic that since 2008 offers free MC. The MC prevalence in 2008 was around 10%. Ongoing and past VMMC campaigns focused on youth with school talks, and adults at community level. The objectives were to assess among adults aged 18-49 years the change in MC prevalence in the past 5 years, the annual uptake rate of MC, and the characteristics of the uncircumcised men.
**Methods:** Cross-sectional surveys (ANRS-12126-12285) were conducted among random samples of 3182 and 522 adult men in 2010 and 2015 respectively. MC status and characteristics of participants were collected through a genital examination and face-to-face questionnaire. Multivariate Poisson regression allowed comparing circumcised men with uncircumcised men.
**Results:** MC prevalence among young adult men aged 18-19 years increased markedly from 61.2% (95%CI; 57.4% to 65.0%) in 2010 to 87.5% (76.0% to 94.6%) in 2015 (p< 0.001). In the same period, among men aged 18-49 years, MC prevalence varied little (p=0.60) from 55.4% (53.6% to 57.1%) to 56.7% (52.4% to 60.9%).
In 2015, 84.9% (79.2% to 89.5%) of uncircumcised adult men reported that they were willing to be circumcised. However, we estimated that only 4.6% (11/237; 2.5% to 7.9%) of the uncircumcised men became circumcised in 2015. In 2015, in comparison with circumcised men, uncircumcised men were younger, less educated, and more often lived in OF for less than 5 years. Most frequent reported reasons for not being circumcised were that MC was not cultural practice: 27.6% (21.5% to 34.3%) and fear of pain: 18.4% (13.3% to 24.4%).
**Conclusions:** In Orange Farm, VMMC campaigns were successful among the youth and led to a sufficiently high MC prevalence to have a substantial impact in the future on the HIV-AIDS epidemic. However, despite high acceptability and a free VMMC service, VMMC campaigns have failed to increase MC prevalence among adults above 80%. These campaigns should be revisited.

## THPEC210

### IS A HIGH VOLUNTARY MEDICAL MALE CIRCUMCISION UPTAKE OBTAINABLE AMONG ADULTS IN A SHORT TIME? A PROSPECTIVE OBSERVATIONAL INTERVENTION STUDY CONDUCTED IN THE TOWNSHIP OF ORANGE FARM (SOUTH AFRICA)

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**Background:** WHO recommends a male circumcision (MC) prevalence higher than 80% to have a substantial impact on the HIV-AIDS epidemic in Eastern and Southern Africa. The objective of the study was to assess whether a novel intervention can lead to a high voluntary male medical circumcision (VMMC) uptake among adults in a short time.
**Methods:** This prospective observational intervention study was conducted in the township of Orange Farm (South Africa). In this semi-urban area MC prevalence among adults aged 18-49 years was stable between 2010 and 2015 at 55%-57%, despite regular VMMC campaigns at community level, and the presence of a VMMC clinic that offered free VMMC.
The intervention took place in a random sample of 983 households where 512 men aged 18-49 years were identified. Among the 226 uncircumcised men, 212 accepted to be enrolled in the intervention study. At household level the intervention consisted of a discussion with the members. A personal MC adviser trained on interpersonal communication skills was assigned to each uncircumcised participant. The MC advisers were trained to explain the risks and benefits of VMMC and to discuss 24 possible reasons given by men for not being circumcised. Participants where followed up for 9 weeks. Each participant had a maximum of 3 motivational talks at home. Participants who decided to be circumcised received time compensation in cash equivalent to 2.5 days of work at the minimum South African salary rate.
**Results:** Among the 212 uncircumcised men, 69.3% (147/212; 95%CI; 62.9% to 75.3%) agreed to be circumcised, which corresponds to the uptake. The MC prevalence of the sample increased from 56.9% (296/522) to 84.9% (443/522; 81.6% to 87.7%), p< 0.001. The reported reasons for accepting circumcision were motivational talks with the MC adviser (83.0%), and time compensation (40.0%).
**Conclusions:** High VMMC uptake can be obtained in a short time among male adults but requires an intense intervention centred on uncircumcised men at an individual level and time compensation. The effect of this novel intervention should now be tested elsewhere.

## THPEC211

### GETTING MEN INTO 90-90-90: THE POTENTIAL ROLE OF MEDICAL MALE CIRCUMCISION SERVICES IN KWAZULU NATAL, SOUTH AFRICA

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**Background:** Meeting the UNAIDS targets for 90:90:90 will require strategies to reach more men with HIV counselling and testing and ART services. In South Africa men have lower rates of HIV testing, more men are unaware of their HIV positive status than women (62% versus 45%) (Shisana, Rehle et al; 2014) and men tend to access HIV services in the public sector later and with poorer health outcomes (Ramkissoon et al,2011). Medical male circumcision (MMC) services have the potential to provide an entry point to HIV care for males.
**Description:** Routine data on 68,627 men accessing MMC services during October 2012-September 2015 in 4 districts in KwaZulu-Natal was reviewed to determine uptake of HIV testing, men newly diagnosed as HIV positive, geographic location and acceptability of services.
**Lessons learned:** Of the 68,627 men accessing services, 64,900 (95%) were either tested on site (70%) or had been tested within the last 3 months (25%). Only 5% of males refused the voluntary HIV test. 4% were newly diagnosed as HIV positive. Most (97%; n=66,299) of those accessing services underwent MMC procedures, 91% of whom were HIV negative, 4% HIV positive and 5% did not know their status. 80% of males accessing MMC services were 10-24 years. 94.1% received services at a public sector hospital/clinic, 5.5% at a general practitioner and 0.4% in a correctional service. Prevalence rates were highest among prison populations (38.5%) and in informal settlements (7.88%).
**Conclusions/Next steps:** Men are willing to attend free MMC services in the public sector or at general practitioners and the majority consented to HIV screening services as part of this package. This is an opportunity to screen males for TB, STI and refer men for CD4 tests and ART. MMC services provide a feasible and acceptable way of getting males into HIV services and should be scaled up.

## THPEC212

### DESCRIBING THE ROLE OF WOMEN IN PROMOTING MEDICAL MALE CIRCUMCISION TO ADULT MEN IN A PERI-URBAN CLINIC OF SOUTH AFRICA: FINDINGS FROM THE IMBIZO STUDY

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**Background:** HIV prevalence is high (20.9%) in South Africa among men aged 25-49 years. Medical male circumcision (MMC) reduces the risk of HIV infection in men from heterosexual sex. Few studies have assessed women's role in promoting MMC. Baseline qualitative data are summarised from a study conducted in a peri-urban setting in Ekurhuleni North, South Africa from April - September 2014 that aimed to increase MMC uptake among older men.
**Methods:** Adult men (25-49 years) and women (≥18 years) were interviewed in English, Sepedi or Zulu. Interviews were digitally-recorded, transcribed, and translated. Through a standard iterative process, a codebook was developed for each sex and used to thematically code the interviews using MAXQDA 10 (males) and QSR NVIVO 10 (females). Inductive thematic analysis was used. Descriptive statistics were calculated.
**Results:** A total of 35 men and 30 women were interviewed. Men described women as better communicators than men and better equipped to discuss MMC. Some men felt that it is helpful for female sexual partners to recommend MMC for shy men, and most agreed that men would be more likely to pursue MMC if women introduced it. A minority of men felt that women promoting MMC means that the

man is weak and an embarrassment. Women felt that they should use indirect methods of introducing the topic of MMC with their partner, which could include mentioning a magazine article, newspaper report, pamphlet, or media advert while talking to him in a respectful and calm manner. Women emphasized being patient and the use of different opportunities to direct his attention to available MMC information. Some women were also concerned that discussing the topic of MMC with their partners might make them suspicious about their fidelity. Women also perceived educated females as being less constrained when talking about MMC to their partners when compared to those who followed exclusive traditional roles.
**Conclusions:** Innovative approaches to demand creation to increase MMC uptake among men aged 25-49 years are especially important given the high HIV prevalence and low MMC uptake in this age group. Men and women are largely supportive of women promoting MMC.

## THPEC213

### ARE MEN AT HIGH-RISK LIKELY TO ACCEPT VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC)? A COMPARISON OF VMMC CLIENTS AND DEMOGRAPHIC AND HEALTH SURVEY (DHS) PARTICIPANTS IN TANZANIA

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**Background:** We conducted a cluster randomised trial to evaluate an intervention to increase VMMC uptake among men aged 20-34 years in Tabora and Njombe regions, Tanzania. Findings showed that the intervention increased the uptake of VMMC in men for all age groups in the 10 intervention clusters compared to the 10 control clusters. The aim of this sub-study was to compare the behaviour risk profile of a sample of the VMMC clients to that of uncircumcised men in the general population in Tanzania.
**Methods:** Approximately 20% of the VMMC clients aged 20-34 years participating in the study were randomly selected to complete an interviewer-administered questionnaire which addressed risk behaviour, user costs, and decision-making around VMMC. The behaviour parameters were compared with similar parameters collected in the last DHS survey (2010) from uncircumcised men in the 12 VMMC priority regions in Tanzania.
**Results:** A total of 331 men aged 20-34 years participated in the sexual behaviour survey, and 195 in the 2010 DHS. VMMC clients were younger than the DHS participants, and after adjusting for age, they were more likely to report two or more sexual partners (adjusted OR=2·73, 95%CI 1.85-4.02;
p< 0.001), and to report unprotected sex with non-marital and non-cohabiting partners in the past 12 months (adjusted OR=1·81, 95%CI 1·12-2·93; p=0·003). The mean age at first intercourse was 17.7 years in the behavioural survey participants and 16.7 years among DHS participants (age adjusted test of significance p< 0.001).
**Conclusions:** Men who accepted VMMC reported more risky sexual behaviour compared to men in the general population. These findings suggest that VMMC is reaching men at a relatively high risk of HIV, and increasing uptake of VMMC through demand creation activities in adult men will continue to reduce HIV acquisition and transmission.

## THPEC214

### EFFECTIVENESS OF MOBILE CLINICS OFFERING VMMC IN MARGINALISED COMMUNITIES AS AN HIV PREVENTION INTERVENTION

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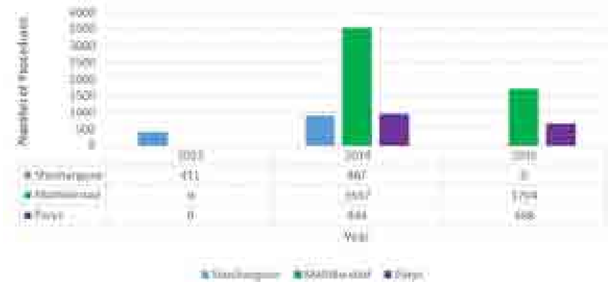
**Background:** Evidence shows that a large number of males would have to undergo VMMC in order to have a population level impact on HIV prevalence in South Africa. The challenge lies in increasing VMMC uptake in South Africa, especially in marginalised communities with limited healthcare facilities. Mobile clinics offering free VMMC services aim to increase uptake in hard-to-reach areas.
**Description:** The mobile clinic is a basic medical clinic inside a container van that travels directly to the community and remains static for a limited period of time, before moving to another area. The mobile clinic site was first located in Shoshanguve, Gauteng (October 2013-March 2014). After identifying areas where there was little to no VMMC coverage, the team moved to Mathibestad, Northwest Province (April 2014), and Parys, Free State, (July 2014). In Mathibestad, the mobile clinic is situated next to a public clinic.
**Lessons learned:** From 2013 to present, the mobile clinics program cumulatively circumcised 8151 males (see figure). The advantage of the mobile clinic is its mobility to move to and within communities. However, the mobile clinic remains static in the community as a result of the large size of the mobile clinic. This requires the outreach team to travel within the community and recruit clients, as well as offer transportation to bring clients to the mobile clinic site.



*[VMMC Procedures Performed Using Mobile Clinics]*

**Conclusions/Next steps:** Although mobile clinics have contributed to VMMC uptake, the effectiveness of the mobile clinics would increase by using smaller mobile clinics that can move within the area, compared to large mobile clinics that remain static and therefore require transportation for clients. The relationship between the public healthcare facilities and mobile clinics is critical in ensuring that clients feel safe knowing that the public clinic is associated with the mobile clinic; as well as for referrals to the mobile clinic.

## THPEC215

### DOES MALE CIRCUMCISION INDIRECTLY REDUCE FEMALE HIV RISK? EVIDENCE FROM FOUR DEMOGRAPHIC AND HEALTH SURVEYS

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**Background:** Although the World Health Organization now recommends routine male circumcision to reduce risk of HIV infection, studies of whether male circumcision (MC) reduces HIV transmission to their female partners indicate no additional protective effect. However, women are theorized to indirectly benefit from increased rates of MC as rates of transmission will be lower overall. To date, there has been limited research directed at exploring the influence of MC on the women's HIV risk, and there are currently are no estimates that account for the indirect protective effect of MC for women. This study examines the potential benefit of MC for women accounting for individual and population level risk factors using couples data from Demographic and Health Survey (DHS) collected between 2003-2010.
**Methods:** This study assessed HIV risk among women from a sample of 11,621 couples from Kenya (2003, 2008), Lesotho (2004, 2009), Malawi (2004, 2010), and Zimbabwe (2006, 2010). We examined the relationship between a woman's HIV status, her partner's circumcision status and regional rates of male circumcision using multivariate regression models. We then adjusted all models for male and female sexual behaviors (multiple partners) and demographic characteristics (age, wealth, and education).
**Results:** Neither regional rates of male circumcision nor their partner's circumcision status were associated with lower odds of HIV infection in women once individual's sexual behaviors and demographic characteristics were accounted for. Having multiple partners was associated with higher odds of HIV infection in women [OR=2.32, p< 0.01] as was having an older male partner [OR=1.03, p< 0.01]. Women whose male partners had other partners also had a higher odds of HIV [OR=1.43, p< 0.01].
**Conclusions:** After adjustment, we found no association between MC and female HIV risk either directly or indirectly though having multiple partners was strongly associated with increased odds of HIV risk. These results suggest that programs aimed at expanding MC may need to be pay additional attention to how the benefits of MC may be offset by the presence of multiple partnerships.

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## THPEC216

### PATTERNS AND PREDICTORS OF ADVERSE EVENTS OVER SIX YEARS OF THE VMMC PROGRAM IN TANZANIA

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**Background:** Modeling shows that scaling-up voluntary medical male circumcision (VMMC) services in sub-Saharan Africa to reach 20 million men will avert 3.4 million HIV infections by 2025. As countries scale up VMMC services, patterns and predictors of Adverse Events (AEs) remain unclear. Factors associated with AEs during six years of program implementation in Iringa, Njombe and Tabora, Tanzania are described.
**Methods:** A retrospective review of moderate/severe AEs was conducted using client-level data to analyze age of clients, types/severity of AEs, service modalities and surgical techniques. Chi-square test was used for statistical significance and mhodds test to adjust for age. Mild AEs were excluded.
**Results:** A total of 497,871 clients were circumcised from 2009-2015. There were 274/497,871 (0.06%) clients with intra-operative AE(s); out of 365,957 clients who returned for at least one visit, 1182 (0.33%) were reported to have post-operative AE(s). Across all age groups, the most common intraoperative AEs was excessive bleeding; among clients 10-14 years, the most common was glans injury (18/30=67%). All clients with glans injuries had been circumcised using the forceps-guided (FG) method. Across all age groups, the most common postoperative AEs were infections (58%), hematomas (21%) and excessive bleeding (11%).
AE rates were higher during campaigns (1,192/368,590=0.33%) compared to routine services (139/48,799=0.29%) (p < 0.001). AEs were highest in 15-29 year old clients (193/218,272=0.09% for intra AE; 686/152,950=0.45% for post AE and lower in older and younger age groups (p< 0.001). AE rates were higher amongst clients who were circumcised using the FG technique (271/437,927=0.06% for intra AE; 1,115/316,960 = 0.36% for post AE) compared to dorsal slit (DS) (3/58,364= 0.01% for intra AE; 66/48,232=0.14% for post AE. (p< 0.001). Clients were less likely to have an AE when circumcised with DS compared to FG, even after adjusting for age (AOR = 0.50 p value< 0.001).
**Conclusions:** Although overall AE rates were low, higher rates during the campaigns need to be addressed. Higher rate of glans injuries among 10-14 year-olds when using the FG method, coupled with lower intraoperative AE rate for DS compared to FG underscores the need to adhere to PEPFAR policy guidelines on age appropriate-methods for VMMC.

## THPEC217

### SAFETY OF EARLY INFANT MALE CIRCUMCISION IS IN PILOT SETTING IN RURAL TANZANIA

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**Background:** Voluntary Medical Male Circumcision (VMMC) reduces female to male HIV transmission by at least 60%. Although adult VMMC has been widely scaled up in most priority VMMC countries, Early Infant Male Circumcision (EIMC) has enjoyed little progress in just a few isolated places. Yet EIMC is easier and quicker to perform, the circumcision site heals faster, and it is more cost efficient compared to VMMC. In 2013, the Tanzanian Ministry of Health introduced EIMC as a pilot in Iringa Region, performed primarily by nurses, on the back of a well-established VMMC program. The safety of EIMC in this region is described.
**Methods:** We conducted a secondary review of the EIMC client level database from 2013-2015. Data were summarized in tables and appropriate frequencies calculated. Wilcoxon Rank Sum test was used to compare the mean age and body weight between infants with AEs and those without AEs, because the adverse event group had a very small sample size.
**Results:** A total of 3,308 infants were circumcised using the Mogen clamp between 2013 and 2015.3,123 (94%) clients returned for first follow-up. The intraoperative AE rate was 0.27% (9/3308) and post-operative AE rate 0.03% (1/3,213). Majority of the AEs were mild (6) or moderate (3) with only 1 severe AE. Intraoperative AEs reported included bleeding and excessive skin removal while the postoperative AE was insufficient skin removal. The severe AE was due to excessive skin removal which required surgical intervention by stitching.
There was no difference in intraoperative AE occurrence by age of the infant (p=0.982) or body weight at circumcision (p=0.613).
**Conclusions:** The AE rate in the EIMC pilot program in Iringa, Tanzania was low and similar to other programs in the region. Majority of the AEs occurred in the intra-operative period, contrary to the VMMC program where most AE are post-operative. Emphasis on the surgical skills may reduce the intraoperative AEs. EIMC scale-up is safe in rural resource-limited settings where nurses have taken the lead to provide this important and sustainable HIV prevention intervention.

## THPEC218

### FOLLOW-UP RATE TRENDS IN A FULLY SCALED VMMC PROGRAM IN TANZANIA

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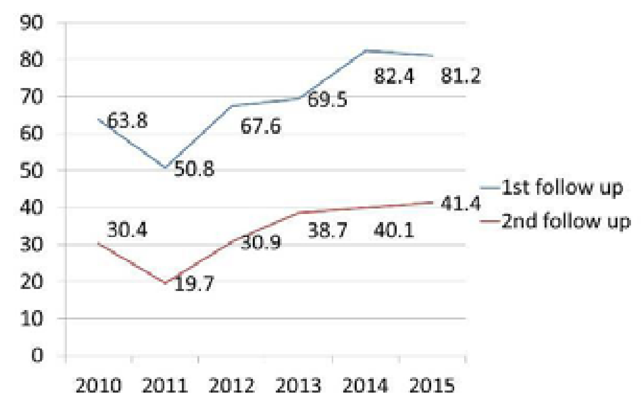
**Background:** Tanzania is scaling up VMMC in 12 priority regions. USAID, through the AIDSFree project supports VMMC in three regions of Iringa, Njombe and Tabora. Approximately 500,000 VMMCs have been conducted in these regions to-date. WHO recommends clients return at 48-hours and 7-day post-circumcision to assess healing and reinforce HIV prevention messages including abstinence during healing. Ensuring high follow-up rates is challenging in rural settings. Various interventions were introduced to improve return visits. The analysis reviews follow-up rates in five years of program implementation.
**Methods:** De-identified data from the VMMC client-level database was reviewed from September 2009- September 2015. Analysis was performed on the follow-ups by year, age of clients and service modality. 48-hour and 7-day follow-up rates were calculated and statistical tests performed as appropriate.
**Results:** 497,259 clients received VMMC services from 2009-2015. Of these, 365,957 (73.5%) returned for the 48-hour visit and 170,268 (34.2%) for the 7-day visit.
For both visits, follow-up rates were slightly higher for 10-14 years olds (76.3% for 48hrs visit and 36.6% for 7-day visit) and lower amongst 15-19 year olds (68.8% and 30.8% respectively). The follow-up rates increased gradually with age in the age group >20 years (73.8% and 33.4% respectively) (p < 0.001). Follow-up rates were significantly higher during mobile services followed by campaigns and lowest in routine services (p < 0.001). There was a significant increase in the follow-up rates over the six-year program (figure 1).
**Conclusions:** Follow-up rates improved gradually over the six-year period. This improvement may be related to the mix of strategies deployed to improve follow up rates including: client education through a post-operative brochure, sending SMS reminders, special training to providers and data clerks on follow-up/AEs and use of data dashboards to improve services at site level. Cumulatively, these innovations may have improved the follow-up rates over time.




*[Figure 1. Follow up trend among VMMC clients in Tanzania 2010-2015]*

## THPEC219

### ADVERSE EVENTS FOLLOWING CIRCUMCISION WITH THE PREPEX DEVICE IN TANZANIA

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**Background:** The Voluntary Medical Male Circumcision (VMMC) program in Tanzania started in 2009, and is being implemented in 12 priority regions, with a goal of circumcising 2.1million adolescents and men by 2017. Up to December 2013 more than 780,000 VMMCs had been conducted with support from PEPFAR. Achieving this target needs innovative ways such as introduction of circumcision devices to accelerate scale up. Jhpiego, supported by USAID, therefore implemented the first safety and acceptability study for the PrePexTM device in the country. Safety of the procedure will take precedence as the new method is being introduced.
**Methods:** A single-arm, open-label, prospective, cohort study was conducted from June-October 2014 across 9 sites in three regions of Iringa, Njombe and Tabora, Tanzania. The study received IRB approval from JHU and the local IRB authority. Clients were aged 18-49 and fulfilled all study inclusion criteria. Analysis on adverse events was performed and adverse event (AE) rates calculated using clients returning for follow-up as a denominator. Mild adverse events were excluded from this analysis.
**Results:** 869 clients were eligible for circumcision using the PrePex device during the study period. Of these, placement was successful in 862 clients. All clients returned for follow-up (100% return rate). There were a total of 22 moderate and severe adverse events reported (AE rate 2.5% %). Of these, 13 (59%) were moderate and 9 (41%) severe. Ten commonest adverse events (in descending order of frequency) related to device circumcision included: pain, hematoma, swelling, early removal, bleeding, infection, difficulty removal, delayed healing, device displacement and wound dehiscence. Most AEs (61.5%) occurred with the device in situ followed by 32.1% during removal, 3.9% during follow-up and 2.5% during placement.
**Conclusions:** The AE rate in this study was low and similar to other safety and acceptability studies in sub -Saharan Africa. Pain was found to be the commonest adverse event highlighting the need to explore pain management alternatives. Clients need to be appropriately and adequately educated on signs and symptoms of common AEs after placement of the device since majority of AEs occur while the client is wearing the device.

## THPEC220

### EVALUATING THE IMPACT OF THE VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) PROGRAM IN ZIMBABWE

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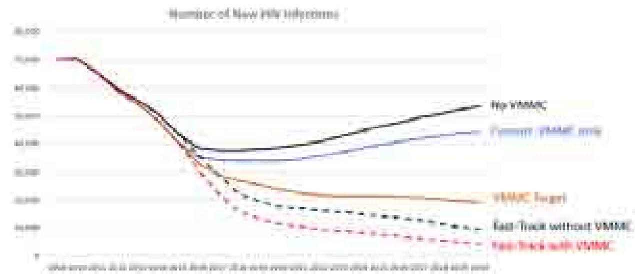
**Background:** Zimbabwe adopted VMMC as a priority prevention strategy in 2007 and began service delivery in 2009 with a target of circumcising 1.3 million men by 2017. The program reached over 500,000 men through mid-2015; 42% under the age of 15. The purpose of this activity is to evaluate the cost and impact of the program achievements to date using multiple mathematical models.
**Methods:** We collected statistics on the number of VMMC performed through a review of client intake forms and site registers and conducted on-site verification and Internal Quality Audits. Four modeling groups (Avenir Health, Imperial College London, Institute for Disease Modeling, Weill Cornell Medical College) independently initialized mathematical simulation models that replicated historical trends in HIV infection. We compared actual trends in new infections with those that would have occurred if the VMMC program had not existed. A modeling workshop reviewed model results and reached a consensus on the most likely impact of the program.
**Results:** Results indicate that 4,000 - 8,000 infections have already been averted by the VMMCs conducted to date. The longer term impact will be much greater as these men will be protected throughout their sexually active lives. The contribution of already performed VMMCs will amount to 73,000-75,000 infections averted through 2030. If the VMMC target is reached by 2017 then the program will avert 240,000 - 310,000 new infections through 2030 -- 30% of all new infections -- at a cost of $500 - $1300 per infection averted. Total savings by 2025 will be $110-$250 million.
**Conclusions:** The VMMC program in Zimbabwe will have a substantial impact in the coming years. The cost per infection averted is low compared to the costs of treatment. Using multiple models and a stakeholders' workshop led to strong evidence for action being generated.



*[Number of new infections by scenario]*

## THPEC221

### SUTURELESS ADULT VOLUNTARY MALE CIRCUMCISION WITH TOPICAL ANAESTHETIC: A RANDOMIZED FIELD TRIAL OF UNICIRC, A SINGLE-USE SURGICAL INSTRUMENT

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**Background:** The World Health Organization has recommended voluntary medical male circumcision (VMMC) as an essential component of HIV prevention in countries with high a HIV burden. Current VMMC methods are relatively expensive and have limitations when it comes to scaling up at a national level, this has led a number of promising new VMMC methods. One such method is the Unicirc method, a closed procedure which uses a disposable surgical instrument which can used with a topical anaesthetic and cyanoacrylate tissue adhesive.
**Methods:** The study was a non-blinded randomized controlled field trial with 2:1 allocation ratio comparing open surgical circumcision under local anesthetic with suturing versus Unicirc disposable instrument under topical anesthetic and wound sealing with cyanoacrylate tissue adhesive. Seventy five men seeking VMMC were recruited by posters and word of mouth from three clinics associated with Andrew Saffy Memorial hospital, serving the Lonmin group of platinum mines, situated in Rustenberg, North West Province, South Africa, from July 15 and August 7, 2015. The primary outcome was intraoperative time, while the secondary outcomes were intra-operative pain, post-operative pain, incidence of adverse events, proportion of wounds that had healed at four weeks, patient satisfaction and cosmetic result.
**Results:** The intra-operative time and blood loss were less with the Unicirc method, median duration 12 versus 25 min ($p<0.001$) and median blood loss 1.5 versus 40 ml ($p<0.001$). The Unicirc method had a greater proportion of participants with a healed wound at four weeks when compared to the open surgical method 90.7% versus 69.6% (p value 0.04) and cosmetic results were superior in the Unicirc group, while the incidence of adverse events and patient satisfaction were similar in both groups.
**Conclusions:** VMMC with Unicirc under topical anaesthetic and wound sealing with cyanoacrylate tissue adhesive is rapid, had less blood loss, more rapid healing, superior cosmetic results, and was potentially safer than the open surgical VMMC.

## THPEC222

### PREDICTORS OF CIRCUMCISION UPTAKE FOR A HIGH HIV PREVALENCE POPULATION IN KWAZULU-NATAL, SOUTH AFRICA

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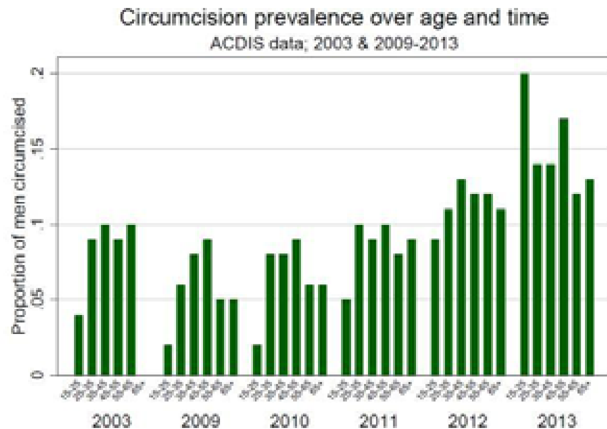
**Background:** Voluntary medical male circumcision (VMMC) reduces HIV transmission and has been encouraged in a number of high HIV prevalence countries, but uptake among males remains low. In KwaZulu-Natal, South Africa HIV prevalence is around 30% and circumcision among males is uncommon. Understanding predictors of circumcision uptake in this region is important for the promotion of public health campaigns for men at risk of HIV acquisition.
**Methods:** A population-based cohort in KwaZulu-Natal, South Africa was followed longitudinally from 2003 to 2013. Self-reported circumcision status was collected for all individuals in 2003 and annually from 2009-2013. An individual was assumed to be newly circumcised if their status switched from uncircumcised to circumcised

across survey years. A multivariable logistic regression model including demographic and geographic variables was used to assess predictors of circumcision uptake.

**Results:** 16,892 unique men reported their circumcision status (median age 22 years, IQR: 18-37 years). From 2003 to 2013 circumcision prevalence rose from 5.8% to 17.4% for all males, with the greatest gains in the 15-24 year age group (4.0% to 20.0%). Men in all ten-year age groups 25-34 and above had reduced odds of circumcision uptake compared to the reference age group of 15-24 years. Men in higher asset index quintiles had greater odds of circumcision uptake, and this increased proportionally by each increase in asset index quintile compared to the most deprived. The odds of circumcision uptake decreased with each kilometer from the nearest health facility by 0.89 (95% CI: 0.86 - 0.92).




*[Figure 1. Circumcision prevalence among males in KwaZulu-Natal, South Africa in 2003 and from 2009-2013, by 10-year age groups]*

**Conclusions:** In the past 10 years, circumcision prevalence has increased dramatically in this high HIV prevalence population. While circumcision has increased, this analysis shows that circumcision uptake has been concentrated in certain populations, primarily young men and men of higher SES. Innovate interventions are needed to reach those men still yet to get circumcised.

## THPEC223

### FACTORS THAT MAY EXPLAIN POST-OP WOUND INFECTIONS AMONG ADOLESCENT VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) CLIENTS: QUALITATIVE FINDINGS FROM ZIMBABWE

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**Background:** Greater than 10 million males have been circumcised through voluntary medical male circumcision (VMMC) programs in sub-Saharan African countries. Although adverse events (AE) have remained low, WHO has reported an increase in severe infection-related AEs and has emphasized the need to mitigate post-VMMC infection risk, including proper wound management by clients. This study explored reasons that hinder adolescents' proper wound management in order to inform risk-reduction strategies.

**Methods:** Between August and September 2015, 20 in-depth interviews were conducted with VMMC adolescent clients (10-19 years) 6-8 weeks post-procedure. Eight focus group discussions (FGDs) were also held with male (n=4 FGDs) and female (n=4 FGDs) parents/caregivers. Discussions explored adolescents' wound care practices and reasons for non-adherence to wound care instructions. Audio recordings were transcribed, translated into English, and thematically coded.

**Results:** Data suggested that although wound care instructions were adequately articulated and comprehended during counseling, younger adolescents (10-14) failed to recall these instructions. Parents/guardians described having to phone or visit VMMC sites to obtain proper instructions. Adolescents reported misrepresenting instructions to parents/guardians in a bid to avert possible pain from having to dip the wound in saline water for recommended periods. Parents/guardians (mostly female) were often deceived by their sons who pretended to have undertaken proper wound care and only found out when an infection had occurred. Some adolescents reported disregarding clinicians' instructions and adopting their own/peer-recommended instructions such as using methylated spirit and other substances to "quicken" wound healing. Conversely, adolescents reported parents/guardians disregarding clinicians' wound care instructions and recommending, for example, larger salt quantities based on their past experiences of caring for non-MC wounds. Both parents and adolescents reported unsafe practices such as boys displaying/touching their fresh surgical wounds with the intention to prove to others that they had been circumcised.

**Conclusions:** This study identified possible explanations for the rising numbers of infections in adolescents. Involving parents/guardians during some of the counseling for younger adolescents and creating age-appropriate materials on wound care will likely be important factors in curbing these infections. Minimizing VMMC-related AEs, including post-operative ones, is important to ensure the overall acceptability and sustainability of the intervention.

## THPEC224

### DEVICES, AN ALTERNATIVE FOR SURGICAL MALE CIRCUMCISION WITH ADOLESCENTS AGES 13-17 YEARS IN ZIMBABWE?

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**Background:** The safety and efficacy of the PrePex™ device for voluntary medical male circumcision (VMMC) has been demonstrated in studies in sub-Saharan Africa, leading to the conditional prequalification of the device for use in adults. WHO has recommended that use of the device could extend to eligible 13-17 year-olds, but only under active surveillance. We present preliminary findings from active surveillance of the device among adolescents in Zimbabwe.

**Methods:** Between October 2015 and January 2016, PrePex circumcisions were conducted at three VMMC clinics. Adolescents circumcised using PrePex during routine service delivery were actively followed up. Outcome measures for the active surveillance included percentage of i) adolescent men seeking VMMC who chose PrePex over the surgical procedure, ii) PrePex clients failing to return to the clinic for scheduled visits on days 7, 14 and 49, iii) PrePex clients returning to the clinic for each scheduled visit after receiving reminders and iv) adverse events (AEs).

**Results:** A total of 562 men (ages 13-17) were circumcised across the three active surveillance sites. Of these, 256 (45.5%) opted for PrePex but only 168 were eligible. The 88/256 (34.4%) that were ineligible were surgically circumcised. Reasons for ineligibility included: adhesions/tight foreskin/frenulum (n=58, 65.9%), mostly in 13 (n=40/58, 69%) and 14 year olds (n=10/58, 17.2%); presence of sexually transmitted infections (n=2, 2.3%); urinary tract infection (n=1, 1.1%). In 27 adolescents (30.7%), the available PrePex device sizes were too large mostly in boys aged 13 (n=18, 66.7%) and 14 years (n=8, 29.6%). 161/168 (95.8%) of the PrePex clients returned for the scheduled removal visit on day 7, six (85.7%) reported on day 8 and 1 (14.3%) on day 10. AEs included one moderate AE due to pain requiring early removal and 2/168 with mild edema.

**Conclusions:** These preliminary results suggest that the device is both safe and acceptable when used with adolescents 13-17 years in routine service delivery. Significant preference of surgical circumcision and high medical ineligibility suggest that both VMMC methods need to complement each other in programs targeting adolescent men. Smaller device sizes need to be available especially for the younger adolescents (13-14 years).

## THPEC225

### THE IMPACT OF THE BROTHERS FOR LIFE MASS MEDIA CAMPAIGN ON MEDICAL MALE CIRCUMCISION

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**Background:** Voluntary medical male circumcision (VMMC) has been promoted in high epidemic countries as part of a combination prevention approach since the release of WHO Guidelines in 2007. South Africa has been implementing VMMC nationally, with demand creation an integral part of the programme. This study evaluated a mass media campaign; Brothers for Life "Salon advert" to investigate its impact on the uptake of VMMC.

**Methods:** Between September and October 2015, a nationally representative survey of 3 763 men and women aged 15 years and over was conducted as part of the IPSOS Khayabus survey. Demographic, knowledge, attitudinal and behavioural outcomes (KAB), self-reported circumcision status (traditional and medical) and exposure to the Brothers for Life HIV communication and VMMC campaign was collected through face-to-face computer assisted personal interview (CAPI). The association

between the KAB outcomes and exposure to the campaign was analysed for a subset of men aged 15- 30 (n=763), who are the primary audience of the campaign.
**Results:** Of the 763 men interviewed, 63% reported that they were circumcised. Exposure to the campaign was reported as 46%, i.e. have seen the advert. The likelihood of being circumcised increased monotonically with exposure to the campaign, from 15% at none to 54% at the highest level of exposure. Further behavioural outcomes observed in relation to campaign exposure are: 73% of men reported condom use at last sex (15% at no exposure vs. 51% at the highest level of exposure) and testing for HIV is 43.8% (50.5% at highest exposure vs. 14.1% at none). Knowledge of circumcision benefits as well as post-circumcision care is highest in men who have the highest exposure to the campaign (81% knowing HIV risk reduction benefits at highest exposure vs. 72% at no exposure and 71% 'wait six weeks' at highest exposure vs. 67% at no exposure).
**Conclusions:** The importance of demand creation through mass media cannot be underscored as shown by the findings of this study. Brothers for Life campaign is an important contributor to the uptake of circumcision and other HIV prevention behaviours such as condom use and HIV testing.

## Strategies for identifying key populations

### THPEC226

#### Identifying unaware HIV-positive status among HIV-positive Black men who have sex with men in the United States

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**Background:** Improving HIV testing uptake to identify unaware HIV-positive individuals is critical to reduce the alarming incidence rates of HIV among Black men who have sex with men (BMSM) in the United States. Understanding demographic, social, and mental health differences between HIV-positive BMSM who know their status and those who do not may help elucidate potential pitfalls in community HIV testing outreach efforts.
**Methods:** We include observational data collected from the first two years (2014-2015) of the *Proving Our Worth, Equality, & Resilience* (POWER) Study. Using time-location sampling, POWER recruited BMSM who attended Black Pride events in six major U.S. cities. Participants completed a behavioral health survey consisting of demographic, behavioral, and psychosocial measures in addition to being offered an on-site anonymous HIV test. Unaware HIV-positive BMSM were identified if they reported a *negative* HIV status within the survey, but provided a *positive* HIV antibody screening test result obtained from on-site testing. Differences in positive status (aware versus unaware) were evaluated using logistic regression, adjusting for demographic, psychosocial, and mental health variables.
**Results:** Our analytic sample included 894 HIV-positive BMSM who provided complete responses in our behavioral health survey. Over a third (38.3%) were not aware of their status. Among unaware positives, over two-thirds (67.8%) had been tested for HIV in the prior 6 months. In our bivariate analyses, unaware positive status was associated with lower age and internalized homophobia as well as reporting bisexual identity, low education, and intimate partner violence. Using logistic regression, we found that the odds of being an unaware positive were higher among bisexual BMSM (AOR=2.15, 95% CI: 1.41, 3.31) compared to gay-identified BMSM. Additionally, age (AOR=.96, 95% CI: .95, .98) was associated with decreased odds of unknown status whereas internalized homophobia (AOR=1.33, 95% CI: 1.01, 1.04) was associated with increased odds of an unaware HIV-positive status.
**Conclusions:** Our results show that greater than 1 in 3 HIV-positive BMSM are unaware of their status. Given our significant findings, we identified a number of factors that may inform new approaches to improve outreach efforts and engage BMSM in routine HIV testing practices.

### THPEC227

#### Improving HIV case-finding through integrating hot spot-based outreach and peer-driven recruitment models

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**Background:** Although HIV testing is the critical entry point for antiretroviral treatment and pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM), fewer than half of MSM in Asia know their HIV status, and outreach-based test promotion has achieved low testing uptake and yield. The USAID-funded LINKAGES program, implemented by FHI 360 in Thailand, introduced an enhanced peer mobilizer (EPM) model to increase rates of HIV testing and counseling (HTC) and to strengthen case finding and access to ARV treatment for HIV-positive individuals.
**Methods:** EPM was implemented by community-based organizations Mplus Foundation and Caremat as part of a three-year program for MSM in Chiang Mai, Thailand. Under EPM, a small team of trained, salaried Community-Based Supporters (CBS) manage a wider, informal network of incentivized Peer Mobilizers (PMs) to recruit clients from their social networks. Data on client demographics, risk behaviors, and referrals are collected and shared via a digital, mobile data collection system. CBS are informed when a referral is successful and can respond proactively to losses to follow-up.
**Results:** From July to December 2015, 657 clients were registered under the EPM model and 4,791 were reached via traditional outreach. Clients reached via EPM were significantly more likely to receive an HIV test (72.6% versus 34.4%, p=0.00). Bivariate analysis identified that, under the EPM, clients recruited by PMs via social networking (n= 424) did not differ significantly to clients recruited by CBS via hot spot-based outreach (n=266) with regards to self-reported risk behavior, but were more than twice as likely to be HIV positive (10.6% HIV+ compared to 4.9%, p=0.01). Furthermore, 76.7% (n=43) of those diagnosed HIV+ in both groups initiated ART through proactive case management by the organizations. Initiation rates were higher for social network clients than for hot spot clients (81% v. 58%, p=0.02).
**Conclusions:** Social network recruitment through an informal pay-for-performance cadre that compliments a standard outreach workforce can expand reach, HIV case yields, and ART initiation. Expanded more widely, this outreach model offers a more sustainable and cost-efficient approach to HIV testing and ARV treatment initiation than traditional outreach models.

## Combination prevention approaches (including interventions on gender-based violence, cash transfers and poverty)

### THPEC228

#### Can cash grants and care break the cycle of vulnerability? A study of young children in HIV-affected communities across Malawi and South Africa

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**Background:** Cash transfers have been used to alleviate dire poverty and enhance child HIV outcomes (Pettifor et al 2014). Recent data has shown that cash, and then cash plus care, can reduce adolescent HIV risk behaviours for both girls and boys (Cluver et al 2013,2014). Educational risks are a precursor to sexual risk behaviours (Orkin et al 2014). For younger children cash, or cash plus care, may interrupt negative educational outcomes and thereby divert HIV-infection risk pathways for the future.
**Methods:** Consecutive children and caregivers (n=854; 115 HIV+ve) were recruited. Children were coded as in receipt of any of 6 government cash grants. Care was defined as good parenting on a 10 point composite measure. Educational risk comprised five binary variables - incorrect grade for age, irregular school attendance, slow learner, struggling in school, and missing school recently. Cognitive testing used standardized Digit span and Draw a person tests. Associations between grant receipt and educational variables (adjusted and unadjusted for cognitive ability) were tested using logistic regressions and linear regression, and were repeated for care and cash+care.

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**Results:** Children with HIV were significantly less likely to receive grants (57.3%-vs -75.6% $\chi^2$=17.21, *p*< .001). Controlling for cognitive ability, grants were associated with beneficial educational outcomes. 21.0%(n=179) did not receive cash or care, 61.4%(n=524) received either cash or care, and 17.7%(n=151) received both cash and care. In a linear regression model controlled for general cognitive ability, receiving cash, care or a combination of both was negatively associated with educational risk in a stepwise manner (B=-0.13, t(811)=2.03, p=.043).
**Conclusions:** Overall, receiving a grant 'cash' or good parenting 'care' was associated with beneficial educational outcomes: higher enrolment rates, higher odds of being in the correct class for age and higher odds of regular attendance for both girls and boys. Receiving cash plus care did not improve educational outcomes over and above receiving either cash or care alone. For younger children cash grants and good quality care may interrupt the cycle of elevated educational risks shown to increase HIV sexual risks in adolescence. Children with HIV should be specifically included in cash and care provision.

## THPEC229

### PROJECT SHIKAMANA: COMMUNITY EMPOWERMENT BASED COMBINATION HIV PREVENTION AMONG FEMALE SEX WORKERS IN IRINGA, TANZANIA

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**Background:** Combination HIV prevention demonstrates significant promise in reducing the impact of HIV. Yet, to maximize its effectiveness, it must be tailored and targeted to those at heightened risk of acquisition and transmission. Community empowerment approaches have been found to be effective in responding to HIV among female sex workers (FSW). No rigorous evaluations of these approaches have been evaluated in sub-Saharan Africa. In response, we are conducting a Phase II trial of community empowerment-based combination HIV prevention among FSW in Iringa, Tanzania.
**Methods:** A Phase II randomized controlled trial is underway in the high prevalence Iringa region of Tanzania to evaluate the effectiveness of a community empowerment-based response among HIV- and HIV+ venue-based FSW. The project is rooted in efforts to address structural constraints to achieving optimal HIV outcomes by promoting social cohesion and community mobilization to address stigma, discrimination, violence and financial insecurity. Intervention elements include peer-led community education and HIV treatment service navigation, HIV counseling and testing and linkages to care, SMS adherence reminders and support for HIV+ FSW and sensitivity training among HIV care providers. Cohort members are surveyed and screened for HIV and viral load annually.
**Results:** To date, 254 FSW have been enrolled into an ongoing longitudinal cohort. Baseline HIV prevalence was 39.4%. Only 14% of FSW had contact with a peer educator and less than half had been tested for HIV in the last 6 months at balseine. Among those testing positive, just 37.6% reported being previously aware of their HIV status, and only 27% of those were enrolled in HIV care or on ART%, indicating important gaps in the HIV care continuum. HIV and sex work-related stigma, discrimination and violence were prevalent with over half (52%) of the cohort having experienced physical violence and almost a quarter (22%) experiencing sexual violence from a client in the last 6 months.
**Conclusions:** Community empowerment-based combination prevention which addresses biomedical, behavioral and structural drivers of HIV holds significant promise among FSW in underserved areas of sub-Saharan Africa, where FSW continue to face high disease burden, limited access to HIV services, and stigma, discrimination and violence.

## THPEC230

### WHERE DO THE CHILDREN PLAY? ALARMING LEVELS OF SEXUAL AND GENDER-BASED VIOLENCE IN TOWNSHIP SCHOOLS IN THE WESTERN CAPE: BASELINE DATA FOR A JOINT GRASSROOT SOCCER AND SOUL CITY INTERVENTION

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**Background:** Sexual and gender-based violence (SGBV) is recognised as a major public health threat and key driver of the HIV epidemic in South Africa. An external HSRC baseline evaluation was conducted of a joint Grassroot Soccer and Soul City programme to tackle Sexual Violence in Schools in South Africa (SeVISSA).
**Methods:** Baseline surveys were delivered to male and female learners (n=2881; female = 1684; male = 1197) in twenty intervention schools (n=10 primary, n= 10 secondary) and four control schools (n=2 primary, n= 2 secondary) in Khayelitsha, Cape Town to ascertain exposure to SGBV and determinants of SGBV. Sample sizes were stratified by school and grade size. A separate survey was conducted with educators (n=140; female = 107; male = 33) capturing attitudes and knowledge of school policies towards SGBV. All surveys were conducted on mobile phones using Open Data Kit.
**Results:** 70% of students reported exposure to violence at home and 60% felt at risk of violence within their communities. Safety on the way to school was of concern to students and educators. 32% of high school students in relationships experienced intimate partner violence (IPV) in the past 12 months. 33% of all high school students experienced non-partner SGBV. 49% indicated perpetrating SGBV, with alcohol and drugs as a key feature of this violence. Non-partner violence was mostly perpetrated by a learner or teacher at school.
Primary school students were less likely to be in relationships, but 48% of those in relationships reported IPV. 65% of primary school students reported perpetration of non-partner related SGBV.
66% of educators felt schools are safe but only 50% indicated their school has a policy on SGBV. 33% felt corporal punishment is acceptable while 25% knew of others that use corporal punishment.
**Conclusions:** Learners report alarming levels of SGBV, whether in relationships or not. Primary school learners report higher levels of IPV and non-partner related SGBV than high school learners, reflecting the need for intervention at a young age, while many educators do not know how to respond to SGBV. These results will inform a joint Grassroot Soccer and Soul City intervention to reduce SGBV in schools.

## THPEC231

### SITAKHELA LIKUSASA IMPACT EVALUATION PROTOCOL: A RANDOMIZED CONTROL TRIAL TO EVALUATE THE EFFECTIVENESS OF INCENTIVES TO IMPROVE HIV PREVENTION OUTCOMES FOR YOUNG WOMEN IN SWAZILAND

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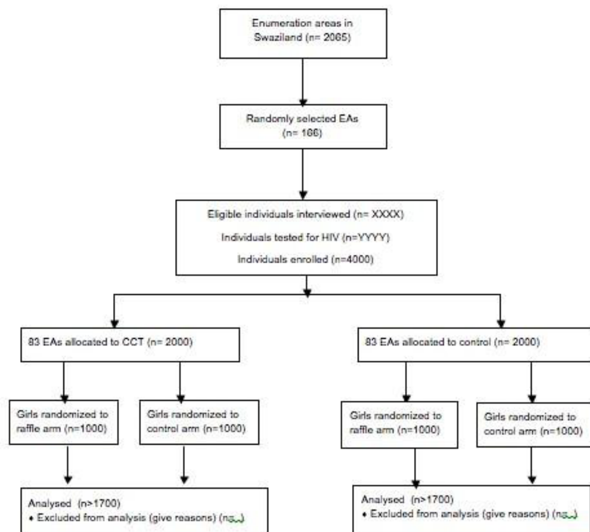
**Background:** Swaziland has the highest HIV prevalence in the world, estimated at 26.5% of the adult population (15-49) in 2012, and high HIV incidence (4% amongst adolescent girls and young women [AGYW]). Cash transfers and other financial incentives have been proposed as a tool for HIV prevention. Results of impact evaluations have been mixed, with some studies showing promising results while others have failed to measure a statistically significant impact.
**Methods:** This abstract presents the protocol for the Sitakhela Likusasa Impact Evaluation, a cluster randomized control trial in Swaziland using a 2 X 2 factorial design to create four study arms: 1) cash transfers conditional on school enrolment and attendance (>80% over last school term ) randomized at the enumeration area level, 2) raffle enrolment conditional on testing negative for curable STIs (*Trichomonas vaginalis,* syphilis) randomized at the individual level, 3) cash transfers conditional on school enrolment and attendance (>80% over last school term), and raffle enrolment conditional on testing negative for curable STIs, and 4) a control group with neither intervention.
**Results:** The primary endpoint is the impact of incentives on HIV incidence among HIV-negative AGYW aged 15-22 at baseline. Figure 1 describes expected sample sizes, and recruitment will aim at enrolling an equal proportion of participants cur-

rently attending school and out-of-school. Secondary study endpoints include the prevalence of curable STIs, self-reported sexual behaviors, HSV-2 prevalence at endline, and educational outcomes.




[Figure 1: Expected flow chart of participants]

**Conclusions:** This study is designed to test the following hypotheses:
1) cash transfers paid to the household conditional on school enrolment and attendance will encourage school participation and reduce HIV incidence;
2) financial incentives provided as raffle tickets to girls conditional on a negative curable STI status will reduce HIV incidence; and 3) the combination of both interventions offers complementarities reinforcing their impact.

## THPEC232

### ADAPTING COMBINATION PREVENTION AND CARE CONTINUUM FRAMEWORKS IN A CULTURALLY-COMPETENT MODEL TO ADDRESS LOCAL NEEDS AND REDUCE HIV INFECTIONS AMONG GAY AND BISEXUAL MEN

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**Background:** In San Francisco (SF), gay/bi men report HIV/STIs, depression, sex and dating, social support, and substance use as their greatest needs. Citywide 5000 HIV+ MSM are virally unsuppressed and 300 new infections occur annually. San Francisco AIDS Foundation (SFAF) recently opened a center, called Strut, to address gay/bi men's needs and to reduce HIV transmission in SF by combining prevention and care programs in an integrated model.
**Description:** SFAF developed a program model that adapts major frameworks, including combination prevention, the continuum of care, and resilience research to build coping skills and social support to reduce HIV risks. Balancing local epidemiology, identified needs, and evidence-based research, SFAF integrated biomedical and behavioral services as well as community mobilization to develop the Strut model (see figure). Strut will serve one third of MSM in San Francisco (~20,000) annually, providing HIV/STI screening, substance use treatment, mental health counseling, case management and linkage to HIV care, PrEP, and benefits counseling. Strut currently has 800 MSM on PrEP, provides over 10,000 HIV tests annually, and builds social support and coping skills through activities from monthly art openings to weekend-long support seminars for MSM newly-diagnosed with HIV. Clients are 71% Caucasian, 15% Latino, 4% African-American, and 16% API/Native American. Mean age is 38 years.
**Lessons learned:** Over 5 years, SFAF aims to directly reduce HIV transmission by 33%, as a result of increasing viral suppression, increasing PrEP use, reducing transmission risk and unknown HIV status. We used a published mathematical model to project 100 infections averted due to increased investment in Strut. At ~$60,000 per infection averted, this center will cost well under the $380,000 per infection averted that CDC recommends for cost-saving programs in the US.
**Conclusions/Next steps:** Community-based organizations can adapt combination prevention and continuum of care frameworks to fit their local needs in culturally competent ways. For gay/bi men, continued engagement in HIV prevention and care requires addressing key barriers, including social isolation, mental health, and substance use. Bringing multiple programs together enables full support for individuals to reduce HIV transmission and to help HIV+ individuals achieve viral suppression, as well as building individual and community resilience.

# REDUCING PRE-PARTUM AND INTRA-PARTUM TRANSMISSION TO INFANTS

## THPEC233

### RALTEGRAVIR CONTAINING ANTIRETROVIRAL THERAPY FOR PREVENTION OF MOTHER TO CHILD TRANSMISSION IN A HIGH RISK POPULATION OF HIV-INFECTED PREGNANT WOMEN IN BUENOS AIRES, ARGENTINA: MATERNAL AND NEONATAL OUTCOMES

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**Background:** Mother-to-child-transmission of HIV-1 in Buenos Aires remained high (4-7%) in recent years: novel strategies for reduction are needed. There is limited information regarding the use of raltegravir (RAL) in subpopulations of HIV-infected pregnant women (HIPW) with high transmission rates (late presenters [LP] and those with detectable antepartum viral load [VL] despite antiretroviral therapy [ART]). We aimed to evaluate:
1) trends in RAL prescription in HIPW in our institution;
2) maternal/neonatal outcomes after RAL exposure.
**Methods:** Retrospective study in a general hospital in Buenos Aires, Argentina (2009-2015).
**Results:** A total of 239 HIPW were assisted; 31 received RAL-containig ART (12.9%): 8/130 (6.15%) in period 2009-2012 vs. 23/109 in 2013-2015 (21%) ($p < 0.001$ OR: 4, 95%CI:1.7-9.5). Clinical scenarios: 1) intensification (INS): addition of RAL to current ART because of detectable antepartum VL, 13 (41.9%); 2) LP: standard ART + RAL as fourth drug, 15 (48.4%); 3) treatment of resistant-HIV: 3 (9.7%).
The median (interquartile range) of age, baseline VL and CD4 T-cell count were: 23 years (19-32); 6840 copies/mL (2445-66650) and 300/µL (197-436), respectively. Ten (33.3%) acquired HIV perinatally (the rest, sexually). Median gestational age at RAL initiation was 34 (29-36) weeks and median exposure was 30 days.
In INS-group median VL decrease was 1.48 $\log_{10}$ (0.98-1.77) and 70% had peripartum VL < 50. In LP-group, median VL decline was 2.15 $\log_{10}$ (1.40-2.85); 45.5% and 100% had peripartum VL < 50 and < 400, respectively. No clinical adverse events or maternal intolerance attributable to RAL were observed; 1 had moderate transaminases elevation. One patient had a stillbirth. Elective cesarean section was done in 51.7%; 18.5% of births were preterm. Neonatal prophylaxis: AZT in 57.1% (the rest, combined prophylaxis). Mild elevation of transaminases was observed in 35% of neonates; 14.8% required phototherapy. No vertical transmission was documented to date (all infants had a negative PCR in the first week, 70% at >2 months and 23% had negative 18-month ELISA).
**Conclusions:** RAL prescription in HIPW increased in the recent years in our institution, mainly in high risk populations. A rapid maternal virological response with RAL containg ART was observed, without major cautionary signals or perinatal transmission.

## THPEC234

### ADHERENCE TO ANTIRETROVIRAL THERAPY DURING AND AFTER PREGNANCY IN THE MALAWI "OPTION B+" PROGRAMME

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**Background:** While adherence to ART during pregnancy and breastfeeding is crucial for PMTCT/ART success, robust data on adherence in African Option B+ women are rare.
**Methods:** We did a cohort study of women starting ART between Sep 2011 and Mar 2014 at 12 facilities with complete electronic medical records. We estimated adherence across three groups: pregnant and breastfeeding Option B+ (OB+) patients and women who started ART for their own health (AOH). Based on drug dispensing records, we considered patients as "non-adherent" if they had insufficient pill supply in the interval between visits. We expressed cumulative medication adherence (CMA) as the percentage of days a patient had sufficient pill supply. We used flexible parametric survival models to compare non-adherence between patient groups.

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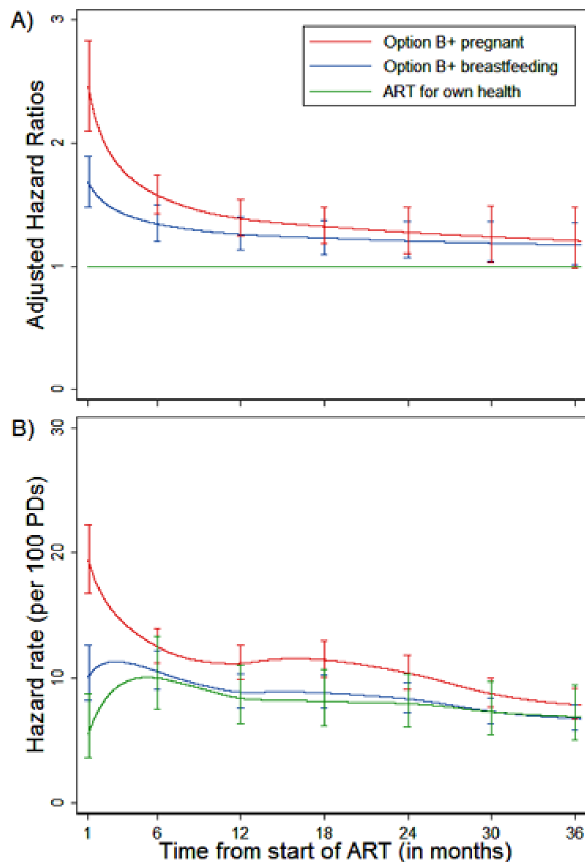
One facility had viral load data for 678 patients and we compared CMA with viral suppression rates (< 400 copies/ml) in this subgroup using logistic regression (adjusted for age, patient group and time on ART).

**Results:** We included 10,385 patients (OB+ pregnant: 5,589; OB+ breastfeeding: 1,689; AOH: 3,107). One month after start of ART, pregnant and breastfeeding OB+ patients were 2.46 and 1.68 times more likely to be non-adherent than AHO. Risk of non-adherence in OB+ patients declined rapidly during the first year, but remained slightly higher than in AOH patients (Figure A). Among 1,667 patients with ≥3 years of follow-up, OB+ pregnant, breastfeeding and AOH patients skipped doses on 18%, 11% and 7% of days within the 2nd month on ART, respectively. Levels of non-adherence rapidly improved during the first six month on ART in OB+ pregnant patients (Figure B). CMA was linearly associated with virological suppression (p=0.0018).

**Conclusions:** Option B+ patients had challenges to adhere to ART during pregnancy, especially early on, but adherence improved during breastfeeding and remained stable thereafter.




*[A) Hazard ratios for non-adherence for women starting ART, B) Hazard rates for non-adherence per 100 person-days (PDs) for women retained >3 years]*

## THPEC235

### RISK FACTORS ASSOCIATED WITH PRETERM AND LOW BIRTH WEIGHT AMONG INFANTS BORN TO HIV-INFECTED MOTHERS IN FIVE TERTIARY HOSPITALS IN CHINA, 2009-2014

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**Background:** Highly active antiretroviral therapy (HAART) has been reported in some, but not all, studies, to be associated with preterm delivery and low birth weight among infants born to HIV-infected mothers. Information is particularly limited in Asian populations.

**Methods:** A cross-sectional medical chart review was conducted in five HIV treatment tertiary hospitals in China. HIV-infected pregnant women who delivered between 2009-2014 and their infants were included in the study. Maternal demographic and medical information was collected. The outcome measures were preterm delivery (delivery gestation age <37 weeks) and low birth weight (LBW) (<2500g). Logistic regression was performed to assess risk factors for these outcomes adjusting for potential confounders including maternal age, hemoglobin, CD4 count, body mass index (BMI) before delivery, time of maternal HIV diagnosis, time of HAART initiation, and delivery mode (vaginal vs. Cesarean section).

**Results:** There were 736 mother-infant pairs included in the analysis. The preterm delivery rate was 12.0% (88/736); 13.1% (69/525) in infants prenatally exposed to HAART vs. 9% (19/211) among infants unexposed to ART (P=0.12). The LBW rate was 18.1% (133/736) among all infants; 19.4% (102/525) in the HAART-exposed group vs. 14.7% (31/211) in the unexposed group (P=0.13). In the multivariable analysis, prenatal use of HAART was not associated with an increased risk of LBW (aOR= 1.64, 95% CI, 0.93-2.88) nor preterm delivery (aOR= 1.43, 95% CI, 0.73-2.80). However, when focusing on women starting HAART during pregnancy, a protease inhibitor (PI, Lopinavir/Ritonavir) based regimen was associated with nearly two-fold risk of preterm delivery (aOR=1.84, 95% CI, 1.06-3.18), compared with a non-nucleoside reverse transcriptase inhibitor (Efavirenz or Nevirapine) based regimen. Maternal BMI≤20 before delivery was significantly associated with LBW (aOR=3.70, 95% CI, 1.29-10.56) and preterm delivery (aOR=3.40, 95% CI, 1.06-10.98) regardless of HAART use during pregnancy.

**Conclusions:** Prenatal exposure to HAART was not associated with an increased risk of either preterm delivery or LBW in this population. Use of a PI-containing HAART regimen initiated during pregnancy may be associated with increased risk for preterm delivery. Malnutrition with low maternal BMI was an independent risk factor for both low birth weight and preterm delivery in HIV-infected pregnant women.

## THPEC236

### THE IMPACT OF HIV/AIDS SPENDING ON PREVENTION OF MOTHER TO CHILD TRANSMISSION IN NIGERIA BETWEEN 2011 TO 2014

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**Background:** The National AIDS Spending Assessment (NASA) is a comprehensive and systematic resource tracking method developed by UNAIDS that describes the financial flow, actual disbursements and expenditures for HIV/AIDS by identifying financing sources, agents, service providers and beneficiary populations. In Nigeria, NASA tracks the AIDS spending of the HIV response including prevention of mother to child transmission (PMTCT). The effect of the HIV/AIDS spending on PMTCT in Nigeria cannot be over emphasis due to the low PMTCT coverage (30%) and effect on in the population.

**Methods:** NASA uses top-down approach to track sources of funds from donor reports, commitment reports, and Government budgets whilst the bottom-up tracks expenditures from service providers' expenditure records, facility level records and governmental department expenditure accounts. The assessment focused on tracking national level HIV expenditure available at central level and 10 States. The assessment did not include household out-of-pocket expenditure on HIV and AIDS.

**Results:** The outcome from the AIDS spending assessment showed an increased PMTCT spending from $12,400,238 in 2011 to $58,114,134 in 2014. These translate to 63% effort increase in coverage from 18.3% in 2011 to 29.9% in 2014. Also, the annual infections averted by PMTCT increased by 119% from 6,790 to 14,844. Deaths averted by PMTCT also increased by 94% (from 3,685 to 7,167). In addition, new child infections due to mother to child transmission decline by 17% (from 67,960 - 58,331).

**Conclusions:** PMTCT coverage still remains low though an increase was noticed in the last three years. This underscores the need to invest more in this area and to intensify PMTCT interventions to eliminate transmission from mother to child.

## THPEC237

### VIRAL SUPPRESSION AMONG HIV-POSITIVE WOMEN STARTING ANTIRETROVIRAL THERAPY (ART) BEFORE OR DURING PREGNANCY IN LESOTHO

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**Background:** Reaching maximal viral suppression is critical for preventing perinatal transmission. One hypothesized benefit of lifelong ART for all HIV-positive women (Option B+) is improved viral suppression in subsequent pregnancies.
**Methods:** This is an observational prospective cohort study of HIV-positive pregnant women conducted at 13 clinics in three Lesotho districts. Factors associated with HIV viral load (VL) suppression were assessed. VL was obtained between June 2014-November 2015 in 104 women at enrollment (any ANC visit) and delivery. Three women were excluded because of missing ART dates; 13 were excluded because delivery VL was obtained ≥3 weeks post-delivery. Undetectable VL was defined as <20 c/mL (Roche CAP/CTM v2). Adherence was measured by seven-day self-reported recall. Logistic regression analysis was conducted to detect an association between ART initiation timing and undetectable VL.
**Results:** All women received NNRTI-based ART (85.2% Efavirenz-based); 75/88 (87.2%) reported 100% adherence. Mean ART duration was 40.8 months in women starting ART prior to pregnancy (n=43) and 4.1 months for those starting during ANC (n=45); only 3/88 (3.4%) had <4 weeks ART. Enrollment VL was undetectable in 26/43 (60.5%) women starting ART pre-pregnancy and 10/45 (22.2%) starting during-ANC. Delivery VL was undetectable in 32/43 (74.4%) women on ART pre-pregnancy and 18/45 (40.0%) of women who started ART during-ANC. Of 52 women with detectable enrollment VL, 18 (34.6%, 9 pre-pregnancy, 9 during-ANC) achieved undetectable VL by delivery. Four women with undetectable enrollment VL experienced a VL increase by delivery
(3 pre-pregnancy, 1 during-ANC). Women starting ART pre-pregnancy were 5.4 and 4.3 times more likely to have undetectable VL at enrollment (p<0.0001) and delivery (p<0.001), respectively, than those starting during-ANC. Fifty women (56.8%) had delivery VL < 20 c/mL, 19 (21.6%) had 20-999 c/mL and 19 (21.6%) had >1,000 c/mL.
**Conclusions:** Most women received >4 weeks ART and reported high adherence. However, only 56.8% achieved profound viral suppression to <20 c/mL; 78.4% reached suppression to <1,000 c/mL. While women starting ART pre-pregnancy were more likely to have undetectable VL than those starting during-ANC, almost one quarter still had VL >20 c/mL at delivery, with 11.6% having VL >1,000 c/mL.

## THPEC238

### ENGAGING COMMUNITIES TO ACCELERATE CHILDREN'S ACCESS TO HIV PREVENTION, TREATMENT CARE AND SUPPORT SERVICES

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**Background:** The HIV prevalence rate among women in Zambia is higher at 15% compared to men at 11%, increasing the risk of mother-to-child transmission of HIV (MTCT). Although global gains have been made in reducing MTCT, progress has been much slower in countries with a high burden of HIV like Zambia, with less than 40% of new infections averted. Many low resource settings affected by a critical shortage of health care workers are task shifting delivery of prevention of mother to child transmission (PMTCT) services to community health workers (CHWs).
**Description:** Between October 2013 and September 2015, PCI prioritized 5 sites with a high burden of HIV and scantly staffed health centers to implement a community PMTCT program with strong linkages to facility-based PMTCT services. A community PMTCT register was developed to allow for longitudinal postpartum/postnatal follow up of mother/baby pairs to the end of breastfeeding. The register contained variables to ensure linkage of women to treatment as prevention/Option B+, early infant diagnosis for exposed infants, retesting for breastfed exposed infants, breastfeeding and adherence counseling for the mother, and defaulter tracing. Fifty CHWs (10 per site) were trained on delivering services as per register guidelines.
**Lessons learned:** A total of 428 HIV positive pregnant women were identified (217 in 2014 and 211 in 2015). The percentage of women linked to Option B+ increased from 52% (113) in 2014 to 100% (211) in 2015. The rate of HIV exposed infants born from HIV positive women who were tested for HIV increased from 41.5% (90/217) in 2014 to 86.7% (183/211) in 2015. The HIV positive rate in HIV exposed infants identified and tested reduced from 15.5% (14/90) in 2014 to 2.7% (5/183) in 2015. All HIV negative and breastfed infants retained their status at the close of September 2015.
**Conclusions/Next steps:** In resource limited settings, engaging CHWs in pediatric HIV testing, facility linkage, care and support programs and providing them with clear documentation tools increases children's access to life-saving HIV prevention and treatment services. Research is needed to explore how CHWs can effectively be engaged, motivated and retained to deliver key HIV and child survival services.

## THPEC239

### HAS AUSTRALIA ELIMINATED MOTHER TO CHILD TRANSMISSION OF HIV? AN ANALYSIS OF 30 YEARS OF NATIONAL SURVEILLANCE DATA

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**Background:** The internationally endorsed strategy of early testing and treatment has the potential to eliminate mother-to-child-transmission (MTCT) of HIV in countries where treatment coverage is high. We examined long-term time trends in MTCT rates in Australia and progress towards World Health Organization (WHO) elimination targets; < 50 cases per 100 000 live births AND MTCT rate of < 2% in non-breastfeeding populations (for at least 1 year) AND >95% treatment coverage (for at least two years).
**Methods:** Data from the Australian Paediatric Surveillance Unit (APSU) which flows into the Australian Perinatal HIV Surveillance System were analysed. Paediatricians and other child health professionals participating in the APSU notify infants born to HIV-positive mothers. Further information is then sought including demographics of infant and mother, maternal HIV exposure risk, HIV prevention interventions used (antiretroviral therapy (ART), mode of delivery, breastfeeding status) and the infant's HIV status. We assess time trends in the treatment coverage during pregnancy and MTCT rate over a 30-year period, using logistic regression.
**Results:** Between 1985 and 2014, there were 701 infants born in Australia to HIV positive mothers, 27 in 1985-1989 increasing to 238 in 2010-2014. Over a third (39%) of mothers were born in Sub-Saharan Africa or South-East Asia, increasing from 14% in 1985-1989 to 49% in 2010-2014 (p< 0.001). In mothers with information recorded on use of ART during pregnancy, the proportion on treatment was 17% prior to 1995 increasing to 98% in 2010-2014 (p< 0.001). In the last 5-year period, treatment coverage was >95% each year. Overall 66 (9%) were notified as HIV positive and the MTCT rate declined from 37.0% in 1985-1989 to 1.7% in 2010-2014 (p< 0.001). In the last 5-year period, there were 4 transmissions recorded (3 in 2012 and 1 in 2010), equating to MTCT rates of 4.1% and 1.9% respectively or 0.97 and 0.34 cases per 100 000 live births respectively, and 0% in all other years.
**Conclusions:** Australia has expanded services to provide significantly more HIV-positive women with interventions to avoid HIV transmission during pregnancy. The high treatment coverage and very low MTCT rates in the past two years meet WHO elimination targets.

## THPEC240

### HIV VIRAL LOAD MONITORING IN HIV-INFECTED PREGNANT WOMEN ESTABLISHED ON ANTIRETROVIRAL THERAPY IN CAPE TOWN, SOUTH AFRICA

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**Background:** Use of viral load (VL) monitoring is increasing across Africa however there are few insights into VL monitoring strategies during pregnancy. We describe public sector VL monitoring practices in a cohort of HIV-infected pregnant women established on antiretroviral therapy (ART) in Cape Town, South Africa. Annual VL monitoring has been routine in this setting since 2010, with two consecutive VL results >1000 copies/mL used to diagnose virologic failure.
**Methods:** We enrolled consecutive pregnant women on ART for at least 4 months and making their first visit to a primary care antenatal clinic between March 2013 and June 2014. All women received a research ultrasound to determine gestation

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and estimated date of conception, and then used laboratory systems to follow-up routine VL testing practices from 15 months before the estimated date of conception to 6 weeks after delivery.
**Results:** Among 538 women the median age was 31 years and the median duration of ART use was 31 months [IQR, 17-59 months]. In the 15 months before the estimated date of conception, 64% (n=327) had at least one VL test done in routine adult ART services, and 9% of these results (n=28) were >1000 copies/mL. During the pregnancy, 81% (n=437) of women had at least one VL test done and 12% (n=53) of these results were >1000 copies/mL. Pregnant women with elevated VL were more likely to report missed ART doses in pregnancy (p=0.036) and be on a PI-based regimen (p=0.054). Among women with VL ≥1000 copies/mL during pregnancy, 62% (n=33) had a repeat VL test done at a median of 4 months after the initial test (IQR 2-5 months) and 48% of women (n=16) had a VL ≥1000 copies/mL on this second test.
**Conclusions:** While coverage of VL monitoring appears high in this setting, VL testing during pregnancy occurs less frequently. A substantial fraction of women with elevated VL in pregnancy are never retested, and the time to retesting appears unusually long. With increasing numbers of HIV+ women using ART, greater attention is needed to design and implement effective strategies for VL monitoring in pregnancy.

## THPEC241

### Predictors of neurocognitive outcomes among a cohort of 12-month old infants from Uganda of mixed HIV-exposure status

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**Background:** Conflicting evidence exists concerning the effects of perinatal exposure to both antiretrovirals (ARVs) and HIV on early infant cognitive development. We therefore aimed to evaluate whether maternal HIV status, maternal ARV treatment status, and demographic characteristics were predictive of infant cognitive development in the first year of life.
**Methods:** Postpartum Ugandan women (n=244) of reproductive age (mean 24.9y±5.2) with known HIV status were enrolled from the Prenatal Nutrition and Psychosocial Health Outcomes (PRENAPS) study, a longitudinal pregnancy cohort, at a 2:1 HIV-infected:uninfected ratio. Maternal socio-demographic and physical and mental health parameters were collected at multiple study visits. We assessed neurocognitive development of infants at 6 and 12-months of age using Mullen Scales of Early Learning (MSEL). Linear regression models for repeated measures (mixed effects) were used to relate MSEL scores to maternal age, education, HIV-status, ARV regimen, socioeconomic status, and social support.
**Results:** Repeated measures were available for 215 mother-child dyads. At baseline, 147 women (65%) were HIV-, 57 (27%) were HIV+ receiving ARVs, and 18 (8%) were HIV+ not receiving ARVs. In multivariate models, HIV-unexposed infants had higher Mullen Composite (ß=3.9, SE=1.8, p=.03) and Gross Motor scores (ß=2.9, SE=1.3, p=.03) than HIV and ARV exposed but uninfected children. Infants from HIV+ mothers receiving ARVs had higher Mullen Composite scores compared to infants from HIV+ mothers not receiving ARV's, but statistical significance was not reached, possibly due to smaller size of no ARV group. Greater postnatal maternal social support was associated with higher Mullen Composite scores at 6- and 12-months (ß=0.37, SE=0.14, p=.01).
**Conclusions:** These data suggest that HIV-exposure is associated with lower cognitive development scores in the first year of life, but that ARV regimen is not. Further, increasing maternal social support may be an effective strategy to improve early cognitive development. Examination of the effects of maternal and pediatric ARV-exposure on child cognitive development beyond 1 year are warranted.

# Reducing post-partum transmission in infants

## THPEC242

### Predictors of uptake of early postnatal care among HIV exposed and unexposed infants in South Africa

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**Background:** Almost half of annual global deaths among children under 5 take place during the first 28 days of life, yet many infants do not receive the minimum WHO recommendation of three postnatal care (PNC) visits during their first six weeks of life. This study aims to identify predictors of uptake of early postnatal care among HIV-exposed and unexposed infants in South Africa, with the ultimate goal of increasing coverage and reducing infant deaths.
**Methods:** We analyzed data from the South African prevention of mother-to-child transmission (PMTCT) of HIV effectiveness through cross-sectional national surveys in 2010, 2011/12, and 2012/13. Research nurses interviewed mothers/ caregivers and collected dried blood spots (DBS) from 4-8 week old infants (n= 28,095 mother-infant pairs). DBS samples were tested for maternal antibodies using enzyme linked immunosorbent assay tests and, if positive, we defined the baby as HIV-exposed. Multivariable logistic regression was used to identify predictors of uptake of early postnatal care using STATA 12.0. Unweighted preliminary results are presented.
**Results:** Of the 28,095 mother-infant pairs, only 13.74% (n=3,861) received the recommended three PNC visits during the first 6 weeks of life, with 15.06% (n=1,258) of HIV exposed infants and 13.19% (n=2,603) of HIV unexposed infants achieving the recommendation. Predictors of receiving recommended PNC visits were HIV-exposure (Adjusted Odds Ratio (AOR): 1.14, 95% CI: 1.05 - 1.24), four or more ANC visits (AOR: 1.36, 95% CI: 1.22 - 1.51), and health facility delivery (AOR: 1.19, 1.05 - 1.38). The multivariable model also included maternal age and education, infant birth weight, formula feeding, and timeliness of first ANC visit.
**Conclusions:** Antenatal, labor and delivery care interactions with the health system were shown to significantly improve uptake of PNC services during the first 6 weeks of life. Therefore, efforts to improve uptake of vital early PNC should include health education that stresses the importance of four or more ANC visits, facility delivery, and three PNC visits within the first six weeks of life. Analysis weighted for sample realization and population live births will be conducted in the near future.

## THPEC243

### Prevalence of HIV infection among children born to HIV-infected mothers after the implementation of Option B+ in Rwanda

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**Background:** Prevention of mother-to-child transmission (PMTCT) of HIV is an important component of the global fight against HIV/AIDS. In 2011, the World Health Organization (WHO) recommended Option B+ for PMTCT, which provides lifelong triple antiretroviral therapy (ART) for all HIV-positive pregnant women, regardless of CD4 count. Rwanda implemented the program nationwide in November 2011.
**Methods:** Efficacy of Option B+ in Rwanda was evaluated through a pre/post quasi-experimental study comparing 18-month HIV-positivity rates among infants born to HIV-positive women before and after program implementation. Routinely collected data available through the TRACnet database system were used to analyze outcomes for infants in three birth cohorts before and after the implementation of Option B+. Only infants whose mothers accessed antenatal care/ PMTCT services at least once during pregnancy were included.
**Results:** Of the 6,768 infants whose mothers were enrolled in Option B+, 121 (1.8%) infants tested HIV positive, 6,368 (94.1%) infants tested HIV negative and 279 (4.1%) infants did not receive an HIV test due to death, loss to follow up or transferred out. 68% of HIV-positive infants first tested positive at 6 weeks, while 20% and 12% tested positive at 9 and 18 months, respectively. In the years 2007 - 2009, the HIV prevalence among infants at 18 months with known HIV status was 3.3%.

**Conclusions:** The HIV prevalence among infants whose mothers were enrolled in the PMTCT program has decreased by more than 40% since the implementation of Option B+ in Rwanda, from 3.3% to 1.8%. Further, the decreased proportion of infants identified as infected at the 9 and 18 month test dates shows declining HIV transmission during the breastfeeding period. Currently, the majority of infants who become infected with HIV are infected sometime during pregnancy, delivery, or within the first six weeks of life. Continued improvements are possible and necessary to prevent all infants from becoming infected, including increased awareness of HIV status among women of childbearing age, immediate initiation of ART at the time of HIV diagnosis prior to pregnancy, and increased follow up care.

## THPEC244

### EXCLUSIVE BREASTFEEDING AMONG HIV-POSITIVE MOTHERS RECEIVING LIFELONG ART FROM PMTCT CLINICS IN KIGALI, RWANDA

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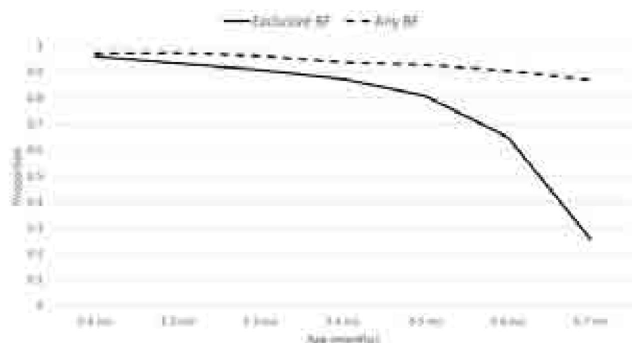
**Background:** In low-resource countries with unsafe replacement feeding options, HIV-infected women are advised to exclusively breastfeed (EBF) for the first six months while on a regimen of antiretroviral therapy (ART). The Kabeho (Kigali Antiretroviral and Breastfeeding Assessment for the Elimination of HIV) Study is an observational prospective study of 24 month HIV-free survival of infants born to HIV-positive women attending antenatal clinics participating in the Rwanda National Prevention of Mother-To-Child Transmission (PMTCT) program, implementing lifelong ART, ('Option B+'). These analyses evaluated individual and facility factors associated with duration of EBF to 6 months postpartum.
**Methods:** HIV-positive women from 14 health facilities in Kigali were followed at monthly clinic visits. Self-reported infant feeding practices were recorded at each visit. We estimated longitudinal logistic regression models of EBF including all observations up to 6.5 months of age (n=3295 observations, 590 infants surviving>2 days). We considered individual and facility-level factors.
**Results:** Overall, 97.6% of mothers initiated breastfeeding; however, EBF declined rapidly after first 3 months postpartum. By 6.5 months, less than half (43%) of infants were exclusively breastfed (Figure 1). Likelihood of EBF was significantly lower among women with higher education, living in households with higher socioeconomic status, and with a twin or cesarean delivery. A higher facility factor score (more staff training related to infant feeding) and provision of infant feeding counseling were strongly associated higher likelihood of EBF across all ages.
**Conclusions:** Results show that adherence to 6 months of EBF rapidly declined after 3 months postpartum in Kabeho mothers. Given the strong association of facility factors with EBF, Option B+ programs should focus on improving infant feeding counseling at facilities by staff well-trained in comprehensive infant feeding and support.



*[Figure 1. Prevalence of any and exclusive breastfeeding among Kabeho infants]*

## THPEC245

### PRENATAL DEPRESSION EFFECTS ON EXCLUSIVE BREASTFEEDING PRACTICE AMONG HIV-INFECTED WOMEN IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Exclusive breastfeeding (EBF) provides infants with optimal nutrition in early life, and together with appropriate antiretroviral therapy has also been shown to decrease the rate of mother-to-child transmission of HIV from 45% to less than 1%. However, rates of EBF are particularly low in South Africa, where rates of HIV are some of the highest in the world. Determining the barriers and facilitators of EBF among postpartum women living with HIV is necessary to identify possible points of intervention. Although perinatal depression has been identified as a potential barrier to EBF, we understand very little about perinatal depression rates among HIV-infected women, and its impact on EBF.
**Methods:** A cohort study was conducted as part of a pilot randomized controlled trial examining the effect of a information, motivation and behavioral skills-based intervention promoting EBF among Black South African women living with HIV in their third trimester (28-42 weeks) of pregnancy. Women were recruited from two antenatal clinics near Pietermaritzburg, South Africa. At baseline, participants were interviewed on demographic variables, prenatal depression symptoms (PHQ-9), and their intentions to EBF. Postpartum, women were asked about their depression symptoms (PHQ-9) and breastfeeding behavior. Multivariate logistic regressions were built to determine predictors of EBF at six-weeks postpartum.
**Results:** A total of 68 women (34 intervention, 34 control) were enrolled and 58 women completed both assessments. Most (80.9%) of the sample reported symptoms of depression prenatally. Rates of depression were lower postpartum (47.1%). In multivariate models, higher prenatal depression scores significantly predicted lower rates of EBF at six weeks postpartum after adjusting for demographics, condition, and intentions (AOR=0.68, $p < 0.05$). However, postpartum depression was not a significant predictor of EBF rates (AOR=0.96, p=0.995). Compared to women who did not live with their mother, women who lived with their mother had greater odds of EBF (AOR=51.77).
**Conclusions:** These findings demonstrate the negative impact of prenatal depression on breastfeeding behavior. Future interventions focused on depression are warranted and depression screening/interventions during pregnancy could identify those at risk for sub-optimal EBF. Improving maternal psychosocial well-being could be a new frontier to improving IYCF and reducing peri/postnatal transmission.

## THPEC246

### PERFORMANCE OF OPTION B+ IN A POSTPARTUM COHORT OF HIV-SEROPOSITIVE WOMEN IN NAIROBI, KENYA

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**Background:** Option B+ for prevention of mother to child HIV transmission (PMTCT) is being implemented to streamline women's access to antiretroviral therapy (ART) during and after pregnancy and reduce maternal HIV RNA levels. During widespread rollout, it is important to examine Option B+ performance in real-world settings, especially given concerns over postpartum adherence to ART.
**Methods:** Option B+ rollout occurred during an ongoing observational cohort study of 66 HIV-seropositive postpartum women at a maternal child health clinic. Women's participation in the PMTCT care cascade, ART adherence, CD4 counts and HIV RNA levels were assessed after 6 weeks postpartum.
**Results:** We included 49 HIV-seropositive women who engaged in PMTCT at least 3 months after Option B+ rollout. Median postpartum CD4 count was 558 cells/mm$^3$ (interquartile range: 407). The PMTCT care cascade was functioning well: 100% of women reported enrolling in the on-site ART clinic, 98% reported maternal cotrimoxazole, 95% reported infant ART at delivery, 98% reported infant breastfeeding ART prophylaxis, 98% of women initiated ART, and 100% of women were exclusively breastfeeding at 6 weeks postpartum. Most women (94%) reported receiving adherence counseling. Self-reported adherence was high; 5 women reported missing 1-2

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doses/month and 3 women reported missing 1-2 doses/week. However, among 46 women with plasma tested, 18 women (39%) had detectable HIV RNA. Specifically, 7 women had < 1,000 copies/ml detected, 2 women had 1,000 - 9,999 copies/ml and 9 women (20%) had >10,000 copies/ml (range 11,706 copies/ml - 201,974 copies/ml). No women reported drug stockouts. Efavirenz-containing regimens were used by 42 women (85%) and were equally distributed among virally suppressed and non-suppressed women.
**Conclusions:** Among postpartum women taking Option B+ ART at a public PMTCT clinic, one-quarter of women had plasma HIV levels consistent with virologic failure (>1,000 copies/ml). This occurred despite a high-performing PMTCT care cascade, women reporting ART medication adherence, no drug stockouts, and despite use of efavirenz-based regimens which are highly effective. Postpartum HIV RNA testing should be implemented to protect breastfeeding infants whose mothers are not virally suppressed.

## STRATEGIES TO INCREASE HIV TESTING IN PREGNANT WOMEN AND THEIR PARTNERS

### THPEC247

#### RAPID POINT-OF-CARE HIV AND SYPHILIS TESTING INCREASES UPTAKE OF TESTING AMONG AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINICS IN CHINA

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**Background:** WHO recommends combined screening for syphilis and HIV among pregnant women using rapid tests to reduce delays in diagnosis and accelerate early treatment. The usual turnaround time from screening to results in the national antenatal programme ranges from 1 to3 days. We assessed the feasibility and acceptability of using dual HIV/syphilis rapid tests (RDT) with same day results.
**Methods:** Pregnant women attending antenatal clinics in 21 rural and urban township hospitals, in two counties of Guangdong and Anhui were included. Free dual RDT was offered in addition to the routine obstetric blood tests that included HIV and syphilis. Outcomes include testing uptake before and with concurrent dual RDT use, including feasibility and acceptability. Regression modelling examined predictors for acceptance of RDT testing.
**Results:** In total, 1787 pregnant women attending antenatal care were enrolled. Testing uptake among pregnant women in their first and second trimester increased from 76.0% (2438/3269) before the study to 90.1% (1626/1787) with concurrent RDT use ($\chi^2$=197.1, $P$<0.001). Positive RDT screening results for HIV and syphilis were 0.06% (1/1787) and 1% (18/1787), respectively. RDT results were 100% concurrent with national confirmatory tests. Regression analysis indicated that women who did not receive syphilis or HIV testing before were less likely to receive dual RDT (OR=0.28, 95% CI [0.10, 0.75]). Acceptance for dual RDT testing at the second or third antenatal visit was less likely compared to the first visit (OR=0.37, 95% CI [0.15, 0.94]). Interviews of the pregnant women showed RDTs use with same day results was feasible.
**Conclusions:** Dual HIV/syphilis RDT with same day results increased uptake of HIV and syphilis testing among pregnant women, at decentralized health facilities. Given the diversity of testing capacities among health services especially in rural areas, the dual RDT is feasible to implement and is a tool to improve testing services in antenatal care.

### THPEC248

#### MALE PARTNER INVOLVEMENT IS ASSOCIATED WITH IMPROVED ART RETENTION AND ADHERENCE IN MALAWI'S OPTION B+ PROGRAM

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**Background:** Through Malawi's Option B+ program, all HIV-infected pregnant women are offered free lifelong antiretroviral therapy. Within Option B+, mother to child transmission is negligible among women who remain in care and adherent to drugs. However, many women face challenges with retention and antiretroviral therapy (ART) adherence, and it is not known whether male partner recruitment programs could enhance retention and adherence.
**Methods:** From March 2014 to January 2015, a randomized controlled trial was conducted in the antenatal clinic at Bwaila District Hospital in Lilongwe, Malawi. The trial compared two strategies for helping HIV-infected pregnant women recruit their male partners for couple HIV testing and counseling (HTC): invitation only versus invitation plus phone and community tracing. This analysis was conducted among the entire cohort (N=200) of HIV-infected pregnant women, irrespective of randomization status. We assessed whether those who presented for couple HTC in the four weeks after diagnosis were more likely to be retained in ART care one month later. Retention was based on clinical records. Among these women, we assessed whether ART reminders by male partners were associated with ART adherence. ART adherence was dichotomized into those who had taken >90% versus ≤90% of their pills based on clinician pill count.
**Results:** Two-hundred HIV-infected pregnant women were included in this analysis; 126 of their partners presented to the clinic for couple HTC (52 in the invitation only arm, 74 in the invitation plus tracing arm). Median age of women was 26 years. Most women (86.5%) were retained; of these 69.3% had >90% adherence. Women who received couple HTC with their partners had 4.2 times the odds of being retained (95% CI 1.8, 9.9 ). Among these women, those with partner reminders had 2.0 times the odds of >90% adherence (95% CI 1.0-4.1).
**Conclusions:** Couple HTC was associated with substantially higher retention in care for HIV-infected pregnant women. Many of these male partners reminded women to take pills, and this, in turn, supported better adherence. Partner recruitment programs could play an important role in improving Option B+ retention and adherence.

### THPEC249

#### EXPERIENCES AND PERSPECTIVES OF HOME-BASED HIV TESTING AMONG PREGNANT COUPLES IN KENYA: A QUALITATIVE STUDY WITHIN A RANDOMIZED CLINICAL TRIAL

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**Background:** Testing men for HIV as part of antenatal care has been identified as an important but difficult component of prevention-of-mother-to-child transmission (PMTCT). Home-based testing has been explored as a method of engaging male partners. The objective of this qualitative study was to better understand participant experiences and perspectives of the Home-based Partner Education and Testing (HOPE) intervention.
**Methods:** The HOPE Study randomized pregnant women attending the antenatal clinic at the Kisumu County Hospital in Kenya to home-based couple HIV testing (HOPE) (n=306) or to clinic invitation for partners (INVITE) (n=295) and followed them to 6 months postpartum. Couples who received the HOPE intervention and had not yet exited the study were eligible to participate in individual and couple in-depth interviews. Twenty-one couples were purposively sampled based on HIV status (9 seroconcordant negative, 8 serodiscordant, 3 seroconcordant positive, 1 seroconcordance status unknown). Two coders created a codebook, independently coded, reconciled codes and identified major themes.

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| „It [home testing] is a good method. That is the only way you could reach out to those who are afraid [...] she brings you along the way my wife did and you found me in the house because most men do not escort their wives to the clinic. That is the only way you could reach the other villagers when their wives are expecting." (P6, concordant negative male, age 39) |
| „I think that [home-based couple testing] was also good because there are some people who don't disclose their status to their spouses so if you are tested together the woman knows and the husband also." (P18, discordant positive male, age 26) |
| „The experience was nice, because you know you are free, you are in the house, you know at the hospital you fear those who are there, the nurses and the doctors, you will fear they may know that you are positive, or know your status and maybe they know you they will go to advertise, unlike in the house." (P11, concordant negative female, age 27) |
| „It [being part of the home testing visit] was easy, I have had it easy considering the thoughts I had before this visit, after we were tested and knew our HIV status, we had many thoughts, but after the education we got from the visit, all these days, I lost the thoughts and felt light." (P1, discordant negative male, age 23) |
| „It [the visit] has brought a good one [difference] because we are now staying with peace because everyone knows each other's status so we live well." (P17, concordant positive female, age 27) |
| „I would not like someone from the community, because they come out with it openly. They would put it in a different way to spoil your name. I prefer someone who comes from a place where I don't know [a stranger]. Someone who knows you will speak about it [your status] to others but those who come from outside [far from the community] will keep your secret." (P21, discordant positive male, age 28) |

*[Representative quotes for home-based couple HIV testing facilitating partner testing and disclosure, affording privacy, and improving relationships]*

**Results:** Several major themes emerged: home-based couple testing facilitated partner testing and disclosure, was preferred over clinic-based testing due to privacy and quality time, helped participants overcome their fear of testing, and improved relationships following disclosure. These themes were present in both individual and couple interviews and irrespective of gender or seroconcordance status. These qualitative results explain quantitative outcomes of a greater than 2-fold increase and 85% uptake of testing and rates of disclosure when comparing HOPE vs. INVITE in the parent study. Couples overwhelmingly gave positive feedback for the HOPE intervention, although when asked about being visited by a local community health worker instead of a non-local health worker, most were opposed due to concerns of confidentiality.
**Conclusions:** Home-based couple HIV testing was highly acceptable to both men and women. Home testing was regarded as more private and better at engaging male partners than clinic testing; however, concerns of confidentiality pertaining to type of health worker will need to be considered when scaling up this intervention.

# INCREASING COVERAGE AND QUALITY OF PREVENTION OF VERTICAL TRANSMISSION PROGRAMMES

## THPEC250

### TIMELY DELIVERY OF ANTIRETROVIRAL PROPHYLAXIS DURING PREGNANCY EFFECTIVELY REDUCES HIV MOTHER TO CHILD TRANSMISSION IN HIGH HIV PREVALENCE AREAS IN CHINA: A PROSPECTIVE OBSERVATIONAL STUDY DURING 2004-2011

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**Background:** China has drastically scaled up HIV surveillance, care and treatment since 2004. This study investigates the improvement of the prevention of mother-to-child transmission of HIV (PMTCT) over the period of 2004-2011.
**Methods:** An institution-based prospective study was conducted among HIV-positive pregnant women and their children in eight counties across China. Information of HIV transmission and antiretroviral prophylaxis (ARV) were collected. Associated factors of mother-to-child transmission was analyzed using regression analysis.
**Results:** A total of 1,387 HIV+ pregnant women and 1,377 HIV-exposed infants were enrolled. The proportion of pregnant women who received HIV testing increased significantly from 45.1% to 98.9% during the study period 2004-2011. Among these women, the proportion that received ARV prophylaxis increased from 61% to 96%, and the corresponding coverage in children increased from 85% to 97% during the same period. Notably, 87.7% of HIV+ pregnant women are receiving multi-ARVs in 2011, significantly improved from 2.8% in 2004. In contrast, the proportion required a made-up ARV regimen during delivery declined substantially from 97.9% to 12.7%. As a result, vertical transmission of HIV in this population significantly declined from 11.1% in 2004 to 1.2% in 2011. Regression analysis indicated that women who had vaginal delivery (in comparison with emergency Caesarian-section (OR=0.46; 0.23-0.96) and mothers on multi-ARVs (OR= 0.11; 0.04-0.29) were less likely to transmit HIV to their newborns.
**Conclusions:** Increasing HIV screening among pregnant women and exposed children has improved timely HIV care and prophylaxis to reduce vertical transmission of HIV. Early and consistent treatment with multi-ARVs during pregnancy is vital for PMTCT.

## THPEC251

### INTEGRATING PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HUMAN IMMUNODEFICIENCY VIRUS, SYPHILIS AND HEPATITIS B VIRUS: CHINA'S STEP-WISE SUCCESS MODEL

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**Background:** Elimination of mother-to-child transmission (EMTCT) of HIV and syphilis is a global public health priority. To address the challenge of preventing vertical transmission of HIV, syphilis and hepatitis B virus (HBV), China developed a step-wise approach, integrated within the existing health system: the integrated prevention of mother-to-child transmission of HIV, syphilis and HBV (iPMTCT) model.
**Description:** China's PMTCT of HIV programme was initiated in one rural county in 2003, expanded to include three vertically-transmitted diseases (HIV, syphilis and HBV) in 2010, and gradually scaled-up to all counties by 2015. Integrated within the existing maternal and child health (MCH) system, free testing was provided to pregnant women accessing antenatal care (ANC) services, with free iPMTCT interventions for all infected pregnant women and exposed children. The adjusted mother-to-child-transmission rate of HIV was 6% in 2014, an 82% reduction since iPMTCT inception. From 2011 to 2014, reported congenital syphilis decreased by 30%, while the number of HBV-exposed neonates receiving Hepatitis B immunoglobulin (HBIG) increased by 172% (Table 1).

| Characteristic | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|
| Millions of PW attending ANC | 4.4 | 5.5 | 9.4 | 12.1 | 13.1 | 13.8 |
| Millions of PW tested for HIV (%) | 3.7 (85.4) | 4.8 (88.8) | 8.7 (93.0) | 11.6 (96.4) | 12.7 (97.3) | 13.6 (98.2) |
| No. of PW diagnosed with HIV (%) | 3 662 (0.10) | 4 146 (0.09) | 5 313 (0.06) | 5 779 (0.05) | 5 973 (0.05) | 6583 (0.05) |
| MTCT rate of HIV (%) | 8.1 | 7.9 | 7.4 | 7.1 | 6.7 | 6.1 |
| Millions of PW tested for syphilis (%) | NA | NA | 7.3 (85.0) | 11.5 (95.1) | 12.6 (96.4) | 13.7 (99.5) |
| No. PW diagnosed with syphilis (%) | NA | NA | 14 822 (0.20) | 24 307 (0.21) | 30 520 (0.24) | 31 757 (0.23) |
| No. reported congenital syphilis | 10 032 | 12 477 | 13 294 | 12 166 | 10 032 | 9 252 |
| Millions of PW tested for HBV surface antigen (%) | NA | NA | 7.7 (89.3) | 11.7 (97.1) | 12.7 (97.4) | 13.6 (98.9) |
| No. of HBV exposed neonates received HBIG (%) | NA | NA | 301 048 (86.2) | 599 071 (94.4) | 774 916 (97.7) | 819 211 (98.7) |

*[Table 1. China's iPMTCT model, 2009-2014]*

**Lessons learned:** The iPMTCT-model proved to be feasible and effective in China. National laws and strategic plans were released to create an enabling environment, Government investments increased 220-fold from USD 973,000 in 2003 to USD 215 million USD in 2015. To promote equitable access to MCH and PMTCT services, iPMTCT was included in the National Essential Public Health Programme in 2009, while the National Cooperative Medical Scheme helped increase timely utilization of MCH services among the most vulnerable population.
**Conclusions/Next steps:** Government commitment and a step-wise approach were critical for the success of China's iPMTCT-model. To achieve global EMTCT goals, China's iPMTCT-model will need to focus on further reducing provincial disparities in coverage and quality of care, and strengthening iPMTCT surveillance.

## THPEC252

### THE LAST MILE IN ELIMINATING MOTHER TO CHILD TRANSMISSION OF HIV: ADDRESSING REMAINING LEAKAGES IN THE PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) CASCADE IN RURAL KWAZULU-NATAL, SOUTH AFRICA

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**Background:** With the UNAIDS call for virtual elimination of mother-to-child transmission by 2015, PMTCT interventions are high on the international health agenda, but health systems imperfections lead to large numbers of vertical transmission in

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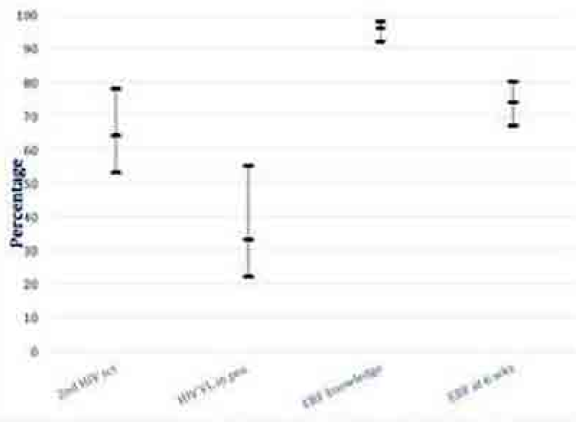
many countries. Despite recent PMTCT successes in South Africa, HIV seroconversions and inadequate HIV virologic suppression during pregnancy remain a concern. Repeat HIV testing and viral load (VL) monitoring are therefore key process elements in optimising PMTCT programmatic success.

**Methods:** The Africa Centre for Population Health is located in a rural socio-economically deprived area of uMkhanyakude district, KwaZulu-Natal. There are 7 primary health care facilities in the Africa Centre Demographic Surveillance Area (DSA). Ethical approval for the study was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee and National Department of Health.

We photographed routine antenatal clinic data from maternity case records (MCRs), infant road-to-health booklets (RtHB), and interviewed locally resident women aged ≥18 years from delivery to 6 weeks postpartum.

Data extracted were *HIV screening practices* of HIV-negative women from first antenatal booking, *HIV VL testing* of HIV-infected pregnant women, *knowledge of early infant feeding* and *self-reported feeding practices*. We present the first 2 months of data collected between 15 July 2015 and 15 September 2015.

**Results:** We recruited 250 participants. HIV prevalence amongst all antenatal clients aged ≥18 years was 48 % (95% CI 41-54%), similar to previous DSA studies. Other results are depicted in Figure 1.




*[Figure 1: Potential leakages in PMTCT cascade at 7 primary health care facilities in rural KwaZulu-Natal]*

**Conclusions:** Repeat HIV screening of pregnant women in this very high HIV-prevalence setting is inadequate. Very low HIV VL testing rates may reverse PMTCT programmatic successes. However other potential gaps in infant feeding knowledge and practice were not found. Health systems innovations, including quality improvement interventions (e.g. MONARCH study ongoing at DSA clinics), are urgently needed to bridge final gaps in achieving complete elimination of MTCT.

## THPEC253

### DOES BIRTH HIV-PCR DIAGNOSTIC TESTING OF HIV-EXPOSED INFANTS REDUCE FOLLOW-UP FOR HIV-PCR DIAGNOSTIC TESTING AT 4-14 WEEKS OF AGE?

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**Background:** Routine or targeted HIV-PCR testing of HIV-exposed infants at birth could improve early infant diagnostic (EID) yield. Those testing negative at birth require repeat testing approximately 3 months later to detect intrapartum transmission. Receipt of a negative birth test result may reduce repeat testing rates. We examined whether a negative birth result decreases follow-up testing at 4-14 weeks.

**Methods:** We included live infants born to HIV-infected women who received antenatal care (ANC) and/or delivered at a Midwife Obstetric Unit in Cape Town, South Africa between February 2014 and March 2015. In August 2014 targeted birth testing was introduced for infants at "high risk" for HIV transmission (< 3 months maternal ART, maternal viral load >1000 copies/ml, no ANC, infant < 37 weeks gestation or birth weight < 2.5kg). Using logistic regression we examined whether a negative birth result was associated with reduced follow-up for routine testing at 4-14 weeks, adjusting for other predictors of EID.

**Results:** The cohort included 870 mother-infant dyads; 540 (62%) met ≥1 "high risk" criterion of whom only 16% received birth EID. Overall vertical transmission was 1.2%; 3.96% of birth tests were positive versus 0.31% at 4-14 weeks. Birth EID was significantly more likely with the following characteristics: HIV diagnosis at first ANC, seroconversion after first ANC, <3 months maternal ART, infant <37 weeks gestation or birth weight <2kg. EID at 4-14 weeks was performed in 74% of infants. Those with negative birth test results were less likely to test at 4-14 weeks (aOR 0.53; 95%CI: 0.34-0.84).

| | All infants (n = 870) | | Birth test (n = 870) | | | 4 - 14 week test (n=866) (excludes 4 infants who were diagnosed as HIV-infected at birth) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mother/infant characteristic | n | % | no (n=769) | yes (n=101) | p-value | no (n=229) | yes (n=637) | p-value | aOR (95%CI) |
| Maternal age ≥35 years | 149 | 17% | 17% | 18% | 0.844 | 12% | 19% | 0.02 | 1.76 (1.11-2.78) |
| ≥1 antenatal visit | 743 | 85% | 89% | 85% | 0.202 | 82% | 87% | 0.058 | 1.51 (0.99-2.30) |
| Known HIV-infected at first ANC | 581 | 67% | 70% | 46% | <0.001 | 60% | 69% | 0.017 | not included |
| Seroconverted after first ANC | 27 | 3% | 3% | 7% | 0.029 | 5% | 2% | 0.031 | 0.41 (0.18-0.91) |
| On ART for <3 months | 294 | 34% | 31% | 57% | <0.001 | 37% | 32% | 0.288 | not included |
| Infant <37 weeks gestation | 36 | 4% | 3% | 12% | <0.001 | 7% | 3% | <0.023 | 0.52 (0.26-1.05) |
| Infant birth weight <2kg | 31 | 4% | 2% | 14% | <0.001 | 7% | 2% | <0.002 | not included |
| Negative birth test result | | | | | | | | | 0.53 (0.34-0.84) |

*[Table. Characteristics of mother-infants dyads grouped by timing of EID and association with testing at 4-14 weeks adjusted for variables as listed]*

**Conclusions:** In this cohort, >60% of infants had ≥1 high risk criterion for HIV transmission, with nearly 4% of birth tests being positive. Receipt of a negative birth test result was associated with reduced follow-up testing. Strengthened follow-up systems are needed to ensure adequate EID coverage.

## THPEC254

### EFFECTIVENESS OF OPTION B+ IMPLEMENTATION ON PREVENTION OF VERTICAL TRANSMISSION OF HIV IN RURAL HAITI: A CASE-CONTROL STUDY

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**Background:** In 2013, the WHO supported new protocols for prevention of vertical transmission of HIV, referred to as Option B+. There has been limited evidence to support its effectiveness in HIV endemic settings with programmatic constraints. We assessed the extent to which Option B+ was implemented officially in the Haitian context for infants and their mothers since 2013 and, whether implementation of Option B+ was associated with vertical transmission.

**Methods:** A case-control design with chart review was performed with infants born to HIV+ mothers between 2011 and 2014 at three clinical sites in rural Haiti. All accessible cases (HIV+ infants) were selected. Controls (HIV- infants) were selected using systematic sampling. Option B+ treatment for infant-mother pairs were categorized based on level of implementation (full, partial, poor) (Table 1). Descriptive analysis measured extent of eligible Option B+ implementation since 2013 in both cases and controls. Logistic regression was used to identify the association between Option B+ implementation and vertical transmission.

**Results:** Data were gathered for 28 cases and 99 controls. Of 49 infant-mother pairs pregnant after implementation in 2013 and eligible for Option B+, 16.7% of cases and 32.4% of controls had received full implementation and 33.3% of cases and 59.5% of controls had received partial implementation.

Multivariate analyses showed that full implementation (aOR=.230, 95% CI= .064-.826) and partial implementation (aOR = .291, 95% CI = .108-.782), compared to no implementation of Option B+, were not associated with an increased risk of HIV vertical transmission.

**Conclusions:** Continuing to promote Option B+ would benefit the reduction of vertical transmission in HIV endemic countries. Emphasis on improving the implementation of Option B+ in settings with programmatic constraints is warranted.

| IMPLEMENTATION OF COMPONENTS OF OPTION B+ | Full implementation (Score: 2) | Partial implementation (Score: 1) | No/Poor Implementation (Score: 0) |
|---|---|---|---|
| Component 1: ART coverage for pregnant and breastfeeding women | Full coverage without interruption once confirmed eligible per Option B+ | Coverage with interruption at any point during pregnancy, delivery or after delivery | No coverage during pregnancy or after delivery |
| Component 2: ARV prophylaxis for infant | Received fully recommended prophylaxis | Received at least some of recommended prophylaxis | Did not receive prophylaxis |
| Component 3: Infant feeding method | Exclusive breastfeeding for first 6 months | Breastfed at any point during, but not exclusively for, first 6 months | No breastfeeding at any point during first 6 months |
| **OVERALL IMPLEMENTATION OF OPTION B+** | SCORE 5-6 | SCORE 3-4 | SCORE 0-2 |

*[Description of treatment implementation variables]*

## THPEC255

### EVALUATING FACILITY INFRASTRUCTURE FOR THE PMTCT OF HIV: A 2015 SURVEY OF MAJOR DELIVERY HOSPITALS IN ATLANTA, GA

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**Background:** Elimination of MTCT of HIV can be achieved if each step of the perinatal HIV prevention cascade is followed. However, preventable transmission events continue to occur with 35 perinatal infections reported in Georgia [GA] (USA) between 2010-2014, and a national transmission rate of 3.1%. The objectives of this study were to assess institutional infrastructure for compliance to US guidelines for PMTCT of HIV at major delivery units in Atlanta metropolitan statistical area (MSA).

**Methods:** We conducted on-site assessments and surveys with 70 healthcare providers from 11 delivery hospitals in 2015 to evaluate institutional infrastructure and policies for PMTCT. These 11 hospitals (2 university-affiliated and 9 private) deliver 40,000 infants annually, which represents 52% of deliveries in Atlanta MSA. We assessed compliance to national recommendations through surveys addressing opt-out HIV testing in the 3rd trimester, rapid HIV testing for pregnant women with unknown status at delivery, routine testing of HIV-exposed infants, and the availability of zidovudine and nevirapine for infant prophylaxis.

**Results:** On-site surveys were completed by obstetricians, neonatologists, pediatricians, nurses and pharmacists. Based on these and evaluation of protocols and policies, 73% (n=8/11) of hospitals had limitations in PMTCT infrastructure and 36% (4/11) reported no standardized policies for care of HIV-infected pregnant women. Three units utilized opt-in HIV testing. 59% (24/41) of obstetricians did not routinely offer rapid testing at delivery to women without a 3rd trimester HIV test, 78% (32/41) omitted to offer testing at delivery if the woman declined antenatal testing. Furthermore, one facility, with over 14,000 annual births, did not have the capacity to provide rapid testing at delivery for women with unknown HIV status. Only 53% (8/15) of neonatologists and NICU nurses reported that NAAT testing of HIV-exposed infants occurred in their facility. For infant prophylaxis, oral zidovudine was available in all units, but 64% (7/11) of hospitals did not stock nevirapine suspension.

**Conclusions:** In this study we identified several infrastructure deficits that may have contributed to perinatal HIV transmission events in Atlanta MSA. There is an urgent need to address these healthcare gaps if we are to eliminate MTCT of HIV in the US.

## THPEC256

### TIMING OF PRESENTATION FOR ANTENATAL CARE AMONG HIV-INFECTED WOMEN IN CAPE TOWN, SOUTH AFRICA

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**Background:** As with other maternal health interventions, effective prevention of mother-to-child transmission (PMTCT) benefits from early presentation to antenatal care (ANC). However, delayed presentation is common in South Africa. We examined the timing of ANC presentation and associated risk factors in HIV-infected (HIV+) women.

**Methods:** As part of a larger study of maternal HIV care and treatment, we enrolled consecutive HIV+ women making their first ANC visit at a primary care facility in Cape Town, South Africa. All women underwent research ultrasonography for pregnancy dating and completed a structured questionnaire. We analysed factors associated with presentation in tertiles of < 17, 17-24, and 25+ weeks' gestation; logistic regression was used to examine independent predictors of presentation >25 (late) versus ≤24 (early) weeks gestation.

**Results:** Among 1518 women, median gestational age at booking, was 21 weeks, median age was 29 years, with 40% presenting during the third trimester. Lower socioeconomic status, not being married/cohabiting and having an unplanned pregnancy increased the odds of booking late. (Table 1). Being newly HIV diagnosed in the current pregnancy was strongly associated with later booking gestation, but among women previously diagnosed, antiretroviral therapy (ART) use was not associated with booking time. In multiple logistic regression, having an unplanned pregnancy, being unemployed and having no PMTCT history were predictors of late booking (aOR 0.55; 95% CI: 0.41-0.74, aOR 0.60; 95% CI: 0.44-0.80, aOR 1.68; 95% CI: 1.18-2.39, respectively).

| | ≤17 weeks | 18-24 weeks | ≥25 weeks | Total | p-value |
|---|---|---|---|---|---|
| Number of women | 495 (33) | 501 (33) | 522 (34) | 1518 | |
| Median gestation at booking (IQR) | 12.4 (9.6-14.9) | 20.4 (18.7-22.3) | 29.9 (26.5-33.3) | 20.6 (15-26.9) | |
| Median age (IQR) | 29 (26-33) | 29 (25-33) | 29 (25-33) | 29 (25-33) | 0.210 |
| Completed secondary education | 148 (30) | 139 (28) | 123 (24) | 410 (27) | 0.068 |
| Employed | 219 (44) | 192 (38) | 148 (28) | 559 (37) | <0.001 |
| Socioeconomic status: | | | | | |
| Low SES | 134 (27) | 144 (29) | 180 (34) | 458 (30) | 0.021* |
| Moderate SES | 176(36) | 167 (33) | 186 (36) | 529 (34) | |
| Highest SES | 185(37) | 190 (38) | 156 (30) | 531 (35) | |
| Married/Cohabiting | 247 (50) | 192 (38) | 201 (39) | 878 (58) | <0.001* |
| Pregnancy planned | 242 (49) | 180 (36) | 143 (28) | 565 (37) | <0.001* |
| Primagravida | 82(17) | 93 (19) | 67 (13) | 242 (16) | 0.038 |
| HIV diagnosis and ARV status | | | | | |
| Newly diagnosed with HIV | 140 (28) | 177 (35) | 187 (36) | 504( 20) | 0.061 |
| Known HIV infected, on ART | 206 (41) | 179 (36) | 183 (35) | 568 (37) | |
| Known HIV infected, not on ART | 149 (30) | 145 (29) | 152 (29) | 446 (29) | |
| Timing of HIV diagnosis | | | | | |
| During the incident pregnancy | 140 (28) | 177 (35) | 187 (36) | 504 (33) | 0.018* |
| Prior to the incident pregnancy | 355(72) | 324 (65) | 335 (64) | 1014(63) | |
| Median CD4 cell count (IQR) | 383 (257-535) | 359 (249-500) | 392 (255-542) | 383(257-534) | 0.0247 |
| Median natural logarithm of HIV viral load at enrolment (IQR) | 7.29 (3.66-9.58) | 8.22 (3.66-10.12) | 7.56 (3.66-9.53) | 7.75 (3.66-9.78) | 0.0072 |

*[Table 1: Characteristics of 1518 HIV-infected women at the time of ANC booking stratified by three categories of booking gestational age]*

**Conclusions:** Despite the availability of effective interventions, late ANC presentation remains a significant barrier to the success of PMTCT programs. These results will assist in strengthening existing interventions to ensure maximum duration of ART use during pregnancy, particularly in those newly diagnosed, who may be particularly vulnerable. There is opportunity for improved integration of HIV and reproductive care services to ensure women test regularly and access ANC services as early as possible.

## THPEC257

### INCREASING ACCESS TO VMMC SERVICES THROUGH PRIVATE PARTNERSHIP

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**Background:** Lesotho has the second highest HIV prevalence in the world, in an effort to curb the incidence of HIV; VMMC services were initiated in early 2012 and scaled up to 14 government hospitals in the first two years of program implementation. Services were however, not accessed by some men who expressed concerns with their privacy, the usually long queues and crowded waiting areas at public facilities. In an effort to reach out to these clients, Jhpiego approached private doctors to provide VMMC free of charge

**Methods:** The objective of the partnership was to determine the feasibility of VMMC and HIV testing at the private clinics. Private clinics capacity to provide high-volume VMMC was done using the Lesotho VMMC site assessment tool. Three Clinics were assessed in 2014 and met the required standards and criteria partnered

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with Jhpiego from June 2014. An additional five clinics were assessed and partnered with Jhpiego in 2015. Jhpiego provided VMMC training to teams, each comprising of a doctor, two nurses and a counselor, from the partner clinics. Jhpiego contributed with MC kits, as well as mentorship and compensated for the time worked by private providers.
**Results:** Through this partnership, 697 clients were circumcised at three private clinics between June and December 2014. This number contributed 3.6% to the 19,543 achieved during the 2014 winter campaign. A total of 835 males were circumcised at eight clinics during the winter campaign of 2015, bringing to 1,532 the number of men reached through this approach during both campaigns. Of these, 478 males were aged between 15-29 years. This translates to 31% of adult males who received services. The model improved the number of men testing at the private clinics during these periods with 100 men (6.5%) testing HIV positive and 52 were successfully linked to care and treatment.
**Conclusions:** Access to VMMC/ HIV services can be improved by using independent providers. This is an opportunity in a context such as Lesotho where men have raised concern in the quality of customer care at public facilities. Active participation of private practitioners increases uptake of VMMC services.

## PREVENTION OF VERTICAL TRANSMISSION SERVICES FOR MARGINALIZED GROUPS

### THPEC258

#### PREGNANCY, HIV, AND DENIAL OF ANTENATAL CARE AMONG FEMALE SEX WORKERS IN SOUTHERN TANZANIA: IMPLICATIONS FOR ELIMINATION OF VERTICAL TRANSMISSION

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**Background:** Female sex workers (FSW) are more likely to be discriminated against in health care settings, limiting access to HIV services, including prevention of mother-to-child transmission (PMTCT). Prior qualitative research in Iringa, Tanzania found FSW and other unmarried women were denied HIV testing and ANC services if they did not bring their husbands/partners to the clinic. Here we describe FSW's pregnancy experiences in the context of their HIV risk and quantify prior qualitative findings related to access to ANC.
**Methods:** A Phase II randomized-controlled trial is being conducted in Iringa, Tanzania to evaluate the effectiveness of community empowerment-based combination HIV prevention among venue-based FSW. Venue-day-time sampling was used to recruit FSW, who were consented, tested for HIV, and surveyed for baseline. Logistic regression was used to compare pregnancy and ANC access by HIV-serostatus.
**Results:** Approximately 40% of participating FSW (101/254) were HIV seropositive at baseline. HIV+ women were significantly older (p-value=0.000) and had higher odds of being formerly married
(OR 2.86 [95% CI 1.58-5.18]). Ninety-four percent of the sample had previously been pregnant, 3% were currently pregnant; and 19% were trying to conceive (35% of those HIV+). About 58% of recent pregnancies were unintended, and this was lower among HIV+ women, but statistically insignificant (OR 0.73 [95% CI 0.43-1.23]). There was no difference by HIV status in seeking ANC for most recent pregnancy. Significantly fewer HIV-seropositive mothers had been told to bring a husband/partner to ANC for HIV testing (OR 0.40 [95% CI 0.17-0.97]). Thirty women (13.6% of 220), including 11 who tested seropositive at baseline, were denied ANC because they did not bring husbands to the clinic. Being unmarried was not associated with denial of ANC (0.90 [0.38-2.17]), but unmarried women had lower odds of seeking ANC (91% vs. 98%, p-value=0.08).
**Conclusions:** Given the high HIV-risk contexts in which FSW work, including risk of unintended pregnancy, reproductive health services including ANC must be tailored to fit FSW's needs. Denial of ANC and thus PMTCT to unmarried women is an alarming and counterproductive practice which hurts the most at-risk women and their future children.

### THPEC259

#### INTIMATE PARTNER VIOLENCE AND VERTICAL HIV TRANSMISSION: CAUSAL PATHWAYS AND PROTECTIVE FACTORS FOR PMTCT ADHERENCE

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**Background:** Although prevention of mother-to-child transmission (PMTCT) can virtually eliminate vertical HIV transmission, only 65% of women complete all PMTCT steps. The PMTCT coverage gap may be related to intimate relationships, yet little is known about how partner dynamics influence HIV-related health behaviors around the time of pregnancy.
**Methods:** We conducted 32 qualitative interviews with HIV-positive pregnant and postpartum women who also experienced intimate partner violence (IPV). IPV was assessed through the WHO Multi-country Study instrument and in-depth interviews covered topics related to the woman's pregnancy, HIV testing, the PMTCT cascade, and intimate relationships. Interviews were transcribed verbatim, double-coded and thematically analysed using Dedoose software.
**Results:** Women reported physical, sexual, and emotional violence in pregnancy and postpartum. IPV negatively impacted PMTCT behaviors through several key pathways. A predominant pathway was mental health, with IPV causing feelings of depression and hopelessness that resulted in views that "life is not worth living" and led to skipped medication. Fear of partner disclosure was a second pathway, with women choosing not to disclose because they anticipated a violent reaction. Some women found ways to take daily medication by hiding it, disguising it as other medicine, or moving out from their partner's home. A third pathway was partner control and isolation, where men's abusive strategy of reducing a woman's access to friends and family had concomitant negative effects on her HIV behaviors. Overall, self-reported PMTCT uptake was high, partly due to protective factors. Women reported "striving for motherhood" as a coping technique, reminding themselves that their own health was important for the wellbeing of the baby. The desire to protect one's infant seemed to overcome some of the PMTCT adherence risks related to IPV.
**Conclusions:** Adherence to PMTCT is essential to prevent vertical HIV transmission, but women living with IPV face multiple pathways to non-adherence: mental health challenges, partner non-disclosure, and isolation. Protective factors like striving for a healthy baby and motherhood may attenuate the negative relationship between violence and PMTCT. Addressing IPV in antenatal care can ensure the health of mothers and infants and may enhance PMTCT coverage in this marginalized group.

### THPEC260

#### ASSESSING THE CONCORDANCE OF SUPERVISED SELF-TESTING USING AN ORAL FLUID-BASED HIV RAPID TESTING METHOD AMONG PREGNANT WOMEN IN RURAL INDIA

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**Background:** HIV self-testing offers the potential to increase coverage of essential HIV services. This study aimed to establish concordance of supervised HIV self-testing through inter-rater agreement among pregnant women and rural community health workers (CHWs) in rural India.
**Methods:** A cross-sectional mixed methods study was conducted among 202 consenting pregnant women in a rural Indian hospital for six months. Participants were provided with instructions on how to self-test, and subsequently asked to self-test supervised by community health worker (CHW), using OraQuick® HIV antibody test. Test results were observed and interpreted first by participants in a private room and then by the health worker independently. To determine the ability of women to interpret the test results accurately, participants were provided with three pictorial model test results (positive, negative, and an invalid result). Subsequently, the CHWs recorded both their own as well as participants' interpretations of results. Instruction guides available with each OraQuick® test kit were used to orient the CHWs on the procedures of testing and interpreting results. To orient participants on self-testing, a simplified version of the self-testing protocol with pictorial representation was used. Concordance for self-testing was reported as the measure of agreement of the test result interpretation between a participant and a health

worker, quantified as a percentage agreement and with the Cohen's Kappa (k) inter-rater agreement. All statistical analyses were performed using IBM SPSS Statistics v.22.
**Results:** Overall, 92.6% participants reported that the instructions for the test were easy to understand, 18.7% required the assistance of a supervisor to self-test. Concordance of test result interpretation between community health workers and participants was 98.5% with a Cohen's Kappa (k) value of k=0.566 with p< 0.001 for inter-rater agreement. Two test results were deemed as HIV positive by both participants and CHWs. According to participant's interpretation, 198 tests were HIV negative and two test results were invalid which were in fact negative. One test result was deemed invalid by CHW.
**Conclusions:** High concordance rates of result interpretation with moderate inter-rater agreement between participants and trained healthcare workers indicate potential of feasibility for scaling up HIV supervised self- testing among pregnant women.

## INTEGRATION OF FAMILY PLANNING AND HIV SERVICES

### THPEC261

### FEASIBILITY AND CHALLENGES OF INTEGRATION OF FAMILY PLANNING AND HIV SERVICES AT A RURAL SETTING IN EASTERN UGANDA

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**Background:** Family planning (FP) is one of the four pillars in the reduction of HIV transmission from mother to child. In 2015 however family planning uptake in Uganda was still low with a contraceptive prevalence rate of 30% and a total unmet FP need of 41%. TASO Mbale in collaboration with the Ministry of Health integrated family planning services as part of comprehensive HIV care with the aim of making family planning services more accessible for PLHIV.
**Description:** We identified five frontline staff who were given intensive training on FP for one month and on return trained staff and expert clients. We integrated FP services at all HIV clinic outlet points. Both short and long term FP methods are provided at site. Patients who chose permanent methods are referred and linked to the Mbale Regional Referral hospital. We retrospectively reviewed and analyzed FP data from TASO Mbale information management system for January to December, 2015.
**Lessons learned:** During the period, 1010 female patients received FP services of which 432/1010 (43%) were newly enrolled and 578/1010 (57%) were re-attendants from former years. Most, 756/1010 (75%) were 25 years and above; 110/1010 (11%) were between 20-24 years and 141/1010 (14%) were adolescents aged 10-19 years. The FP methods used were as follows: injectable (DMPA) (78.7%); Implants ( Jadelle and implanon) (12%); oral contraceptives (microgynon) (7%) and 1% had IUDs inserted, 1.3% were referred and linked for BTL. There were no referrals for vasectomy throughout the year. A total of 51 patients (5%) had their implants expire and were removed while two (0.1%) had their IUD removed, one because of pain and the other due to expiry. Thirty one percent (313/1010) were on dual protection. Only 7% ( 23/314) of dual FP users requested for female condoms; (219/314) 93% requested for male condoms.
**Conclusions/Next steps:** Integration of family planning services into HIV Clinics is feasible and highly acceptable to female patients. Male interest and involvement in family planning needs to be encouraged.

### THPEC262

### PROMOTING ACCESS TO SEXUAL REPRODUCTIVE HEALTH AND RIGHTS FOR WOMEN LIVING WITH HIV THROUGH INNOVATIVE SUPPLY SIDE APPROACHES

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**Background:** Most of the existing HIV prevention programmes fail to address the SRH needs of PLHIV. With treatment & care becoming increasingly available, PLHIV live longer & plan for their futures. Providing integrated SRH/HIV information/services through mentor peer-mothers will result in improved decision making process and uptake of services among PLHIV.
**Description:** FPA India implemented a pilot project from May 2013-April 2015 at - Bangalore, Belgaum, South Kanara, Bijapur, Hyderabad and Solapur supported by Japan Trust Fund for HIV and Reproductive Health. The project used a few innovative supply side approaches to supplement and support the national response to eliminate MTCT. Women Living with HIV were engaged as Mother2Mother (M2M) Peer Educators to share experience of motherhood. Couple counselling empowered newly diagnosed with HIV couples on making choices about their pregnancy & safe delivery of the baby. Male involvement increase through Access Cards system. M2M followed up to ensure ART adherence & safe delivery until 18 months after delivery. End line evaluation done to assess the impact using a combination of utilization-focused, mixed-method, participatory evaluation approach.
**Lessons learned:** The findings showed 36,782 women & girls including 440 pregnant women living with HIV received information on SRH/HIV. SRH services were accessed by 83% women & girls. Out of 440 pregnant women living with HIV 74% were put on ART as per the WHO new guidelines. 75 couples opted for safe abortion and 365 continued their pregnancy. 95% pregnant women were followed up by M2M and other support group members to ensure adherence of ART. 297 women had safe delivery and 78% have accepted contraceptives. 65 children completed 18 months and tested HIV negative. Services such as safe abortion, FP which are not provided by the government system was much appreciated. Couple counselling, male involvement and travel/nutritional support empowered women to go through safe motherhood.
**Conclusions/Next steps:** Build partnership and trust among networks. Promote greater awareness of the structural issues affecting the SRH by strengthening communication and counselling skills on FP & SRH issues. Empower communities to understand & address their needs and rights & to raise voice when the rights are violated.

### THPEC263

### PREVALENCE AND DETERMINANTS OF UNPLANNED PREGNANCY IN HIV-INFECTED AND UNINFECTED PREGNANT WOMEN SEEKING ANTENATAL CARE IN CAPE TOWN, SOUTH AFRICA

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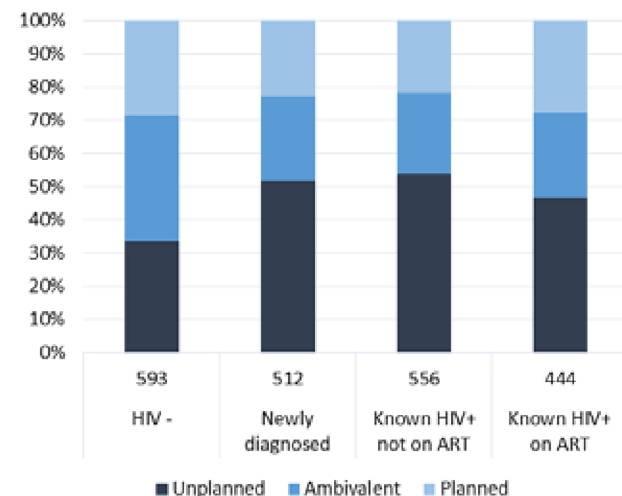
**Background:** Prevention of unplanned pregnancy is a crucial aspect of preventing mother-to-child HIV transmission (PMTCT). However, we have little understanding of how HIV status and antiretroviral therapy (ART) may modify pregnancy planning. There are few data on pregnancy planning in HIV-infected (HIV+) South African women, and no comparative data with HIV-uninfected (HIV-) women.
**Methods:** We conducted a cross-sectional study of 2105 pregnant women (1512 HIV+; 593 HIV-) ages 18-44 making their first antenatal clinic visit at a primary-level health care facility in Gugulethu, Cape Town. All women completed structured questionnaires including the London Measure of Unplanned Pregnancy (LMUP); a 6-item scale that categorizes pregnancies into planned, ambivalent and unplanned. Analyses examined LMUP results across 4 groups of participants: HIV+ established on ART; known HIV+ but not currently on ART; newly diagnosed HIV+; and HIV-.




*[Distribution of pregnancy intentions among HIV-infected and uninfected women]*

Tuesday 19 July
Wednesday 20 July
Thursday 21 July Poster Exhibition
Friday 22 July
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**Results:** Overall, the mean age was 29 years, 43% of women were married/cohabiting and 20% were nulliparous. The LMUP performed well across all groups (Cronbach's α=0.84). Levels of unplanned pregnancy were higher in HIV+ versus HIV- women (50% vs 33%, p<0.001); and highest in women not on ART (Figure 1).
Overall, 69% of women reported contraceptive use in the year before pregnancy; this was strongly associated with unplanned pregnancy (p<0.001). Compared to HIV- women, HIV+ women had significantly higher odds of unplanned pregnancy, after adjusting for age, parity and cohabiting status. The odds were greatest among women newly-diagnosed with HIV and previously diagnosed but not on ART (OR: 1.61; 95% CI: 1.17-2.23 and OR: 2.04; 95% CI: 1.44-2.89, respectively). Increased parity and age <24 years were strongly associated with unplanned pregnancy (OR 3.42; 95% CI: 2.13-5.47 and OR 2.05; 95% CI: 1.34-3.16 respectively).
**Conclusions:** These data indicate high levels of unplanned pregnancy in a high HIV prevalence setting, highlighting missed opportunities for PMTCT through improved family planning services.

## MEN WHO HAVE SEX WITH MEN

### THPED264

#### EMPOWERING KEY POPULATIONS (KPS) TO EFFECTIVELY DEMAND FOR EQUAL HIV/AIDS SERVICES

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**Background:** AGHA in partnership with THETA and MNL with funding from CDC is implementing a Local Capacity Initiative project aimed at building capacity of CSOs working with KPs in Mukono, Kampala and Wakiso to advocate for improved HIV services. In Uganda, HIV prevalence among the general population stands at an average of 7.3% while among SWs is 35-37% and MSM at 13.7% between the age of 18-24.Over 40-50% of the new infections come from KPs (UAC/MOH 2014, Cranes survey 2010).Programs targeting KPs continue to be characterized by limited coverage, poorly linked care, treatment and referral services. The project has increased capacity of 15 CSOs to demand accountability from government on national commitments on KPs; increased capacity of KPs to identify the legal and policy framework that impede equitable access, increased participation and representation of community leaders and KPs living with HIV in the governance structures that influence health services delivery.
**Description:** The project equipped KPs with skills to generate issues on the delivery of HIV/AIDS services using social accountability approaches like the community scorecard in six government hospitals. The scorecard assessed the extent to which government has met its commitment towards achieving zero new infections, discrimination and HIV/AIDS related deaths within the national HIV/AIDS response. The findings showed high stigma and discrimination of KPs by health workers, no peer led services, no commodities like lubricants and condoms, criminative laws and policies.
**Lessons learned:** 10 peers from each KPs category have been trained on ART adherence, home based care, HTC, health rights and advocacy.
3 Joint district planning meetings have been conducted in which issues affecting HIV service delivery for KPs have been prioritized.
Capacities of 50 health workers have been built on dealing with stigma and discrimination.
**Conclusions/Next steps:** Uganda's response has had challenges in the recent past due to limited priority in Prevention, treatment and programming for KPs and yet research shows KPs are the leading avenue for new infections. As a consortium, we continue to contribute to influence the national response through advocacy and community dialogue with duty bearers to enable KPs access HIV services and empower them in voicing out their demands.

### THPED265

#### DISCRETIONARY VENUES: ONLINE HOOK UP CULTURE, HIV VULNERABILITY AND VIOLENCE AMONG SEXUAL AND GENDER MINORITIES IN ABIDJAN, CÔTE D'IVOIRE

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**Background:** Despite the Internet's global importance as a sex-seeking venue for men who have sex with men (MSM), little is known about this topic outside of the US and European contexts. In this mixed methods, ethnographic study, we explore participants' experiences with and attitudes towards online sex-seeking venues with a focus on violence and individual risk-reduction strategies.
**Methods:** In 2015, survey and ethnographic research was conducted with MSM in Abidjan, Côte d'Ivoire recruited on- and offline. In-depth interviews were conducted with 21 of the 105 survey participants. Survey data were analyzed in Stata/SE 14.1 using bivariate logistic regression and interviews were coded in Dedoose.
**Results:** 46% of survey respondents reported finding their partners primarily online and 91% reported ever having found a partner online. Qualitative data revealed that primary motivations for using online venues included discretion and anonymity, ease and accessibility, and making social connections beyond sex. While participants who reported usually finding their partners online were more likely than those who primarily found partners offline to disclose and discuss HIV with online partners (26% vs. 11%, OR 2.67, *all p-values < .10), such risk-reduction did not extend to their practices with partners they met offline. Participants who usually met partners online were more likely to report receptive anal sex with no condom in the past 6 months with their online partners (19% vs. 4%, OR 6.39). Though interview participants perceived online venues as providing a degree of protection against stigma and violence, survey data showed that participants who primarily found their partners online were more likely to report having experienced extortion and/or blackmail with sexual partners (20% vs. 10%, OR 4.93) and stigma or violence because of being gay or bisexual (47% vs. 29%, OR 2.20).
**Conclusions:** These findings are important for current HIV prevention programming in Abidjan and other African cities where use of online sex-seeking venues is widespread among MSM. Further research should be conducted on the online and offline contexts of MSM lives outside of the global North, as their experiences may differ in important ways.

### THPED266

#### DEMOGRAPHIC AND SEXUAL PROFILING OF MEN WHO HAVE SEX WITH MEN IN LAGOS NIGERIA

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**Background:** Men who have Sex with Men (MSM) are known to have an increased risk for HIV infection and are also mainly responsible for heterosexual HIV transmission. An innovative and effective strategy aimed at a reduction in transmission of HIV among this population is needed. However, little is known about the demographic and sexual profiles of this group due to discriminations and current laws in the country (Anti same sex law of January, 2014). The study aimed to profile the demographic and sexual characteristics of MSM in Lagos, Nigeria.
**Methods:** This was a cross sectional study carried out between July to September 2015 in Lagos State, Nigeria. A total of 3501 MSM were drawn from identified hotspots in the twenty local governments in the state using the capture and recapture method. Following informed consent An interviewer administered questionnaire was used to elicit information on the socio demographic and sexual profile of respondents. Epi-Data (v3.1) was used for data entry while SPSS (v20) was used for analysis with relevant descriptive statistics generated.
**Results:** Majority of the respondents (72.4%) were between the ages of 20-29 years and have never been married (77.6%). About 54.6% of the respondents had tertiary education while 44.7% were currently students and 25% were employed. A total of 1851 men (52.9%) had engaged in commercial sex with a man in the last 12 months. Among this population, condom use was reported by 63.7%. Also, about 45.2% of the study population reported having sex with a woman in the last 12 months.
**Conclusions:** The results show the MSM population in the state consists mainly of youths. It also revealed the existence of risky behaviour among the study population. There is the need for youth friendly HIV/AIDS behavioural change interventions aimed at prevention and transmission of HIV not only among the study population but also among their heterosexual partners.

## THPED267

### SYNDEMIC FACTORS ASSOCIATED WITH CONDOM USE AND HIV-POSITIVE SEROSTATUS AMONG YOUNG MEN WHO HAVE SEX WITH MEN IN JAMAICA

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**Background:** Worldwide young gay, bisexual and other men who have sex with men (MSM) experience social inequities that contribute to elevated rates of HIV. Homosexuality is criminalized in Jamaica and there are reported HIV infection rates of 28% among young MSM. Syndemic approaches explore the co-occurrence of psychosocial and health issues, and their interaction with HIV vulnerabilities. We examined syndemic factors associated with condom use and HIV incidence among young MSM in Jamaica.
**Methods:** Cross-sectional survey data were analyzed for young MSM (≤ 35 years) enrolled in a respondent-driven community-based research study in Kingston, Ocho Rios, and Montego Bay, Jamaica. Logistic regression was conducted to identify factors associated with condomless anal sex in the past 3 months and HIV-positive serostatus.
**Results:** Of 556 participants (mean age: 25.5, SD: 5.78; sexual orientation: 67% gay; 30% bisexual; 3% heterosexual/other), 28% reported condomless anal sex in the past 3 months and one-tenth (11.5%) were HIV-positive. Condomless anal sex in the past 3 months was associated with: food insecurity (OR: 1.69, CI: 1.16-2.47); forced sex in adulthood (OR: 2.29, CI: 1.11-4.74); childhood sexual abuse (OR: 2.16, CI: 1.02-4.56); childhood domestic violence exposure (OR: 3.75, CI: 1.62-8.68); alcohol use (OR: 1.42, CI: 1.12-1.82); lower safer sex self-efficacy (OR: 0.77, CI: 0.68-0.88); and lower empowerment scores (OR: 0.86, CI: 0.76-0.98).
Participants who were HIV-positive were older (OR: 1.05, CI: 1.01-1.10) and reported: sexual stigma (OR: 1.07, CI: 1.02-1.13); housing insecurity (OR: 3.32, CI: 1.53-7.21), including living outside (OR: 11.82, CI: 2.59-53.82); food insecurity (OR: 1.68, CI: 1.24-2.26); lower self-rated health (OR: 0.50, CI: 0.35-0.71); lifetime history of STI (OR: 8.63, CI: 3.73-20.00); alcohol use (OR: 1.24, CI: 1.02-1.51); and depression (OR: 1.32, CI: 1.10-1.58).
**Conclusions:** Findings highlight the salience of a syndemics approach to addressing HIV prevention and care with young MSM in Jamaica. Condomless anal sex was associated with social inequities (i.e. poverty, sexual violence) and substance use. HIV-positive young MSM reported increased poverty, stigma, and poorer health outcomes in comparison with HIV-negative MSM. Interventions to increase access to the HIV prevention and care continuum among young Jamaican MSM should address the interplay between poverty, stigma and mental health.

## THPED268

### LESSONS LEARNED OF SETTING UP A COMMUNITY-BASED HIV-RELATED HUMAN RIGHTS MONITORING AND RESPONSE SYSTEM IN UGANDA

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**Background:** In Uganda, discrimination, violence and criminalisation of LGBTI people is mounting. This creates barriers to accessing essential HIV and other health services for men who have sex with men, transgender people at higher risk of HIV. Yet there is growing evidence that we need to address those barriers and uphold the right to health for all if we want to end AIDS.
**Description:** Given this context, LGBTI organisations in Uganda set up REAct (Rights-Evidence-Action), a community-based documentation system that was developed by the International HIV/AIDS Alliance. The REAct system helps monitor and respond to human rights-related barriers in accessing HIV and health services. The information is encrypted and logged in the information management tool, Martus, and is analysed for the following purposes:
• Crisis response to individual emergencies: The system facilitates identifying and prioritising rapid resource mobilisation and assistance to avert or respond to specific individual crisis and/or emergency situations.
• Evidence for advocacy: Implementing Organisations use REAct to compile information from beneficiaries, clients and individuals that produces quantitative and qualitative evidence to substantiate their advocacy.
Between May 2014 and December 2015, Ugandan LGBTI organisations using REAct documented 264 cases of HIV related human rights abuses. Over 65% were responded to through individual emergency responses or referrals to human rights programmes. Most cases related to harassment or intimidation by or with inaction from law enforcement officers (over 70% of cases attended) followed by denial of health services (15%) and termination of employment and house eviction (10%).
**Lessons learned:** - A community-based human rights monitoring system must have full ownership of the community and be flexible to be able respond to its specific needs expressed through full participation.
- Any human rights monitoring system must also help provide individual support to those it collects information from and ensure that implementing organisations have the necessary resources to implement the system.
**Conclusions/Next steps:** REAct as a tool is one that can be adopted by anyone and it posses high levels of security. In Uganda REAct is being extended to other member organisations of SMUG and other countries under the International HIV AIDS Alliance family.

## THPED269

### OPENING PANDORA'S BOX: LESSONS FROM MSM HIV PREVENTION POLICIES AND PROGRAMMATIC EFFORTS IN GHANA

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**Background:** A growing number of national AIDS policies in Africa over the past decade have widened their category of key populations at risk for HIV to include men who have sex with men. These policy changes however are taking place in contexts that criminalize/stigmatize male same-sex acts and have an affect on HIV prevention efforts and their impact.
**Methods:** This paper draws on data from a 12-month qualitative study on Ghana's emerging role as a model country in Africa for HIV prevention efforts among MSM and how these are implemented and experienced by the men. I present findings from participant observations, 43 interviews with policymakers, key informants, HIV service-providers, 'sasoi'/MSM, and group discussions with 18 peer-educators on the government shift to include MSM in the National Strategic Plan, what MSM HIV prevention activities exist and their scope, and challenges/successes/impact of these efforts.
**Results:** The Ghanaian government, through collaborative/strategic work with non-state key-stakeholders consisting of multi-pronged interventions, has made significant progress but with some challenges, in addressing HIV among MSM, a group with 17% HIV-prevalence. Successes include incorporation/implementation of a human rights framework, buy-in of president, involvement of the diverse stakeholders, expansion of prevention programs, and inclusion of sasoi/MSM. Criminalization of 'homosexuality', stigma, and insufficient funding/resources remain key challenges to prevention efforts. MSM and peer educators are content with increased prevention efforts by the government but feel excluded from some areas of work and think programs fall short of addressing distal risk-factors like poverty/anti-gay violence. Moreover, they feel key-stakeholders are more interested in the funding accompanying MSM programs than meaningfully addressing the epidemic among the men. Finally, complex political/sociocultural dynamics shaping and arising from the efforts have produced a backlash against MSM as posing a threat to the public and against lay health-workers for the nature of their work with the men.
**Conclusions:** Ghana has made important progress in addressing HIV among MSM, however, challenges remain. More studies are needed to evaluate prevention efforts for their impact not just in terms of outlined programmatic objectives on HTC, for example, but also on the social/legal context they're carried out in and for their unintended consequences.

## THPED270

### AN INNOVATIVE APPROACH TO ENGAGING MSM LIVING WITH HIV IN HIV CARE CONTINUUM IN MALAYSIA: TREATMENT AND ADHERENCE SUPPORT PROGRAMME BY MSM FOR MSM

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**Background:** While the HIV care continuum posits that early identification and treatment of HIV infection coupled with information and education about antiretroviral treatment (ART) and adherence, emotional management and healthy living with HIV could markedly decrease onward HIV transmission, men who have sex with men (MSM) living with HIV in Malaysia are undoubtedly challenged with stigma and discrimination in addition to prohibitive legal and socio religious environment that negatively impact their access to treatment, care and support services.
**Description:** For the very first time in Malaysia, the Malaysian AIDS Council through its Partner Organisation implemented the Treatment Adherence Peer Support Programme (TAPS) specifically designed and targeted for MSM living with HIV in Malaysia. TAPS is unique in its approach of engaging peer workers who themselves are MSM living with HIV adhering to treatment to provide informal counseling and social support, serve as a role model to help clients adhere to ART, provide practical tips for managing ART and adherence, help clients navigate the health system and facilitate communication with other related service providers.

**Lessons learned:** Since its inception in 2014, TAPS had reached out to a total of 768 MSM in two government hospitals from two different states with high HIV prevalence rate among MSM. Also, a total of 107 training sessions focused at equipping newly diagnosed young MSM with important information to help prepare themselves for treatment was carried out. The ultimate aim of these sessions that benefitted more than 700 newly diagnosed MSM are to ensure treatment adherence and retention among them.
**Conclusions/Next steps:** Exemplary is this approach in addressing poor engagement of MSM living with HIV in treatment, support and care services. However similar effort needs to be replicated widely in Malaysia to further witness a significant change in their engagement in HIV care continuum.

## THPED271

### THE POWER OF PRINCIPLES: THE LONG-TERM EFFECT OF STRONG PERSONAL NORMS ON CONDOM USE AMONG MSM

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**Background:** Principles, or strong personal norms, are one's internalized personal values or "inner convictions" to (not) perform a given behavior. We hypothesized that principles predict condom use over longer periods of time than behavioral intentions do. We investigated the association of baseline principles and intentions to use condoms with casual partners with actual condom use over a 4-year period (January 2011-December 2014) among HIV-negative men having sex with men (MSM) of the Amsterdam Cohort Studies (ACS).
**Methods:** We included men with at least two ACS visits at which condom use with casual partners was reported. Principles and intentions were measured at baseline using 3 items, Cronbach's alpha = 0.91 and 0.73, respectively. Two logistic regression models examined condom use (yes/no). The first for condom use measured at 6 months post-baseline and the second for the last visit. We used bivariate and multivariate models; the latter was corrected for age, educational level, nationality, having a steady partner, and follow-up time (median=3.5 years (IQR=3.2-3.6) between first and last visit.
**Results:** 260 MSM (mean age=39; SD=8.2) were included. Bivariate analyses revealed that men with strong baseline principles (OR=13.4; 95%CI=4.0-44.4) and strong baseline intentions (OR=28.3; 95%CI=7.7-103.9) were significantly more likely to report condom use at their first post-baseline visit than men with weak principles and intentions. At the last visit, the OR decreased to 9.3 (95%CI=2.8-30.7) and 6.6 (95%CI=2.3-18.5) for baseline principles and intentions, respectively. Multivariate analyses revealed that men with strong baseline principles were significantly more likely to use a condom at the last visit (OR=4.8; 95%CI=1.2-19.0); the effect for baseline intentions did not hold in the multivariate model (OR=3.1; 95%CI=0.9-10.7).
**Conclusions:** Having strong principles predicted long-term condom use whereas intentions did not. Our finding suggests that principles regarding condoms use are core cognitions that retain their association with behavior over time, in contrast to strong intentions that may determine behavior over a shorter time frame. In order to develop effective strategies to influence risk behavior, HIV prevention should try to facilitate the formation of strong principles regarding the implementation of effective risk-reduction strategies. Although not an easy task, it may have long-term benefits.

## THPED272

### CONFRONTING VIOLENCE AND DISCRIMINATION AGAINST MEN WHO HAVE SEX WITH MEN (MSM) AND FEMALE SEX WORKERS (FSW) IN MALI IN 2014 AND 2015

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**Background:** While neither homosexuality nor sex work are mentioned specifically by law in Mali, MSM and FSW report widespread stigma, rejection, discrimination, violent attacks and the inability to access justice. Mali has adopted the UNAIDS objective of Zero Discrimination and the 2013-2017 National Strategic Plan against AIDS aims to reduce discrimination and violence against key populations.
**Description:** The non-governmental organization Soutoura piloted a program funded by USAID to document and respond to violence and discrimination against MSM and FSW. Staffs were trained to document cases using a form developed by the National Committee for HIV Prevention for Key Populations. Results for the first two (2) years of implementation, from October, 2013-September 2015 are presented here.
Forty-Seven (72) cases of violence and discrimination were documented (33 against FSW and 46 against MSM). Perpetrators included the general population, particularly groups of youth (41 cases), police (28 cases) and families (13 cases).
Cases of violence against MSM included verbal insults (17), battery (13), arbitrary arrests (8),attempts to sodomize the MSM with foreign objects (5), expulsion from family homes (4), loss of employment (3), intense family stigma (2), expulsion from school (1) and destruction of a business (1). Documented cases of violations against FSW included battery (8), gang rape (10), having to pay bribes to police (13), expulsion from the family (1) and destruction of possessions (1). MSM peer educators reported being insulted and attempts to seize their prevention materials.
In addition to medical and psychosocial support to victims, field staff (physicians and MSM/FSW peer educators) intervened successfully with perpetrators, including reintegrating the MSM expelled from their homes, calming agitated groups of youth, and advocating with a religious leader and a radio personality who then stopped inciting violence.
**Lessons learned:** MSM and FSW in Mali are at high risk of physical and sexual violence and stigma and discrimination, which contributes to their extreme vulnerability. However, interventions by respected community members with perpetrators can be effective to deescalate these situations and promote tolerance.
**Conclusions/Next steps:** HIV prevention programs should include interventions to address key populations' structural/environmental vulnerability to HIV such as violence and discrimination.

## THPED273

### EVALUATING COMPLIANCE OF KEY POPULATIONS (PWID, MSM AND FSW) WITH QUARTERLY HIV COUNSELING AND TESTING (HCT) ACCESSING CARE AT A COMMUNITY HEALTH CENTRE, KADUNA, NIGERIA

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**Background:** Quarterly HCT, as recommended by the World Health Organization (WHO), is important for early detection of HIV and curb of HIV transmission among key populations (KPs) - People Who Inject Drugs, Men who have Sex with Men and Female Sex Workers because of the risky behaviours they engage in which predispose them to HIV infection and other STIs.
This study evaluated compliance of key populations accessing care at a Community Health Centre (CHC) in Kaduna, Nigeria with quarterly HCT.
**Methods:** The data used for the evaluation were obtained from the clinical records of KPs attending the CHC from October 2014 to September 2015. Multivariate analysis was conducted.
**Results:** A total of 1,687 KPs - 233 PWID, 1,141 MSM and 305 FSW accessed HCT at the CHC during period under review. More than two thirds were aged 18-25 years, 78% had secondary school education, 22% were employed and 59% were students. About 17% (24% of MSM, 20% of FSW and 7% of PWID) had HCT **at least twice**; about 9% (10% of MSM, 13% of FSW and 4% of PWID) had HCT **at least three times**; and none of the KPs had HCT **four times** within a one-year period. Overall HIV prevalence among the KPs was 6.4% (PWID - 2%, MSM - 11% and FSW - 16%).
**Conclusions:** This study revealed that compliance of KPs with quarterly HCT was very poor in the Kaduna region of Nigeria. Specific interventions should be designed that will address the health needs and improve compliance of KPs with WHO recommended quarterly HCT in Nigeria in order to reduce the transmission of HIV among key populations and subsequent cross-infection to the general population.

## THPED274

### EVALUATION OF HIV PREVENTION KNOWLEDGE AND HIGH RISK BEHAVIORS AMONGST MSM IN NIGERIA

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**Background:** This study was conducted by the concern Conscience International and International Rectal Microbicide Advocates (Nigeria) to assess knowledge, attitude and behaviors of the MSM community towards HIV prevention issues.

**Methods:** Structured discussion groups incorporating anonymous exit questionnaires were conducted in secure locations in Lagos, Ogun and Ibadan in Nigeria. Analysis of transcribed proceedings located thematic dimensions pertaining to knowledge, attitudes, sexual activities, health care including HIV testing, and social, cultural and religious norms within largely hard-to-reach and secretive communities of MSM
**Results:** About two-thirds of the 55 men who participated, (65%) self-identified as bisexual, 7% as homosexual and 25% as gay; 93% reported sex with a man in the previous 6 months. Of these, 65% also reported sex with women during the same time period. Median number of male and female sex partners was 3 and 1 respectively. The experiences of participants to stigma and discrimination from family and the larger community were diverse, with ethnic, religious and class distinctions strongly structuring sexual behavior. Community networks were hidden, with social activities taking place in non-commercial, private venues. Knowledge of HIV, safer sex practices and related issues was low and misconceptions about HIV were common. Access to HIV testing was seldom available and treatment for those infected with HIV and STIs were inaccessible.
**Conclusions:** The realities with regards to HIV risk for MSM and their male and female partners in Nigeria are critical due to social isolation by culture, religion, family and political will. HIV risk behaviors are high and knowledge of HIV prevention is low despite high levels of education and employment. The implications for public health policy within a nation which is culturally rich and religiously devout are complex, yet these research findings suggest that immediate action is vitally required to mitigate the impacts of HIV and AIDS amongst high risk MSM.

## TRANSGENDER PEOPLE

## THPED275

### SEX WORK AND HIV VULNERABILITY AMONG BRAZILIAN TRANSGENDER WOMEN

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**Background:** Studies of HIV prevalence in transgender women in various countries, including Brazil, have shown that this population is one of the most vulnerable to infection. However, studies that have been conducted in Brazil so far have focused on segments of the community without taking into account the complexity of the epidemics. Therefore, the objective of this study was to assess the HIV status and associated factors, HIV related healthcare access barriers for Brazilian transgender women.
**Methods:** Trans Health Research Project is a hospital and web-based cross-sectional survey that was built with input from the medical and transgender communities to assess the healthcare needs of and access barriers for transgender and gender nonconforming people (TGNP) resident in two Brazilian states: Rio Grande do Sul and São Paulo. Seven hundred and one TGNP answered the survey during two time periods: July-October 2014 and January-March 2015. Of those, 439 met the inclusion criteria for this study. Their average age was 27.5 years (95% CI [26.7, 28.4], ranging from 18 to 61 years.
**Results:** 72.70%(n=245, N=337) reported HIV-testing at least once. Most participants, 47.28%(n=113, N=239), reported last testing in the least 6 months. Regarding serological status, 16.53%(n=40, N=242) reported being HIV-positive, 74.38%(n=180) HIV-negative, 6.20%(n=15) did not know, and 2.89% (n=7) preferred not to say. 106(40.76%, N=260) participants reported history of sex work. Of these, 66.98%(n=71, N=106) said that the reason for doing so was to pay their bills, 37.73%(n=40) because it paid well, and 36.79%(n=39), to pay trans-related expenses. History of sex work was associated with more than one sexual partner, inconsistent condom use and drugs and alcohol use during sex. History of sex work increased HIV prevalence in 5.83 times (95%CI [2.36, 14.42]). Finally, 68.60%(n=225, N=328) participants did not know what post-exposure prophylaxis was, 28.35%(n=93) knew what it was, but never used and 3.5%(n=10) used it.
**Conclusions:** This study points to a combination of factors involved in the high prevalence of HIV among Brazilian transgender women. It also points to the urgent need of a programmatic framework that guarantees TGNP fundamental rights and provides affirmative actions to minimize transgender women vulnerability for HIV infection.

## THPED276

### CONTRADICTORY INFLUENCES OF COMMUNITY NETWORKS AND SEXUAL PARTNERSHIPS ON HIV RISK: RESULTS OF IN-DEPTH INTERVIEWS WITH TRANSGENDER WOMEN OF COLOR (TWOC) IN NEW YORK CITY

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**Background:** HIV prevalence was found to be 19.1% in TW worldwide, 27.7% in the U.S., and in NYC 49.6% for TW of Latin American origin, 48.1% of African descent (compared to 3.5% for white). NYC, a destination for sexual and gender minorities, is home to over 10,000 TW.
**Methods:** We conducted semi-structured, in-depth interviews with TWoC and sexual partners, focused on social and cultural context of risk, in support groups, shelters, and clinics. In a hybrid qualitative approach, field notes were annotated by interviewers, combined in an overall narrative of risk and life experiences, with verbatim transcription of key passages, thematic analysis and cross-case analysis by a TW of African descent, and two white, cisgender men fluent in Spanish.
**Results:** 45 TW and 6 male cisgender partners were interviewed. 96% and 100% respectively were Black and/or Latino; average ages were 33 yrs. and 42yrs.
In the interviews participants described four main themes.
The first was that remaining connected with racial/ethnic communities—lower SES neighborhoods aware of previous identity—caused tension, and provided scarce financial opportunities. Communities ostracize men involved with TW.
The second was related to support networks: TWoC often created “mother/daughter/sister” relationships to deal with tension from family, and public environments. These support networks however often encouraged sex work.
Thirdly, partners reported equal attraction to and sexual relationships with non-TW. Social fallout impacted TW-relationships.
Lastly, sex served multiple purposes: a survival tool for income, housing, food, safety, and medical resources—91% had sex to make money, only 7% formally employed; reinforced female identity and peer confirmation, though stressful and dangerous; reflected a search for intimacy and validation, without condoms.
**Conclusions:** Living in poor neighborhoods—with concomitant low education and high violence rates—TWoC transition faster, and in any way possible to be sexually appealing, thereby mitigating transphobic targeting. Learning how to create lives as women from established/older TW who are sex workers, messages on health and risk contradict those from health professionals. Access to and cultivating truly supportive networks is key, as are interventions that highlight education and job readiness—in safer environments—as a way for TWoC to become self-sufficient individuals.

## THPED277

### FACTORS RELATED TO SUICIDALITY AND MENTAL HEALTH AMONG HIV POSITIVE AND NEGATIVE TRANSGENDER WOMEN IN MEXICO CITY

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**Background:** Transgender women (TW) have been poorly studied in Mexico. Qualitative studies suggest that TW experience throughout their lifetime conditions of vulnerability and marginalization that expose them to higher risk of disease -HIV, substance abuse, poor mental health.
The objective of this study was to estimate the socio-demographic and health factors associated with history of suicidality and ill being in a population-based sample in Mexico City.
**Methods:** This study was part of the first *Health Survey with Seroprevalence in Transgender Women in Mexico City*. The survey was implemented in three strata: detention centers, meeting places and at a free HIV care clinic in Mexico City. After signing informed consent, they completed a questionnaire with socio-demographic questions, substance misuse, mental health status, complications from sex generic transformations, and barriers related to health care access. Suicidality history was measured with WHO’s international interview, CIDI 2. Logistic regressions were use to estimate factors associated with suicidal thoughts and attempts.

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**Results:** The total sample was 585 TW. Mean age was 34.4 years old, only 36.9% had completed high school or higher education and 30.8% were sex workers. Almost 37.9% had ever had serious suicidal thoughts and 20.3% suicidal attempts and 26% had minor, moderate or server ill being. We found higher possibilities of experiencing suicidal ideation and attempts and ill being among those who had ever lived in the street. Consumption of legal drugs was associated with a higher possibility of suicidal ideation and attempts and a lower possibility among those who reported having HIV. Stigma and discrimination was associated with higher possibilities of suicidal ideation and ill being.
**Conclusions:** TW have, by far, a higher prevalence of suicidality than the general Mexican population (2.8%). These findings suggest that poor social support and misuse of substances are associated with suicidality. Mental health care systems should be adapted and available to this population to help to build up HIV prevention strategies.

## THPED278

### LAUNCH OF THE JOURNAL OF THE INTERNATIONAL AIDS SOCIETY SPECIAL ISSUE ON TRANSGENDER HEALTH AND HIV: NEW DATA, NEW OPPORTUNITIES

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**Background:** Transgender (trans) people, particularly trans women who have sex with men, face a disproportionate burden of HIV. Yet, they are severely underserved in the global HIV response. The WHO 2014 *Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care for Key Populations* describe essential elements of HIV programming for trans people. However, these recommendations rely on research among non-transgender MSM. In collaboration with the Journal of the International AIDS Society (JIAS), leaders in transgender health and human rights sought to expand the evidence base specific to HIV and trans people to better enable funders, policymakers, and implementers to develop HIV policies and programs based on the most current trans-specific knowledge.
**Description:** An editorial team invited data-driven abstract submissions on: HIV clinical and prevention issues; epidemiologic and behavioral data; research and practice addressing social and structural issues; evaluations of interventions to improve engagement in the HIV continuum of care; and policy and programmatic case studies. Submissions by trans authors were strongly encouraged. More than 80 abstracts were received. Based on quality, regional representation, and trans authorship, editors selected15 abstracts for full manuscript submission. Thirteen manuscripts were submitted for peer review. These manuscripts represent research in West Africa, East and South Asia, Latin America, and the Middle East. Data on trans MSM as well as trans youth are included. Topics include the impact of stigma on healthcare seeking and service access, human rights and health implications, community-led approaches to reaching trans populations, and new tools for trans program implementation, among others.
**Lessons learned:** The volume and geographic diversity of abstracts indicate significant interest in trans health and HIV around the world. Trans people are engaged in conducting and presenting research as well as leading the HIV response in their communities. Trans women continue to face stigma, extreme constraints on livelihood choices, and diminished agency that impede their engagement in HIV prevention, care, and treatment. However, where opportunities exist, successful programs have been implemented.
**Conclusions/Next steps:** The JIAS special issue on transgender health and HIV brings global visibility to new trans-specific epidemiological, behavioral, and programmatic evidence from around the world.

## THPED279

### *BLUEPRINT FOR THE PROVISION OF CARE FOR TRANS PEOPLE AND TRANS COMMUNITIES IN ASIA AND THE PACIFIC* - A CONTEXTUAL MAP FOR THE REGIONAL HIV AND HEALTH RESPONSE

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**Background:** Trans women in Asia and the Pacific are disproportionately affected by HIV. Little data is available on HIV among trans men and other gender non-conforming people. There are insufficient programmes and services targeted to meet trans-specific needs. Regionally, legal gender recognition is available in few countries with limited implementation. Violence is a daily reality. A consortium of stakeholders collaborated between October 2014 and September 2015 to address this gap and develoed the *Blueprint for the Provision of Care for Trans People and Trans Communities in Asia and the Pacific.* This is a contextual map demonstrating where to strengthen policy-related, clinical and public health responses for trans people.
**Description:** The consortium included Asia Pacific Transgender Network, the United Nations Development Programme, and the USAID-funded Health Policy Project. Regional consultations were held in Nepal and Thailand with trans community leaders, and included Pacific representation. Sixty-six individuals and organisations submitted feedback, including an expert medical review from providers of trans health in the region. The content encompasses human rights, comprehensive HIV and health care, working with gender-diverse youth and children and a guide on hormone administration, monitoring and use.
**Lessons learned:** The *Blueprint* fills knowledge gaps and can promote dialogue between trans people, health professionals, governments, and others to address HIV, health inequality, violence, and legal gender recognition. Diverse, varied trans identities exist in Asia and the Pacific and required specific case studies, terminology and considerations. Participants and reviewers identified overarching policy recommendations, which include ensuring participation of trans people in research, advocacy and policy; improving access to and quality of health services and public health; ending violence against trans people; passing protective laws for trans people and promoting legal gender recognition. The *Blueprint* has been translated into Chinese and Bahasa Indonesia and informs the new AIDS strategy in China and social protection policies and programming in Indonesia.
**Conclusions/Next steps:** The *Blueprint* is a tool for advocacy, strategic planning, training and programme design. Governments, donors and programme planners can use the *Blueprint* to guide the trans health and HIV response in Asia and the Pacific. Regional roll-outs are planned including policy briefs, provider training, and coordinated dialogues.

## THPED280

### PREVALENCE OF CONDOMLESS RECEPTIVE ANAL INTERCOURSE WITH REGULAR AND NON-REGULAR NON-COMMERCIAL MALE SEX PARTNERS AMONG TRANSGENDER WOMEN SEX WORKERS IN SHENYANG, CHINA

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**Background:** Transgender women sex workers (TSW) are at high risk of HIV/STD transmission. Many TSW were having condomless sex with non-commercial male sex partners. A sizeable population of TG women in China engaged in transactional sex serving men in feminine dressing. This study was to investigate the prevalence and associated factors of comdomless receptive anal intercourse (CRAI) with regular male sex partners (RP) and non-regular male sex partners (NRP) among TSW in Shenyang, China.
**Methods:** The inclusion criteria were:
1) self-reported gender identity as a transgender or transsexual woman (pre- or postoperative),
2) aged ≥18 years old,
3) having had anal intercourse with at least one male client in the last three months and;
4) feminine dressing during transactional sex with men.

220 participants were recruited with the help of an NGO. Appointments were made for an anonymous face-to-face interview conducted by trained NGO staff in settings with privacy ensured.

**Results:** Among all participants, prevalence of self-reported or tested being HIV positive was 25.9%. The prevalence of CRAI with RP and NRP was 25.0% and 23.8% in the last month, respectively. Such prevalence did not differ by their HIV sero-status. Adjusted for significant background variables, having CRAI with male clients in the last month, scored higher in UCLA Loneliness Scale and Self-stigma Scale, and poorer mental health status (depressive symptoms and anxiety symptoms measured by CESD-20 Scale and GAD-7 scale, respectively) were associated with higher likelihood of CRAI with RP and with NRP, while perceived self-esteem was negatively associated with CRAI with RP and with NRP. Perceived social support was associated with CRAI with RP but not CRAI with NRP.

**Conclusions:** Prevalence of CRAI with non-commercial male sex partners was high and did not differ by HIV sero-status among TSW in China. They may form a bridge population transmitting HIV/STD from high risk population (their male clients) to relative low risk population (their non-commercial male partners). Interventions are warranted but lacking. Factors associated with CRAI with RP and with NRP were similar. It is important to reduce psychological problems such as depression/anxiety and to improve self-esteem.

## THPED281

### THE FORCED STERILISATION OF TRANSGENDER PEOPLE IN SINGAPORE: A RESEARCH EXPLORING GENDER IDENTITIES OF TRANSGENDER AND GENDER NON-CONFORMING INDIVIDUALS IN RELATION TO GENDER RECOGNITION LAWS IN SINGAPORE

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**Background:** Singapore's current gender recognition law allows transgender people to change the sex marker (from M to F, or F to M) on their identification cards, only on the condition of full removal of reproductive organs. While there are some who are relatively satisfied, there are many who feel frustrated as a full sex reassignment surgery may not be desired. The study focused on intersectionalities concerning non-operative transgender people's choices specific to Singapore's societal, religious and familial contexts - and sought to fill a lacuna in the current research landscape, where emphasis on transphobia's root cause is lacking: the lack of legal gender recognition fuels the lack of understanding and diversity appreciation. The study also focused on consequential issues faced in employment, healthcare and housing opportunities.

**Methods:** An online survey was conducted between May and December in 2015. Follow up focus group discussions were also conducted with 20 out of 249 of the respondents. The survey was targeted at transgender and gender non-conforming individuals who are at various stages of transition.

**Results:** The study found that there are four main barriers for transgender individuals to undergo sex reassignment surgery: financial concerns, concerns from people around transgender individuals, physical and emotional fears related to surgery, and religion. The study also found that found that 65% of transgender people would like to be able to change the sex marker on their identification cards to match their gender identities. Out of this 65%, 85% of the respondents are pre-operative or non-operative individuals. The other 35% of the respondents would wish to have either "third gender", "X", their sex assigned at birth, or to have the sex category removed completely from their identification cards.

**Conclusions:** The inability to define for oneself how one is presented in the public sphere is a significant cause for the marginalization and discrimination of the transgender community. While Singapore remains progressive in recognizing post-operative transgender individuals, it is important to expand that recognition to people who have not or who do not wish to undergo surgery. Doing so will enable the community to be recognized as part of society.

## THPED282

### "THIRD GENDER" LEGAL RECOGNITION BUT NO ACCEPTANCE: A JOURNEY WITH FULL OF OBSTACLES BEING AS TRANSGENDER WOMAN IN PAKISTAN

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**Background:** Transgender community in Pakistan has faced multiple levels of legal, institutional and societal discrimination, although they have got legal identity cards by the ruling of Supreme Court back in 2010, but rights are not being translated into laws. To identify the major gaps in laws and current status the research was designed by Naz Male Health Alliance and 28 FGDs were organized in Pakistan.

**Methods:** In this National level of qualitative research a total number of 28 FGDs, 14 In depth interviews & 10 key informant interviews were conducted in 14 major cities of Pakistan, the literature was thoroughly reviewed before initiating the research and it was part of the study design to recommend a policy brief, The study took almost 6 months before the final report was published and 10 case studies were also the outcome of this research, tools were developed by psychologist for FGDs, IDIs & KIIs.

**Results:** This study revealed that 35% TGs are illiterate and 42% does dancing for their income. Whereas 15% are involved in sex work and 12% are into begging. The legal recognition has failed to restore the respect in the society and it is a barrier in performing Hajj, the sexual and physical violence is still the same and almost 40% of TGs suffer from rape cases. Head shaving and beaten up during functions are also very common 80% never seek any kind of help and the HIV prevalence is almost 7%.

**Conclusions:** This research has identified crucial areas which need immediate attention of state and civil society organization to ensure the provision of basic human rights for TG women in Pakistan, There is a need to develop a law to ensure social & economic inclusion along with mechanisms for meaningful recognition with rights. The laws & policies for sexual and physical assault are not in place and there is ambiguity in the definition by the ID card issuing organization, there is a need for advocacy for respect & recognition, political visibility, legal support acceptance and positive role of media. The access to health care and justice also needs to be supportive by sensitization.

## THPED283

### THE IMPACT OF THE PROGRAM "TRANSCIDADANIA" IN THE SOCIAL INCLUSION OF TRANSGENDER PEOPLE IN THE CITY OF SÃO PAULO

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**Background:** The Program implemented in the city of São Paulo aims to promote human rights and citizenship and provide conditions and recovery trajectories of life opportunities for transvestites and transsexuals in socially vulnerable. The program has as a structural dimension to supply conditions for financial autonomy, through conditional cash transfers to the implementation of activities related to the completion of basic education, preparation for the world of work and vocational training, civic education. The sum of these actions is an institutional improvement exercise, with regard to the preparation of public services and equipment for qualified and humanized care.

**Description:** This project is proposed to strengthen job placement activities, social reintegration and recovery of citizenship for LGBTT people in vulnerable situations, served by CADS- Coordination of Sexual Diversity. Partnerships for its execution involving the Municipal Bureau of Human Rights and Citizenship - SMDHC and Municipal Secretary of Development, Labor and Entrepreneurship - SDTE. The program offered a monthly assistance amounting to R $ 827.40 (eight hundred and twenty-seven reais and forty cents) to a Daily schedule of six hours during the period from 10/21/2015 to 12/20/2015.

**Lessons learned:** Of the 100 participants in the first edition of the program, only 10% have left the course, number below the dropout meda youth and adults in Brazil, which is 36%, according to IBGE - Brazilian Institute of Geography and Statistics. The significant and positive number in relation to joining the program "Transcidadania" made the Secretariat for Human Rights, responsible for project management, expand the same for a new edition, comprising 150 participants, 50% more participants in the previous edition.

**Conclusions/Next steps:** The program "Transcidadania" is innovative and inclusive as it subsidizes and empowers transgender people in education and employment, generating social inclusion and providing a new future for the participants, since approximately 43% of participants live in hostels and were house expelled. It is also worth noting that 63% of participants are black and brown, aged between 31 and 40 years. Faced with such evidence it is concluded that the program needs to be expanded and offered in all the Brazilian territory.

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## THPED284

### VULNERABILITIES, HUMAN RIGHTS AND HEALTH ISSUES AMONG TRANSGENDER PERSONS: A QUALITATIVE APPROACH WITH IN-DEPTH INTERVIEWS AND WORKSHOPS IN SÃO PAULO, BRAZIL

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**Background:** The transgender population is one of the most vulnerable minorities globally. In Brazil, they are likely to be discriminated against and have less access to health and social care. Despite the existence of some rights and policies, their implementation is not warranted. The objective of this study, conducted in the State of Sao Paulo, was to investigate vulnerabilities that prevent or limit the access of transgender persons to services and rights.
**Methods:** The study used both quantitative and qualitative methods. Based on our survey sample (n=673), we selected 44 people among those who had agreed to be contacted to participate in the qualitative phase (28 of them for individual, in-depth semi-structured interviews and 16 to join the workshops). During the interviews, we deepened issues previously explored in our survey, such as sexual health, discrimination experiences and transitioning. For the workshops, we used group dynamics and memory exercises in order to identify and reflect on the most recurrent violations of rights among transgenders.
**Results:** Both during interviews and workshops, conducted between June and December of 2015, narratives involving situations of prejudice and discrimination (physical, verbal, psychological and/or extortion) were repeatedly reported and were present in almost all statements, albeit significant variations concerning their subjective perception. In both, but especially during the interviews, complaints and demands regarding health services and access to body changes (hormones and reassignment surgeries) were one of the main issues. During the workshops, the lack of job opportunities and the use of ID documents and public restrooms were reported as particularly problematic, illustrated by situations involving participants and their transgender acquaintances.
**Conclusions:** These results confirm difficulties in the access to health care, or even the lack of health services to assist specific needs of transgender persons. This situation is worsened by the recurrent discrimination this population is subjected to. It is well established that situations like these generate poor health outcomes and increase risk for HIV acquisition, although many other concerns appear to be at least as important for participants. A better understanding of these issues can help constructing public policies towards transgender people and minimizing the violation of their rights.

## THPED285

### HIV TESTING, INCIDENCE, AND SEX WORK INVOLVEMENT AMONG TRANSGENDER WOMEN IN JAMAICA

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**Background:** Globally stigma and discrimination are social drivers of HIV among transgender women. Transgender women are overrepresented in the Caribbean's HIV epidemic. Yet little is known regarding transgender women's HIV prevention and care needs in Jamaica—where there are reports of pervasive transgender stigma. We explored HIV testing, HIV incidence, and sex work involvement among transgender women in Jamaica.
**Methods:** Cross-sectional survey data were analyzed for transgender women enrolled in a respondent-driven community-based research study in Kingston, Ocho Rios, and Montego Bay, Jamaica. Multivariable logistic regression was conducted to identify factors associated with: ever having received an HIV test; HIV-positive serostatus; and sex work involvement in the past year.
**Results:** Among 150 transgender women (mean age: 24.35 [SD: 13.67]; median monthly income: $124 USD [range: 0-$2489]; residence: 64% Kingston, 22% Ocho Rios, 7% Spanish Town, 2% Montego Bay, 5% elsewhere), one-fifth (20%) reported full-time employment. Half (51%) reported sex work in the past year. Three-quarters (74%) had received a HIV test; of these, 17% were HIV positive. In multivariable analyses, HIV testing was associated with: perceived HIV risk (AOR: 2.03, CI: 1.23-3.35), childhood sexual abuse [CSA] (AOR: 3.13, CI: 2.28-8.30), lower HIV-related stigma (AOR: 0.96, CI: 0.93-0.99), and not getting drunk/high during sex (AOR: 0.46, CI: 0.24-0.90). Sex workers reported higher homelessness (AOR: 18.84, CI: 4.92, 72.13), unemployment (AOR: 6.24, CI: 2.42-16.13), forced sex (AOR: 2.76, CI: 1.36-5.58), depression (AOR: 1.55, CI: 1.24-1.93), perceived HIV risk (AOR: 1.50, CI: 1.07-2.11), and transgender stigma (AOR: 1.25, CI: 1.11-1.40). HIV-positive participants reported higher interpersonal violence (AOR: 5.88, CI: 2.19-15.74), homelessness (AOR: 5.06, CI: 1.14-22.49), unemployment (AOR: 4.40, CI: 1.11-17.52), forced sex (AOR: 3.37, CI: 1.31-8.69), CSA (AOR: 2.81, CI: 1.12-7.02), transgender stigma (AOR: 1.28, CI: 1.09-1.52), and lower self-rated health (AOR: 0.51, CI: 0.29-0.89).
**Conclusions:** Findings reveal HIV rates of 17% among transgender women in Jamaica, and half of participants reported sex work engagement. Sex workers and HIV-positive participants were more likely to experience homelessness, unemployment, forced sex, and transgender stigma. In the context of social inequities, HIV prevention and care continuum interventions for transgender women in Jamaica must address stigma, violence, mental health, and survival needs.

## THPED286

### HEALTH AND HUMAN RIGHTS VULNERABILITIES OF LGBT PEOPLE IN HUMANITARIAN EMERGENCIES

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**Background:** While humanitarian systems have slowly become more fine-tuned to respond to the needs of marginalized populations, lesbian, gay, bisexual, and transgender people (as well as other sexual and gender minorities) continue to fall through the cracks at a policy level and in responses on the ground. Vulnerabilities related to lack of documentation, multiple checks on documents that don't match appearances (in the case of transgender people), or assumed family structures (in the case of same-sex couple-headed households), scapegoating, disrupted access to HIV and other health services, and the erosion of informal networks of care when crisis strikes all exacerbate the marginalization that LGBT people already face in daily life.
**Methods:** The European refugee crisis presents unique challenges in this vein. LGBT people from the Middle East and Africa have been claiming asylum in European countries for decades, but the influx of migrants to Europe and policy decisions by the EU and member states have taxed protection systems. What is more, political declarations about accepting LGBT asylum claims have been perceived as preferential treatment and caused (in some cases) violent backlash. One study found that half of LGBT refugees seeking asylum in Europe have engaged in commercial sex; yet the needs of those engaged in sex work have been largely overlooked in the humanitarian response. In Southern Africa, armed conflict and humanitarian crises have compounded challenges faced by the region already shouldering the world's heaviest HIV burden.
**Results:** While conflict-related sexual violence against women remains a significant problem, widespread sexual violence against men has barely been acknowledged by states, and the ways in which LGBT people experience conflict are widely overlooked.
**Conclusions:** Expanded understandings of gender and sexuality are necessary to a comprehensive response. The relationships between violence, migration, social marginalization and access to HIV services are complex; this presentation sheds light on what research to date can tell us about policy gaps, and suggests changes that should be urgently implemented to improve the health and human rights response for all people.

# FEMALE, MALE AND TRANSGENDER SEX WORKERS

## THPED287

### "NOTHING FOR US WITHOUT US": THE IMPACT OF COMMUNITY PEER EDUCATORS' (PES) INVOLVEMENT TOWARDS ACHIEVING THE 90-90-90 TARGETS; SEX WORKERS OUTREACH PROGRAM (SWOP), NAIROBI, KENYA

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**Background:** SWOP is the outreach arm for the University of Manitoba program in Nairobi and draws funding from CDC-PEPFAR. SWOP offers behavioral, structural and biomedical services with the aim of scaling up HIV prevention services among sex workers. A peer led hotspot based model in demand creation and mobilization as well as provision of safe spaces at the clinic is the hallmark of SWOP. A 2013 review of SWOP data showed that 75% of enrolments at the clinics were through the PEs and those clients had more knowledge on HIV transmission and prevention as compared to 25% who had not met a PE. Based on these results, a decision to involve PEs in all SWOP activities was made.
**Methods:** Groups of selected PEs were further trained as
(1) paralegals to sensitize stakeholders (SWs, law enforcers, bar owners) on sex worker rights,
(2) community Positive Health and Dignity Prevention champions(cPHDP) among those HIV positive to support disclosure and linkage to care,
(3) Sister to sister peer leaders to champion HIV/STI prevention and condom negotiation skills and
(4) Community advisory board (CAB) comprising of SWs who form a link between the community and the program.
Other PEs were trained as Outreach workers who are in charge of a number of PEs manning a cluster of hotspots. A comparative study was conducted comparing data before the community engagement 2012-2013 and after 2014-2015. The variables compared were retention, number of violence cases reported and addressed, and number of individuals receiving evidence based interventions( sister to sister, cPHDP).
**Results:** Enhanced community engagement through the specially trained PEs has improved linkage to care to 85%, Retention to 84% from 40% and, number of violence cases reported and addressed increased by 80%. Individuals receiving evidence based interventions increased by 54%. Repeat attendance for bio-medical services clinics also increased by 54%.
**Conclusions:** Involving the PEs in the program enhances activities which are key in achieving the 90-90-90 targets and create room for growth.

## THPED288

### ASSESSING THE SEXUAL AND REPRODUCTIVE HEALTH NEEDS OF FEMALE SEX WORKERS: HOW DOES U.S. FOREIGN ASSISTANCE MEASURE UP?

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**Background:** The U.S. government is a major donor to global health and supports a range of programming for key populations in the HIV epidemic, including female sex workers (FSWs). In recent years, emerging research and instruments such as the Sex Worker Implementation Tool (SWIT) have increased knowledge about evidence-based best practices to effectively address HIV in sex workers, and promote their broader sexual and reproductive health (SRH) needs. We evaluated the consistency of U.S. foreign assistance with best practices in order to propose recommendations to better promote sex workers' health and rights.
**Methods:** We reviewed the literature on the SRH needs of FSWs, including those related to HIV/AIDS, family planning, sexual health, maternal health and gender-based violence. We then conducted semi-structured interviews with key informants to assess how aspects of U.S. foreign assistance promote or impede the sexual and reproductive health and rights of FSWs based on best practices. Interviewees included U.S. officials, country-based implementers, researchers, sex workers and sex worker advocates, providers, and representatives from multilateral organizations.
**Results:** FSWs face a disproportionate burden of HIV but also experience significant unmet SRH needs related to safe pregnancy, contraception, and gender-based violence. Accessible, respectful, quality healthcare services remain the exception rather than the norm. Interviewees highlighted the challenges of addressing broader SRH needs within the HIV/AIDS agenda—funding for research among sex workers reflects the same siloing. Interviewees characterized the U.S. anti-prostitution loyalty oath (APLO) as a clear departure from best practice which interferes with the HIV/AIDS response. Many also identified criminalization more broadly as a continuing driver of HIV and poor SRH outcomes among sex workers. The need for approaches that are tailored to address sex workers' unique SRH needs was also emphasized, along with an inclusionary, rights-based, community-empowerment paradigm.
**Conclusions:** U.S. policies such as the APLO undermine the effectiveness of the HIV/AIDS response and are inconsistent with human rights principles. However, the U.S. is also well-positioned as both a funder of research and major international donor to promote a more inclusive HIV/AIDS agenda that addresses sex workers' broader SRH needs and priorities. Specific policy change recommendations are addressed.

## THPED289

### THE CONDOM QUANDARY: HOW LAW ENFORCEMENT ACTIONS IMPACT HIV PREVENTION STRATEGIES AMONG SEX WORKERS

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**Background:** Sex work is illegal in China. It has been long reported that police use the possession of condoms as evidence of sex work to harass and punish sex workers. But the public debate on the impact of law enforcement on the HIV response is limited by the lack of substantiated data on the issue.
**Methods:** In 2015, Asia Catalyst worked with four sex worker organizations to conduct a research to understand how law enforcement practices affect sex workers' ability to access and carry condoms. The research conducted in three major Chinese cities, combined 517 questionnaire and 74 in-depth interviews with male, female and transgender sex workers, and 18 interviews with key informants including CBOs, staff of local health authorities, managers of sex work venues, and police officers.
**Results:** Among 517 respondents, 51.3% (265 /517) said they had been interrogated by police since engaging in sex work, and 42.9% (222/ 517) responded that they had been interrogated in the past year. Among the respondents, 35.4% (183/517), including female (133), male (23) and transgender (37) sex workers said they had experienced searches for condoms by the police. We compared condom use among respondents who had been interrogated by the police in the past year with those who had no such experience, and found that respondents who had experienced law enforcement action used condoms less consistently than those who had not experienced it: the rate of consistent condoms use among respondents who experienced interrogation is 47.7%, while it is 67.8% for respondents who have not had such an experience. Similar results came out for possession of condoms: 47.7% (106/222) of respondents who had been interrogated always carried condoms, a rate clearly lower than for those who always carried condoms but had not been interrogated (75.9%, 224/295). For both consistent condoms use and possession of condoms, the discrepancy was most evident among women.
**Conclusions:** We found that law enforcement practices have a negative impact on sex workers' possess and use of condoms. Police reform and community-police cooperation is crucial to HIV prevention among criminalized groups, and should be supported as a central part of HIV programming.

## THPED290

### PERCEPTIONS OF SEXUAL AND GENDER-BASED VIOLENCE BY FEMALE SEX WORKERS AND MALE CLIENTS IN MOMBASA, KENYA

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**Background:** Sexual and gender-based violence (SGBV) is common between female sex workers (FSWs) and their male clients (MCs). SGBV is associated with increased HIV risk, yet incidents often go unreported due to gender and economic power imbalances that characterize commercial sex. We examined the manifestations of SGBV from the perspectives of both FSWs and MCs to better understand the contexts in which SGBV occurs.
**Methods:** We conducted in-depth interviews with 25 FSWs and 25 MCs recruited from 18 bars/nightclubs in Mombasa. Interviews were audio-recorded, transcribed, and translated from Kiswahili to English. Transcripts were analyzed thematically using Dedoose.

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**Results:** Most FSWs had experienced either verbal or physical manifestations of SGBV perpetrated by MCs; only six reported no SGBV incidents. The two most common forms of violence that FSWs reported were being beaten up by MCs or forced to engage in unprotected vaginal sex; one FSW had been raped anally. FSWs also encountered verbal abuse, which frequently occurred when MCs refused to pay for sexual services. Most MCs, in turn, reported that they had resorted to violence after FSWs stole their money or phones, tried to drug them or threatened to blackmail them if there was disagreement over payment. FSWs reported that it was easy for MCs to threaten, harm or refuse to pay them if sex occurred at MCs' homes. Guesthouses were therefore considered safe places because security personnel could intervene when conflicts arose. Few FSWs and MCs reported SGBV to police for fear of being ill-treated and possibly arrested. MCs also expressed fear of being blackmailed by FSWs or the police.
**Conclusions:** FSWs need to be better protected against SGBV and MCs need to be educated against resorting to physical violence with FSWs. FSWs could benefit from skills-based peer education about how to mobilize SGBV avoidance and management strategies. Police should be sensitized on handling reported SGBV from FSWs and MCs. In the long-run, strategies are needed to tackle male privileged power and gender norms that condone male violence; legalization of sex work might encourage FSWs and MCs to report incidents to the police.

## THPED291

### INCREASING ACCESS TO HIV PREVENTION SERVICES FOR FEMALE SEX WORKERS THROUGH MOONLIGHT OUTREACHES IN KIRINYAGA COUNTY, KENYA

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**Background:** Female sex workers (FSWs) often experience barriers in accessing health services. They also suffer additional barriers to access health services due to stigma; discrimination. Kirinyaga is one of the Counties in Kenya with 12 sub counties with an estimate of 4,000 FSWs. The adult HIV prevalence is 3.3% (NASCOP 2013). The program has employed 10 peer educators (PEs) to reach out to the estimated FSWs with HIV programs and services. The program has also established one drop in service centre which acts as a safe space for FSWs. In 2014, The Kenyan national guidelines for key populations which includes FSWs was revised and it recommended to use peer educators (PEs) in delivering routine HIV combination prevention interventions through planned community outreaches.
**Description:** During micro planning exercise hotspot listing was done which gave size estimates per hotspot. Hotspots are distinct places where FSWs solicit their clients. In order to improve access to HIV services, the program conducted routinely 20 moonlight clinics in a month in hotspots so as to increase the access of HIV services to FSWs who solicit clients in those hotspots. Services that were offered through moonlight clinics included HTC, screening and treatment of sexually transmitted infections, condom and lubricant distribution, health education, linkage to HIV care for those who tested HIV positive.
**Lessons learned:** The program quarterly uptake of contacts and HIV services have increased from Sept, 2014 to Sept 2015 with contacts increasing from 33% to 95% during the above period. HIV testing and counselling increased significantly from 15% to 35%, while STI screening increased from 52% to 95% with the STI positivity rate decreasing significantly from 10% - 1% during the same reporting period respectively.
**Conclusions/Next steps:** Structured outreaches with peer educators' involvement and improving access to HIV services through routine moonlights, increases services uptake among female sex workers. The program now plans to recruit more peer educators at the rate of one Peer educator to 60 FSWs to ensure that all the female sex workers are reached and ensure that a high number of FSWs are able to access HIV services.

## THPED292

### DEVELOPING COLLECTIVE LEADERSHIP IN HIV RESPONSE: AN INNOVATIVE APPROACH TO COMMUNITY-LED TRAINING ON SEX WORK, HIV AND HUMAN RIGHTS AMONG SEX WORKERS IN EUROPE

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**Background:** This presentation documents and reflects on community-led capacity building programme on 'Sex Work, HIV and Human Rights' developed by ICRSE. This programme was initiated in 2014 in order to address health needs of sex workers in Europe and to build sex workers' capacity to engage in the HIV response at the community, national and regional level.
**Description:** This innovative and multifaceted project consisted of a series of participatory trainings organised by ICRSE with the cooperation of sex worker collectives in Europe. A five-day regional workshop facilitated awareness-raising and knowledge-building efforts amongst sex workers and supported community engagement in advocacy for sex workers' health rights. Subsequently, leaders of 5 local sex worker organisations were supported in sharing knowledge from the training by conducting context-specific national workshops for their communities. These local workshops were accompanied by the development of the sex worker-only e-learning space through which particularly isolated sex workers could gain knowledge and interact with their peers from across Europe. Eventually, ICRSE published community training manual: a tool for organising and leading community trainings on issues related to sex workers' vulnerability to HIV and human rights.
**Lessons learned:** The community-led character of the workshops facilitated knowledge and experience sharing among the participants and allowed different communities of sex workers to openly voice their health concerns. In several countries, ICRSE workshops encouraged sex workers to advocate for their health rights despite initial fear of discrimination from health professionals. In others, trainings were successful in promoting community empowerment as a key component of HIV programming and an effective way to address structural factors increasing sex workers' vulnerability to HIV. Economic and social exclusion also constituted a serious barrier to sex workers' involvement in the programme, e.g. the loss of income while attending the workshops should to be taken seriously as a barrier for the most precarious sex workers.
**Conclusions/Next steps:** Community empowerment has been recognised by the UNAIDS and WHO as indispensable for the development of well-informed and effective HIV prevention programming. ICRSE training programme served as a tool to support community mobilisation in the region and facilitated sex workers' involvement and collective leadership in response to HIV/AIDS.

## THPED293

### ARE THE LEGAL AND POLICY CONTEXTS IN MALAWI FAVOURABLE TO EQUITABLE ACCESS TO TREATMENT, CARE AND SUPPORT SERVICES FOR FEMALE SEX WORKERS?

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**Background:** The primary mode of HIV transmission in Malawi is unprotected heterosexual sex. Female sex workers are particularly vulnerable and this population tends to have a higher prevalence of HIV infection (70%) than the general population (10.6%) because they engage in behaviours that put them at a higher risk of becoming infected. The National HIV Prevention Strategy and the National HIV and AIDS Strategic Plan (2011-2016) were prepared to guide the implementation of HIV prevention interventions. But are these policies and strategies inclusive and favourable for female sex workers?
**Description:** From 2012 to 2015 Badilika Foundation has implemented a PMTCT project with funds from ViiV Healthcare aimed at reducing new HIV infections among FSWs and their clients and preventing unintended pregnancies with a focus on improving access to modern contraceptive methods. The project looked into promoting equitable access to quality HIV prevention, testing, treatment, care and support for FSWs from a human rights and public health based approach. Major activities included training peer educators on their role in project implementation; educating FSWs on safe sex practices and family planning, behavioural change communication, strengthening community networks, facilitating referrals, capacity development of rights holders and duty bearers on human rights of FSWs, and conducting mobile HTC clinics at hot spots.
**Lessons learned:** Our observation shows that many stakeholders including the police, health workers and FSWs themselves are not aware of the laws and provisions that protect the female sex workers' rights. Health facilities are not accessible and friendly to female sex workers. Health workers violate sex workers right to health by judging them and even denying them health services.

**Conclusions/Next steps:** The project enabled FSWs to make informed decisions about their sexual and reproductive health, reduced stigma and discrimination by service providers and has improved access to health services. But there are many policy gaps affecting FSWs. In future community engagement and empowerment requires involving FSWs in the design, research, implementation, monitoring, evaluation, of policies and programmes that affect their lives because without their active engagement and involvement efforts to provide access to HIV prevention, treatment, care and support will not be optimally effective.

## THPED294

### COMMUNITY COLLECTIVIZATION, FINANCIAL SECURITY AND HIV RISK BEHAVIORS AMONG FEMALE SEX WORKERS IN INDIA: FINDINGS FROM AVAHAN-III EVALUATION STUDY

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**Background:** Recent research studies show that community collectivization and financial security are crucial to defy HIV risk among female sex workers. This study assesses collective action and financial security among FSWs, and explores its association with their HIV risk behaviors in India.
**Methods:** Data were drawn from the Avahan-III baseline evaluation survey- 2015, conducted among FSWs (n=4098) in five states of India. Two stage cluster sampling approach was used to select the required number of FSWs for the survey. Adjusted odds ratios (AOR) and their 95% confidence intervals (CI), bivariate and univariate analysis were conducted to assess the relationships between collective action and financial security with HIV risk behaviors.
**Results:** Nearly half of the FSWs (48%) were having high level of collective action (e.g. community members came together for a problem), 68% had functional savings account either in a nationalized bank or post office, and 19% invested in insurance schemes or gold/land/business etc. FSWs, those who had high level of collective action (85% vs. 78%; AOR: 1.6) and had invested in insurances/gold/land/business (84% vs. 79%; AOR: 1.4) were significantly at higher chances of using condom consistently with both regular as well as occasional clients than others. The odds of using condom consistently with both regular and occasional clients were also higher among FSWs those had functional savings account at the time of the survey. Similarly, likelihood of using consistent condom use with non-regular partners were also higher among FSWs those had higher level of collective action than their counter parts.
**Conclusions:** Findings from the study show that there was a significant association between collective action and financial security with consistent condom use with different type of clients among FSWs. Maintenance of high level of consistent condom use is central to improve the sustainability of HIV prevention programs. However, more community outreach activities, research and advocacy are required to highlight these issues in a wider context in other high risk group population including FSWs.

## THPED295

### HIGH CO-OCCURRING STI AND HIV PREVALENCE AND THE POOR TREATMENT CASCADE AMONG FEMALE SEX WORKERS IN DURBAN, SOUTH AFRICA

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**Background:** National studies in South Africa have estimated HIV prevalence among Female Sex Workers (FSWs) to be between 46-69% significantly higher than the 13.3% HIV prevalence among women in the general population. In high prevalence settings or with key populations the World Health Organization recommends regular HIV testing, with linkage to care, however, there is insufficient information exploring FSWs HIV or STI testing behaviour or linkage to care.
**Methods:** The data reported in this paper were collected in 2012 using a cross sectional survey and HIV rapid testing, conducted for an ongoing multi-country research project among FSWs in India, Kenya, Mozambique and South Africa. Participants were recruited using respondent driven sampling, in total 400 FSWs participated. Data were entered into Intercooled Stata v.11 and descriptive analyses conducted. Ethics approval was attained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg, South Africa (M120522).
**Results:** Participants are between 21-30 years of age; hold a primary education 69.4%. Estimated having between 1-7 partners a week (43.2). Few FSWs know the HIV status of their regular paying partners (12.2%) or their last non-paying partner (8.3% ). Condom use at last sex with a paying partner is estimated at 71% and lower with regular non-paying partners 63%. Additionally 65.3% of FSWs reported condom breakages in the last year. The biological data collected indicate that HIV prevalence among FSW in Durban is 66.9%. Of the FSWs who self-reported an HIV positive status 18% are currently accessing antiretroviral therapy (ART). Seventy percent of FSWs reported experiencing an abnormal discharge or genital ulcer within the last 12 months, of these 92% sought care, 47.7% were satisfied with the care they received. Unplanned pregnancies in the last 5 years were reported by 37.3% and 67% reported male condoms as their primary method of contraception.
**Conclusions:** There are multiple risk factors that increase FSWs risk of STI and HIV infection and transmission. These findings highlight the need and importance of integrating, providing and promoting family planning in addition to regular STI and HIV prevention, testing and treatment services for FSWs.

## THPED296

### SEX WORK AND THE CITY: A COMPARISON OF FEMALE SEX WORKERS IN TWO SOUTH AFRICAN CITIES

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**Background:** The HIV prevalence in sex workers is significantly higher than in the general population. In order to achieve the 90-90-90 target set by UNAIDS, this hidden population must be accessed and effective programs implemented. The Wits Reproductive Health and HIV Institute provides healthcare services to sex workers in Hillbrow and Tshwane and the study was conducted to better characterize the drivers of the HIV epidemic and to inform more targeted and efficient HIV programming for sex workers at these sites.
**Methods:** Study participants (n=174) were women aged 18 years and older who self-identified as sex workers. A standardized questionnaire was administered in face-to-face interviews, which included questions on socio-demographic characteristics, sexual behaviour, sexual and reproductive health knowledge, risk behaviours and condom use. We used Chi square to compare the characteristics of FSW from the two sites.
**Results:** Of the 174 participants enrolled into the study, 124 were based in Hillbrow and 50 in Tshwane. Our data show that there are significantly more FSW of Zimbabwean origin working in Hillbrow than in Tshwane ($p< 0.01$) and FSW in Hillbrow tend to stay at the brothel where ($p< 0.001$). There was no significant difference in the level of education between the FSW at both sites ($p< 0.1$) and no significant difference in HIV status at between the two sites was observed (Hillbrow 39.5%, Tshwane 42.8%, $p< 0.44$). Although there were significantly more FSW who received information STI/HIV information in Tshwane, there were more STI cases reported in Tshwane than in Hillbrow ($p< 0.04$). Similarly, there were fewer cases of condom failure reported in Hillbrow than in Tshwane ($p< 0.019$). We observed no significant difference between the sites in the amount of FSW who are receiving treatment for HIV.
**Conclusions:** Although the two sites characterised in this study are both inner-city and both in Gauteng there are numerous important differences between these two populations. The study highlights the importance to consider the uniqueness in composition, migrancy, behaviours and health profile of individual sites when implementing services for sex workers.

# PEOPLE WHO USE DRUGS, INCLUDING INJECTING DRUG USE

## THPED297

### PARTICIPANT PERSPECTIVES ON ETHICAL CONSIDERATIONS FOR THE COLLECTION OF GEOGRAPHIC INFORMATION IN HIV AND SUBSTANCE USE RESEARCH

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**Background:** In substance use and HIV-related research, geographic information can help identify "hot spots" and "health service deserts", evaluate associations between proximity to health services and their use, and link contextual factors with individual-level data to understand environmental influences on risk/health-seeking behaviors. Technological advancements in the methods used to collect location data can improve the accuracy of contextually-relevant geographic data; however, they

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have outpaced the development of ethical standards and guidance, particularly for research involving populations engaging in illicit/stigmatized behaviors. The purpose of this qualitative study was to
(1) explore participant comfort with and perceptions regarding privacy, confidentiality, and safety associated with different geographic data collection methods used in substance use and HIV-related research and
(2) determine the extent to which these concerns could influence study compliance and the validity of participants' responses.
**Methods:** Between November 2014 and April 2015, we recruited 15 Baltimore residents reporting recent drug use via flyers and peer-referral to complete in-depth qualitative interviews exploring perceptions regarding acceptability and ethics of three methods for collecting geographic data:
(1) surveys collecting self-reported addresses/cross-streets,
(2) surveys using web-based maps to find/confirm locations, and
(3) geographical momentary assessments (GMA), which collect spatiotemporally referenced behavioral data via mobile applications on GPS-enabled smartphones.
Content analysis identified concerns and perceived likelihood of participation and compliance in studies using these methods.
**Results:** Although the collection of geographic data was generally viewed as acceptable, participants raised concerns relating to confidentiality and comfort regarding providing exact addresses for illicit/stigmatized behaviors (e.g., purchasing/using drugs). Further, many felt that concerns about the confidentiality of such "sensitive" locations could influence the accuracy of the information provided. Specific to GMA studies, concerns included the burden of carrying/safeguarding study phones and responding to survey prompts, confidentiality issues, discomfort with being tracked, and noncompliance with study procedures (particularly while high/getting high).
**Conclusions:** Concerns raised by participants could result in differential study participation, differential compliance with data collection procedures, and questionable accuracy and validity of location data for sensitive behaviors. Additional research engaging this population is needed to develop and refine innovative methods for collecting accurate, real-time geographic information on substance use and related risk behaviors.

## THPED298

### SEXUAL VIOLENCE FROM POLICE AGAINST HIV-INFECTED WOMEN WHO INJECT DRUGS IN ST PETERSBURG, RUSSIA: A MIXED METHODS ANALYSIS OF PUBLIC HEALTH AND HUMAN RIGHTS IMPLICATIONS

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**Background:** Police violence against people who inject drugs (PWID) is common in Russia and associated with HIV risks. Sexual violence from police against women who use drugs has been reported anecdotally in Russia. This study aims to evaluate police sexual violence against HIV-infected women who inject drugs via quantitative assessment of its prevalence and HIV risk correlates, and through qualitative interviews with police, substance users, and their providers in St. Petersburg, Russia.
**Methods:** Cross-sectional analyses with HIV-infected women who inject drugs (N=228) assessed the associations between police sexual violence victimization (i.e., having been forced to have sex with a police officer) and the following behaviors: current drug use, needle sharing, and injection frequency using multiple regression models. We also conducted in-depth interviews with 23 key informants, including PWID, police, civil society organization workers, and other stakeholders, to explore qualitatively the phenomenon of police sexual violence in Russia and strategies to address it. We analyzed qualitative data using content analysis.
**Results:** Approximately 1 in 4 women in our quantitative study (24.1%; 95%CI, 18.6%, 29.7%) reported sexual violence perpetrated by police. Victims reported more transactional sex for drugs or money than non-victims; however, the majority of those victimized were not involved in these forms of transactional sex. Victimization was not significantly associated with current drug use or needle sharing. However, victims reported more frequent drug injections (adjusted incidence rate ratio 1.43, 95%CI 1.04, 1.95). Qualitative data suggested that police sexual violence and coercion appear to be entrenched as a norm and are perceived insurmountable because of the seemingly absolute power of police. Police sexual violence are human rights violations and systematically add to the risk environment of women who use drugs in Russia.
**Conclusions:** Police sexual violence was common in this cohort of Russian HIV-infected women who inject drugs. Our analyses found more frequent injection drug use among victims, suggesting that the phenomenon represents an underappreciated human rights and public health problem. Addressing police sexual violence against women in Russia will require raising social awareness and instituting police trainings that protect vulnerable women from violence and prevent HIV transmission.

## THPED299

### PANGAEA GLOBAL AIDS AND CLINTON HEALTH ACCESS INITIATIVE BEST PRACTICE SERIES: REACHING KEY POPULATIONS AFFECTED BY HIV. THE GOVERNMENT OF MAURITIUS HARM REDUCTION PROGRAM FOR PEOPLE WHO INJECT DRUGS (PWID)

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**Background:** Pangaea Global AIDS, in partnership with CHAI, produced a series of case studies documenting and costing effective approaches to HIV service delivery in Sub-Saharan Africa. Mauritius has a concentrated HIV epidemic, predominantly among PWID, men who have sex with men, and sex workers.
**Description:** In response to the growing HIV epidemic among people who inject drugs (PWID), a partnership of civil society and the government of Mauritius initiated harm reduction practices in 2006 that includes methadone maintenance therapy (MMT) and needle and syringe exchange (NEP) in conjunction with the scale up of HIV testing and ART access. These activities were formally established under the Harm Reduction Unit (HRU) within the Ministry of Health in 2010.
**Lessons learned:** Since 2006, 7000 individuals have initiated MMT, 80% of whom received a HIV test. In 2014, 3078 individuals accessed NEP through fixed sites (47 sites in 2015), vans, backpack outreach workers, and peer educators. In 2013, 719,427 clean needles and syringes were distributed, representing 283 needles and syringes per person per year. The incidence of HIV among PWID in Mauritius declined from 68.1% in 2011 to 31.1% in 2014. New HIV infections peaked at 921 in 2005, the year prior to the harm reduction program implementation. There were 322 new infections in 2014. In 2014, MMT service delivery cost $267 per person per year, while needle exchange cost $49 per person per year.
**Conclusions/Next steps:** The harm reduction program in Mauritius is a successful, collaborative approach to a major public health problem that is based on evidence and respect for human rights. The case study provides an example of effective advocacy by civil society and political will by the government leading to a partnership that has reduced HIV transmission. The MMT program uses the harm reduction strategy as an entry point to other services, such as HIV testing and linkage to care. The outreach strategies have ensured that PWID are offered services they need while protecting them from harassment and prosecution. The HIV response in Mauritius provides an evidence-informed best practice that should be considered by other countries with HIV epidemics among PWID.

## THPED300

### SOCIAL AND STRUCTURAL FACTORS ASSOCIATED WITH GREATER TIME ABOVE AN HIV VIRAL LOAD OF 1500 COPIES/ML PLASMA AMONG ILLICIT DRUG USERS IN A CANADIAN SETTING

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**Background:** Although previous studies have characterized temporary increases in plasma HIV-1 RNA viral load (VL) among HIV-positive people who use drugs (PWUD), factors associated with longer periods of time with heightened HIV transmission potential have not been investigated. Therefore, we examined factors associated with amount of person-time spent above a VL threshold that increases risk of transmission to others among HIV-positive PWUD in Vancouver, Canada.
**Methods:** Data were derived from the AIDS Care Cohort to evaluate Exposure to Survival Services (ACCESS), a long-running prospective cohort of HIV-positive PWUD linked to comprehensive clinical monitoring records. We used Poisson regression to longitudinally examine factors associated with person-time (in days) above a VL of 1500 copies/ml in the previous 180 days.
**Results:** Between December 2005 and May 2014, 845 participants were included in the study, including 581 (69%) males and 464 (55%) who self-reported Caucasian ancestry. Of these, 593 (70%) spent at least one day with a VL above 1500 copies/ml during the study period. In a multivariable model, homelessness (Adjusted Rate Ratio [ARR] = 1.50; 95% confidence interval [CI]: 1.36 - 1.65), and having no social support (ARR = 1.36; 95% CI: 1.23 - 1.49) were independently and positively as-

sociated with amount of time spent over 1500 copies/ml. Age (ARR =0.97; 95% CI: 0.97-0.98), enrollment in addiction treatment (ARR = 0.73; 95% CI: 0.65-0.82), and CD4 cell count (ARR = 0.81; 95% CI: 0.78 -0.85) were independently and negatively associated with time spent over 1500 copies/ml.
**Conclusions:** Among HIV-positive PWUD, periods of homelessness or lacking in social support were independently associated with greater time experiencing an elevated VL. Our findings suggest the need for targeted prevention efforts to address modifiable factors associated with risk of HIV transmission among PWUD.

## THPED301

### A decade of harm reduction and the projected impact of 10by20

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**Background:** Harm Reduction International (HRI), a leading non-governmental organisation working to promote and expand support for harm reduction, has been tracking developments in HIV and viral hepatitis related harm reduction worldwide since 2007. This paper highlights the key findings from a decade of information on harm reduction services across the globe, using mathematical modelling to illustrate the importance of investment in harm reduction for the reduction of HIV among people who inject drugs.
**Methods:** Information presented in this paper was sourced using international scientific and grey literature, reports from multilateral agencies, international non-governmental organisations, organisations of people who use drugs, biennial surveys to civil society and harm reduction networks, expert consultation from academics and those working on HIV, drug use and harm reduction. Using the body of available data HRI, in collaboration with the Kirby Institute, developed a mathematical model to map future projections of harm reduction scale up and the impact a small shift in spent from punitive measures related to drug control towards harm reduction could have on the HIV and HIV related deaths among PWID.
**Results:** Just 7% of what is currently required ($2.5 billion) to fund harm reduction is invested globally. 2.5% ($2.66 billion) of current estimated global spend on drug law enforcement would bring harm reduction coverage levels to mid-range coverage as advised within UN guidance. Modelling data projects a 78% reduction in HIV among PWID by 2030. Investment of 7.5% of enforcement spend ($7.66 billion) would see high coverage levels in all countries around the world, and a near eradication of HIV among people who use drugs.
**Conclusions:** Harm reduction is cost-effective and effective in reducing HIV and HCV among PWID. A small shift in investment from punitive measures towards drugs to harm reduction would ensure a near eradication of HIV among PWID.
PWID by 2030. Investment of 7.5% of enforcement spend ($7.66 billion) would see high coverage levels in all countries around the world, and a near eradication of HIV among people who use drugs.

## Indigenous people

## THPED302

### A sectoral approach to reach Indigenous Papuan workers with HIV information and services

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**Background:** Integrated Biological and Behavioural Surveillance in 2012 showed significant HIV prevalence among indigenous Papuans (2.3%) compared to other Indonesians (0.4%). Prior to project start up, a survey conducted showed 30% of Papuan Indigenous workers had never received HIV prevention information and 75% has never been offered HIV testing before the project began.
**Description:** The ILO and Department of Foreign Affairs and Trade (DFAT) Australia partnered with local government and private sector enterprises to deliver HIV prevention information, testing and treatment services to over 5000 indigenous workers.
The project built upon the existing health system to reach Indigenous Papuan working in palm oil plantation and port areas by strengthening collaboration between labour and health sectors.
The project provided HIV prevention information and provider initiated HIV testing on a routine basis over a one year period. The target group included 10000 workers; 72% were Indigenous Papuan workers aged 8-60 years old; 80% were men.
**Lessons learned:** After one year implementation, a total of 6500 workers in plantation and transport sectors received HIV prevention services and 2192 underwent HIV testing. 3.1% tested positive and, among those, 80% initiated HIV treatment. Private sectors and government allocate funding to ensure sustainability of the program.
**Conclusions/Next steps:**
- The private sector is an efficient means to extend HIV services to hard-to-reach indigenous peoples in remote areas
- Workplace interventions have strong potential to fill gaps in HIV responses and ensure sustainability and continued funding
- Workplace programs can ensure a rights-based approach by guaranteeing continued employment, confidentiality of medical status and access to health services in line with the ILO standard on HIV and AIDS in the Workplace.

## THPED303

### Refining the research response: Indigenous leadership in HIV research

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**Background:** Research can be a useful tool to better understand and address HIV. In Canada, HIV is epidemic in Indigenous communities, many of whom are joining researchers in seeking to inform effective responses to preventing new and co-infections, eliminating stigma and discrimination and reducing AIDS-related deaths. As a nationally recognized leader in Indigenous HIV Community-Based Research, the Canadian Aboriginal AIDS Network (CAAN) has partnered with some of Canada's top research institutions to develop a strategic research response to HIV that is Indigenous-led, grounded in community concerns, and relevant across scientific disciplines.
**Methods:** Our interdisciplinary research team, including social and biomedical scientists, have used a multi-method and phased approach to strategy development including:
1) a comprehensive literature review of existing Indigenous HIV research;
2) 19 in-person consultations across Canada with a broad range of stakeholders, including Indigenous people living with or affected by HIV, researchers, clinicians, health care and service providers, and Traditional Knowledge Keepers; and,
3) an online survey. In total, we spoke to 212 individuals, 60% of whom self-identified as Indigenous, about their HIV-related research needs and preferred approach to research. To ensure that our findings reflect the broadest range of stakeholders, we also attended eight HIV-related research meetings and 'member checked' our preliminary findings with three groups of Indigenous stakeholders.
**Results:** Strategic research priorities include: understanding and addressing the impacts of racism, colonization, and HIV-related stigma and discrimination on Indigenous peoples' health; facilitating access to health-care, including HIV testing, care, treatment and support; and the intersections of mental health, substance use, and social determinants. Findings confirm that successful HIV-related research with Indigenous communities must be Indigenous-led or partnered, and engage Indigenous communities and Indigenous people living with HIV in the research design, implementation, analysis and dissemination of results. This is true for all HIV research, regardless of discipline or research design.
**Conclusions:** Indigenous and non-Indigenous communities are mobilizing around the urgent need for Indigenous-led responses to issues that impact Indigenous communities, including HIV. Strategically identifying Indigenous HIV research priorities in a consolidated strategy that is evidence-based, Indigenous-led and grounded in community-identified need will increase the quality and relevance of new investigations.

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## THPED304

### GLOBAL INDIGENOUS YOUTH: RECLAIMING CULTURAL AND LAND BASED METHODS CONCERNING STIGMA, SEXUAL HEALTH AND HIV/AIDS

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**Background:** The Panel will consist of four International Indigenous Youth leaders whom will be addressing a number of Indigenous global issues. Focused on resisting, reshaping, and remodeling new ways to educate their communities around stigma and shame. Stigma and Shame is highly prevalent in Indigenous communities related to HIV/AIDS and Sexual and Reproductive Health. The panel will lead a discussion addressing the Global Indigenous Youth Council on HIV/AIDS and Sexual and Reproductive Health Rights with ways of encouraging Indigenous Youth cooperation and global solidarity for the Indigenous HIV movement.
**Description:** This will be a panel discussion with grassroots young Indigenous youth who are taking up leadership in their communities. As role models they will share ways in which they address shame and stigma in culturally relevant ways within each of their communities. This panel will discuss the practical implementation of what reducing shame and stigma for so called 'marginalized' groups actually looks like globally in practice, through the lense of activism, resistance of settler colonialism, and solidarity of a global movement of Indigenous youth.
Reducing shame and stigma in young Indigenous peoples' because it includes a wide variety of openness that includes self-ID women, men, 2S, Queer, trans, ect youth. In this way, we can remain broad while sharing our own stories of resistance and resiliency within our own Native Nations while opening the conversations to be continued by others. Panelists include: Iehente Foote, Keioshiah Peter, Letishia Parter & Brent Huggins.
**Lessons learned:** We would assist the audience in actively being involved, supporting and taking the initiative to create and promote new health models, colonial models, whilst promoting conversations around accountability for creating further harm and violence against certain voices.
**Conclusions/Next steps:** Leaders and youth creating sustainable discourses among Indigenous communities through utilizing youth narratives that can be implemented in community-based organizations.
Furthermore, another expected outcome is the reduction of stigma of HIV in indigenous community through activism, raising awareness, and increasing solidarity of indigenous youth in the HIV movement. This will be accomplished through the audience participation, support, and promotion of new health models that provide accountability against harm and violence.

# INCARCERATED PEOPLE

## THPED305

### UNDERSTANDING HEALTH CONSEQUENCES OF THE U.S. PRISON RAPE ELIMINATION ACT (PREA) FOR INCARCERATED TRANSGENDER WOMEN: IMPLICATIONS FOR SEXUAL ASSAULT AND HIV TRANSMISSION RISK

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**Background:** In the United States, transgender women are disproportionately at risk for HIV infection and incarceration relative to cisgender (non-transgender) women and men. Most U.S. correctional institutions house transgender women with men if they have not had gender reassignment surgery. While in male prisons, transgender women are targets of sexual assault, which place them at risk for HIV infection. The Prison Rape Elimination Act (PREA) was designed to protect the most vulnerable prisoners (e.g., transgender women) against sexual assault and HIV acquisition, yet the extent to which this policy is serving its intended purpose is unknown.
**Methods:** Phase 1: From June-August 2015, semi-structured interviews were conducted with 20 racially diverse, formerly incarcerated U.S. transgender women. Interviews assessed participants' sexual relationships, perceived risk for acquiring or transmitting HIV, and whether and how PREA was enforced in U.S. male prisons. Phase 2: A critical policy analysis was conducted to understand the health and human rights implications of PREA for transgender women in male prisons.
**Results:** Interviews with formerly incarcerated transgender women and the policy analysis revealed that PREA has failed to adequately protect transgender women against sexual assault and control the spread of HIV infection. Participants reported engaging in condomless consensual and non-consensual sex while in prison. Sex was often used for survival to ensure their physical protection or to receive goods in the absence of social and material support inside and outside of prison. Participants reported being penalized by prison staff for engaging in sexual behavior regardless of whether the sexual act was consensual or unwanted. Participants expressed concern about HIV acquisition while in prison, with several women reporting that they may have acquired HIV while incarcerated.
**Conclusions:** The transgender women sampled engaged in survival sex while in prison and were also the victims of sexual assault - unprotected sexual acts with consequences for HIV transmission and acquisition. While designed to protect the safety of incarcerated transgender women, our research suggests that PREA has not only failed to prevent sexual assault and control the spread of HIV, but has also had the unintended consequence of penalizing those whom it was intended to protect.

## THPED306

### THE ASSOCIATION BETWEEN HIV KNOWLEDGE AND HIV RISK AMONG PRISON INMATES IN LATVIA

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**Background:** Latvia holds the second highest incidence level of new HIV cases in Europe.
One fifth of people living with HIV (PLWH) in Latvia are prisoners. HIV-negative inmates are the risk group. HIV-positive prisoners need knowledge for not spreading the infection. Inmates and even doctors had poor knowledge about HIV/AIDS transmission, treatment and care. Previous prevention measures have not been sufficient, which led to an increase in the number of infections among prisoners. Extra information from outside was urgently needed.
**Description:** This situation motivated AIDS/NGO "AGIHAS" to start projects. During a 6 year period, four projects have been implemented in all the 15 prisons providing 72 seminars and 50 consultations to 2334 prisoners (median age: 31 years) and 7 lectures to personnel (n=124). The team consisted of a doctor, social worker and an HIV+ peer. Attendees were selected by administration. Among the inmates trained, 8% were women, most of the prisoners are Russians. Ethical considerations of PLWH (n=95) not wishing to reveal their status were met by providing answers via 346 mails. After the seminars, questionnaires were collected and later analysed.
**Lessons learned:** Ethnicity and sex had made no difference, according to evaluation from the questionnaires. It showed the following: inmates are better educated on AIDS issues than after the previous projects; some 4 are going to train their peers; some have changed their lifestyles; discrimination towards PLWH in prison settings has almost disappeared. The team noticed that PLWH are no longer hiding their status. Prisons' Administration concluded that after our seminars there are less hooligan activities, which has also a positive economic impact. To improve attendees' attentiveness, for future projects the audience should be limited to around 12 persons; correspondents should be provided with stamped envelopes for their replies.
**Conclusions/Next steps:** The feedback shows that inmates feel more comfortable with non-governmental prevention initiatives. Since prisoners have shown even a better AIDS knowledge, medical personnel should get trained also on AIDS medical aspects, not only on PLWH rights and obligations. Projects have positively influenced changes in prison policies. Our prevention and support activities should be continued, otherwise too many PLWH may feel double marginalized again.

## THPED307

### FACTORS SHAPING A HIGH PREVALENCE OF EVER AND RECENT INCARCERATION EXPERIENCE AMONG WOMEN LIVING WITH HIV IN CANADA

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**Background:** Women with incarceration experience a disproportionate burden of HIV/AIDS, including poorer HIV treatment outcomes driven by prison-associated interruptions in antiretroviral therapy (ART). While prisons provide an opportunity for women living with HIV (WLWH) to engage in HIV care, they face numerous social and structural challenges in maintaining their HIV treatment in the community post-release. We aimed to describe the prevalence and correlates of ever and recent incarceration among WLWH in Canada.
**Methods:** We analyzed baseline survey data for 1,425 WLWH aged ≥16 years in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS), a prospective, community-based research study. Prevalence of 'ever' (but not in the last year), 'recent' (in the last year), and 'never' incarceration was assessed via self-report to a peer-administered survey. Women with incomplete responses were excluded. Multivariable logistic regression estimated factors associated with ever and recent incarceration.
**Results:** Of 1,422 participants, the median age was 43 years (IQR: 35-50); 41% identified as Caucasian, 29% as African, Caribbean or Black-Canadian, 22% identified as Indigenous. Prevalence rates of incarceration were 30% (ever) and 6% (recently). Factors independently associated with ever and recent incarceration (vs. never) included: Indigenous ethnicity (Recent: AOR=3.74 [95%CI: 1.76-7.96]); < $20,000 CDN annual income (Recent: AOR=3.01 [95%CI: 1.07-8.48]); living in unstable housing (Ever: AOR=1.27 [95%CI: 0.69-2.35]; Recent: AOR=2.82 [95%CI: 1.27-6.28]); current sex work (Ever: AOR=4.59 [95%CI: 1.92-10.96]; Recent: AOR=4.33 [95%CI: 1.48-12.69]); self-reported depression symptoms (Recent: AOR=3.78 [95%CI: 1.90-7.52]); Hepatitis C co-infection (Ever: AOR=3.88 [95%CI: 2.43-6.18]; Recent: AOR=2.86 [95%CI: 1.26-6.49]); and current injection drug use (Ever: AOR=8.36 [95%CI: 3.60-19.41]; Recent: AOR=24.55 [95%CI: 7.85-76.78]). Compared to never, ever and recently incarcerated women had increased odds of sub-optimal ART adherence (< 95%, by self-report) (Ever: AOR=1.48 [95%CI: 0.94-2.33]; Recent: AOR=3.14 [95%CI: 1.55-6.36]).
**Conclusions:** Over one-third of WLWH in this study have incarceration experience, with a higher prevalence observed across several social and structural inequities. The strong independent association between incarceration and sub-optimal adherence to ART underlines the urgent need for reductions in rates of incarceration among vulnerable and marginalized women living with HIV, as well as improvements in prison healthcare and transitional care plans.

## THPED308

### VULNERABILITIES TO HIV INFECTION AND SYPHILIS IN THE STATE FEMALE PRISON SYSTEM, SÃO PAULO, BRAZIL: A CROSS-SECTIONAL AND POPULATION-BASED SURVEY

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**Background:** The high increase of the female prison population in Brazil has brought challenges to STDs control. The state of São Paulo accounts for 30% of this population, and has develop strategies for assessment of individual, programmatic and social vulnerability. The aim of this study was to describe the vulnerability contexts to HIV infection and syphilis in women deprived of freedom.
**Methods:** A cross-sectional population-based survey conducted in all female prisons of the State of São Paulo. The study population consisted of a representative sample of 10% of the expected population. The demographic and epidemiological characterization of 1,099 women was based on the application of a structured instrument. The mean of age was 34.1 years. The mean detention time was 32.6 months, 82.5% of closed and semi-open regimes.
We use a descriptive analysis of the included aspects of the vulnerabilities.
**Results:** Most of the women are originally from South America (93.7%), and Brazil (91.8%) - São Paulo (91.2%). For international origin, Angola (15.6%), and South Africa (13.3%) predominated. Self-reported race/color in 44.5% was grayish-brown; 68.4% had completed only the elementary school. The predominated occupation/profession was maids (14.4%), and other works with lower training. 52.5% reported being single; 84.0% had children - 64.5% two or more. 20 (1.8%) women reported current existence of pregnancy; 66.5% had sex only with men. 31.3% reported never using condoms. 55.0% reported using contraception. 38% have an abortion history, and 500 (45.5%) present or have presented STDs - syphilis (26.0%), HIV/AIDS (11.6%), and condylomatosis (2.2%). Risk situations: have had or have sex without a condom (78.8%), already have used or use drugs (61.5%), have had or have multiple sexual partners (36.2%), partner have had or have many partners (33.4%), already have worked or work as sex worker (21.1%), and have been victims of sexual violence (18.6%).
**Conclusions:** This population-based survey reinforces the status of great individual, programmatic and social vulnerability of the women in the state penal system, both in urban and rural realities. Most women in prison are from socially marginalized groups. Gender inequality, migration, stigma, and discrimination increase imprisoned women's vulnerability to HIV infection and syphilis.

## THPED309

### PREVALENCE OF SYPHILIS IN THE STATE FEMALE PRISON SYSTEM OF SÃO PAULO, BRAZIL: A CROSS-SECTIONAL SURVEY AND THE IMPLEMENTED INTERVENTIONS

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**Background:** The epidemiological profile of syphilis in Brazil reinforces the high significance as a public health problem, especially in populations with greater risk and vulnerability. The female population of the national prison system is part of this perspective, bringing the need for systematic population-based studies. The aim of this survey was to estimate the prevalence of *Treponema pallidum* infection in women deprived of freedom in São Paulo state, and to describe the implemented interventions.
**Methods:** A cross-sectional seroepidemiological survey for syphilis conducted in all of the 19 female prisons of the State of São Paulo, with an estimated population basis of 11,530 women. This study was coordinated by the State Program of STD/AIDS in São Paulo and conducted from August 2012 to December 2013. The study stages include: reception, information about the intervention, guidance on the sexual transmitted diseases, free and informed consent to data collection, and the offer of testing syphilis and HIV. For the definition of *T. pallidum* infection status we used VDRL and TPHA tests, following the algorithms recommended by the Brazilian Ministry of Health. Data analysis was based on the estimated prevalence with calculation of confidence intervals.
**Results:** Of the total of 8821 (76.5%) addressed women, 8744 (99.1%) underwent the syphilis testing. The estimate prevalence of the infection by *T. pallidum* was 6.88% (95% confidence interval (CI): 6.35%-7.41%), corresponding to 602 women. The estimated prevalence ranges from 0%
(CRF Rio Claro) to 15.19% (CDP Franco da Rocha - 95% CI: 13.15% -17.23%). The integrated analysis identified coinfection (HIV and *Treponema pallidum*) in 36 women, estimated prevalence of 0.47% (95% CI: 0.33%-0.61%). Strategic actions were implemented in order to ensure counseling, treatment and follow-up of the participants who had diagnosed health problems.
**Conclusions:** The population-based survey reinforces the status of great vulnerability to syphilis for women in the State Penal System of São Paulo. This is the first study-based initiative in this state confirming the high prevalence of syphilis in this population. These initiatives could ultimately contribute to improve the quality of life of women with a neglected and vulnerable condition, integrating health attention and epidemiological surveillance.

## THPED310

### WOMEN'S EXPERIENCES OF HIV TESTING, COUNSELLING AND CARE IN JAIL AND PRISON IN THE DEEP SOUTH: AN EXPLORATORY QUALITATIVE STUDY AMONG WOMEN WITH HISTORIES OF VIOLENCE AND SUBSTANCE DEPENDENCE

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**Background:** Individuals in jail and prison settings, globally, are a key-affected population with unmet needs for health and HIV care. Studies of justice-involved women with HIV are few. While HIV testing in jails and prisons is routine in many US states, justice-involved women typically have histories of violence, mental illness and substance use—facing significant barriers accessing HIV services while incarcerated and following release. Moreover, they are not identified within the *National HIV/AIDS Strategy*: indicating they are neglected in policy. Study objectives were to:
1) Explore women's experiences accessing HIV services in jail, prison and post-release in two Alabama cities where HIV incidence is high;
2) Identify the available HIV care continuum, linkage opportunities and gaps.
**Methods:** We employed a descriptive, exploratory design using qualitative methods; purposively selecting participants who were: female; HIV-positive; with multiple experiences of incarceration in jail/prison. Two CBO partners identified eligible potential participants. We conducted in-depth interviews (range of 34-134 minutes, average 74) with 28 participants in Birmingham and Montgomery during January 2014. Two researchers conducted independent coding, producing preliminary codes from transcripts using content analysis. We developed themes through an iterative process of verifying and refining final themes among the team.
**Results:**
(1) Pervasive stigma/discrimination in jail/prison based on HIV-positive serostatus, encompassing: segregation of HIV-positive women in designated dorms (part of Alabama policy until 2012); verbal abuse; food rationing; confinement; forced disclosure of HIV serostatus; tattooing with unsterilized instruments;
(2) Absence of counselling following initial HIV-positive diagnosis in jail/prison;
(3) HIV treatment hindered by:
a) delays;
b) interruption;
c) denial by corrections staff;
(4) Poor health conditions, overcrowding and infrequent medical care;
(5) Psycho-social support drawn from inmates, guards, church;
(6) Lack of discharge planning; (7) Few services post-release.
**Conclusions:** Four strategic opportunities remain unexploited for HIV care/support—comprising the care continuum for justice-involved, which may be relevant for other settings:
(1) On Entry: providing post-test counseling;
(2) During Incarceration: rapid and consistent treatment initiation;
(3) Discharge Planning: identifying community-based HIV, substance rehabilitation, housing, and mental health services;
(4) Post-Release: linking women to clinics and social services through partnerships between corrections departments and CBOs trusted by justice-involved women.

## THPED311

### PATIENT NAVIGATION IMPROVES LINKAGE TO COMMUNITY-BASED HIV CARE AND VIRAL SUPPRESSION AFTER RELEASE FROM PRISON

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**Background:** Prior research has shown that while many patients successfully receive antiretroviral therapy (ART) while incarcerated in U.S. prisons, lapses in treatment and virologic failure are common after patients are released to the community.
**Methods:** We conducted a retrospective cohort study including all HIV-infected patients receiving ART and released from a Wisconsin state prison between 2011 and 2015. Starting in 2013, individuals planning to be released to one of the 2 largest cities in Wisconsin were offered enrollment in a patient navigation intervention that involved frequent phone contact, linkage to care and social services, and assistance with housing and transportation. Post-release HIV care and laboratory results were ascertained through database linkages between the Department of Corrections and the Wisconsin Enhanced HIV/AIDS Reporting System (eHARS). Using logistic regression with generalized estimating equations to account for intra-individual correlation, we compared post-release outcomes between intervention participants and non-participants with respect to
(1) linkage to care, defined as evidence of any HIV RNA test reported to eHARS during the first 6 months after release; and
(2) viral suppression, defined as having HIV RNA< 200 copies/mL.
**Results:** Between January 2011 and June 2015, 145 individuals were released from prison a total of 184 times Of these, 42 individuals were enrolled in the patient navigation intervention at the time of release, while 103 received only standard clinic-based case management. Overall, the sample was 92% male, 59% African American, and 36% reported a history of injection drug use (IDU); there were no significant differences in the demographic characteristics of participants and non-participants. Releasees were more likely to be linked to care within six months (92.8% vs 65.5%, p< 0.001) and were more likely to have viral suppression (85.7% vs 45.1%, p< 0.001) when participating in the patient navigation intervention. After adjusting for age, gender and IDU status, intervention recipients were significantly more likely to be virally suppressed six months after release
(adjusted OR=7.4, 95% CI = 3.0 - 18.2).
**Conclusions:** Patient navigation offering client-centered linkage to services and social support appeared to significantly improve linkage to community-based HIV care and viral suppression after release from prison.

## THPED312

### IMPROVING ACCESS TO JUSTICE FOR PRISONERS AS A KEY POPULATION AND ADVOCACY FOR HEALTH RIGHTS: UGANDA NETWORK ON LAW, ETHICS AND HIV/AIDS (UGANET) EXPERIENCE

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**Background:** HIV epidemic in Uganda continues to be a major health, human rights and development challenge despite fervent prevention efforts in prisons. HIV prevalence among inmates is 11.2%, making it almost twice as high as national prevalence rate estimated at 7.3%. The Uganda prisons Services accommodates over 2,000 inmates living with HIV&AIDS in 224 units. UGANET found it important to support inmates access justice and health services.
**Description:** UGANET established Legal Aid and Health Advocacy programs in collaboration with Uganda Prisons Service to champion HIV related human rights and broader Health issues for inmates and staff.
The objective was to engage policy makers on legal, health and HIV needs for prisoners, increase access to legal aid services, awareness raising and strengthen service systems to facilitate an enabling legal environment for improved HIV and human rights response. This project was implemented in *Luzira* and Kigo prisons in Uganda. During the implementation of this program, inmates were identified and trained to work as paralegals. UGANET lawyers provided legal aid services, conducted sensitizations on access to justice for prisoners living with HIV&TB and dialogues with key prisons staff on access to justice were held.
**Lessons learned:** A survey was conducted among 713 (455M,258F) inmates randomly selected in units of Murchison bay, Luzira women prison, Luzira Upper prison and Kigo men's prison. The findings were; 30%F and 25%M accessed justice and health rights. This was made possible through the availability of inmate paralegals who were trained on basic human rights and given skills to be focal persons for lawyers. The impact was realized through lodging 51%Notices of appeal in higher courts of law, 24%bail applications filed, 11%cases on indictment and committal cause listed. 11.2%of the inmates with health needs enrolled for TB&HIV screening and treatment. These results confirm the need to support inmates and staff with legal aid services and advocacy for better health.
**Conclusions/Next steps:** Providing and advocating for legal and health rights is critical for people in incarceration living with HIV&TB, it mitigates human rights violations and health challenges. Availability of lawyers who are willing to offer free legal services remains an issue of focus.

## THPED313

### DOUBLE JEOPARDY: ADVOCACY AT THE INTERSECTION OF CRIMINAL JUSTICE AND HIV IN THE UNITED STATES

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**Background:** Louisiana is “ground zero” for the dual epidemics of HIV and incarceration in the United States. One-quarter of the nation’s jail population is located in Louisiana, and HIV rates are among the highest in the nation. Yet access to HIV testing, treatment and re-entry services in local jails range from limited to non-existent. Flawed bail procedures, excessive fines that result in incarceration and other failures of the criminal justice system ensure lengthy detention, exacerbating negative health consequences for PLWH in local jails and pushing people out of the continuum of care.
**Methods:** Following a mixed methods study in March 2016 that documented lack of access to HIV services in rural and urban Louisiana jails, an advocacy campaign was conducted to focus on reforms at the intersection of the criminal justice system and HIV. Specific policies are linked to specific harms and public health arguments are used to promote reform. For example, the need for reasonable bail, reduction of fees and costs that result in detention, and alternatives to incarceration for minor crimes such as drug possession are linked to longer periods without anti-retroviral medications fo for people living with HIV incarcerated in Louisiana jails.
**Results:** Key populations including people who use drugs, sex workers and transgender women become prisoners at alarming rates in the United States. Legislators, corrections officials and public health administrators responded positively to arguments at the intersection of criminal justice reform and HIV. Public health arguments can be used to promote criminal justice reform if specific policies are linked with documentation of specific harms. Fiscal arguments can promote alternatives to incarceration where treatment costs for key populations must be borne by local jails with few resources.
**Conclusions:** Advocacy linking specific policies to adverse health outcomes can reduce HIV risk from incarceration among key populations.

## MOBILE, MIGRANT AND DISPLACED POPULATION GROUPS

## THPED314

### A COMPARATIVE CASE STUDY OF THE YOUTH SEXUAL AND REPRODUCTIVE HEALTH INTERVENTIONS IN CHINA: BEST PRACTICES IN SCHOOLS, COMMUNITIES AND MIGRANT POPULATIONS OF 5 GEOGRAPHICALLY- AND ECONOMICALLY-DEFINED REGIONS

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**Background:** Recognized as the most vulnerable population to reproductive health risks, Chinese youth need to receive multi-level interventions to tackle their reproductive challenges from families, communities, schools and other social infrastructures. However, the large disparities in geographic distributions, culture and socio-economic development levels have created strong barriers for the implementation of such educational interventions. This study aims to explore the best practices of youth sex and reproductive health (SRH) intervention programs through a qualitative analysis of five unique interventions in various settings and target populations, with a focus on the content (design and implementation), process (“how”) and outcome (efficiency, effectiveness, relevance).
**Methods:** The present study was designed as a multi-level case study with structural comparisons. Five cases of Youth Health Programs in Chongqing, Guangdong, Shanghai, Ningbo and Shenzhen were selected, including one school-based, two community-based, one workplace-based and one multi-sectional involvement program. Target populations included college students, community and migrant population, which best described SRH interventions in China. Research methods included: (a) semi-structural face-to-face interviews with key informants; (b) focus group discussion by all relevant stakeholders, and (c) retrospective analysis of local archives and program records.
**Results:** Evaluation of these cases revealed that six major factors facilitated successful implementation of the interventions, including:
(1) close cooperation with governmental departments and NGOs in areas of education, health, youth development to gain political and financial support;
(2) youth leadership development and strong involvement in program designing, implementation and evaluation;
(3) developing working force by recruiting and training local teachers and community health workers;
(4) locally-tailored programs by developing training materials suitable for community practitioners;
(5) improving working effectiveness through prioritizing target populations and SRH interventions;
(6) establishment of public-private-partnership that bridges government, civil society groups and private sectors to maximize resources and promote youth-friendly atmosphere.
**Conclusions:** Lessons learned from this study could provide vital evidence for policy makers and relevant service providers in terms of service model design and implementation. The best practices summarized in this study could also be replicated and scaled up in other middle- and lower-income countries of similar socioeconomic settings, as well as in other population-based health interventions.

## THPED315

### RISK BEHAVIOR AND MIGRATION: PERCEPTION OF WIVES AND THEIR MIGRANT HUSBAND IN RURAL INDIA

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**Background:** Little is known about sexual behaviors, knowledge about HIV/AIDS, S/RTI and condom use among wives of migrating husbands (WoM) and about their life and struggle which make them vulnerable to HIV. This study tried to explore sexual behaviors, condom use and perception about husband’s risk behavior among Wives of Migrant (WoM), and their husband’s knowledge regarding HIV/AIDS, R/STI, perception about their own and their wives’ risk.
**Methods:** Both quantitative and qualitative study was done in rural areas of 4 districts of two states in north and central India. We conducted this study among 896 wives of migrant workers (15-35 years) and 40 married migrant men through survey and IDI. Narratives came out during interview with WoM are also analyzed. Narratives from IDI were manually coded and analyzed under themes.
**Results:** According to majority of migrant husband, chances of HIV related risk, like having multiple sexual partners are low among their wives as they are staying with family. However, around 10% of the WoM reported physical relationship outside marriage and among those who disclosed the relationship that majority of these relations are initiated by family member. Lack of emotional and economical support, loneliness, lack of autonomy in absence of their husband make them dependent on other close male member of their family. Migrant husband also lack knowledge about HIV, S/RTI and contraceptives, reported low condom use with partner outside marriage and relationship with wives of other migrants. Only 42 WoM reported that they ever had used condoms with their husbands.223 respondents said their husband confessed about extra marital relationship. 694 respondents couldn’t identify any of the vulnerable group to HIV. 700 out of total respondents couldn’t answer any of the preventive measures of HIV. 38 respondents out of total 896 WOM said that they never heard about HIV. Only 105 respondents said they consider Migrants as vulnerable.
**Conclusions:** Intervention strategies in India should target WoM, as well as their husbands for increasing HIV knowledge, awareness and communication between partners. This research provides additional insight that may be used to develop effective HIV prevention strategies in rural areas of India among Migrants and their Wives.

## THPED316

### HIV-RELATED STIGMA AND HIV-TESTING BEHAVIOR AMONG SUB-SAHARAN MIGRANTS LIVING IN SWITZERLAND

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**Background:** Currently about 82’000 migrants from Sub-Saharan Africa are living in Switzerland. In 2014, the number of newly diagnosed HIV-infections among these migrants was 15 times higher than in the general population. Nevertheless, the HIV testing-behavior among these Sub-Sahara migrants is low. One reason might be the stigmatization of HIV in most of Sub-Saharan-African Communities. Therefore, the aim of the study was to determine the HIV-related stigma and its effect on HIV-testing behavior among Sub-Saharan migrants living in Switzerland.

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**Methods:** The study design was cross-sectional. A community-based research approach was used. Between December 2014 and February 2015, seven peer-researchers and two members of the research team interviewed a convenience sample of 201 Sub-Saharan migrants using a standardized paper-pencil questionnaire. HIV-related stigma was measured by using 8 items of stigmatizing attitudes towards HIV and PLWH. Answers ranged from 1="strongly disagree" to 4="strongly agree". HIV-testing behavior was measured by asking participants if they have ever been tested for HIV during their lifetime and during the past 12 months. Descriptive and inferential statistics were carried out.

**Results:** Mean age was 33.5 years (*SD*=9.8). Fifty-four percent were male (n=108). The mean duration of living in Switzerland was 8.8 years (*SD*=8.4). Twenty-three percent (n=46) had Swiss Nationality. Forty-one percent (n=82) were singles.
Twenty-three percent (n=47) have been tested for HIV during the past 12 months. Thirty percent (n=61) never had an HIV-Test during their lifetime. The HIV-related stigma was moderate (*M*=2.2, *SD*=0.8). On the other hand, 48% (n=96) considered HIV as a punishment for bad behavior and 51% (n=103) believed that people with HIV are promiscuous. About 66% (n=133) would be ashamed if they were infected with HIV and 49% (n= 98) if someone in their family would have HIV. The HIV-related stigma was negatively associated with HIV-testing behavior (r=-.20, p< .01).

**Conclusions:** The participants' HIV testing-behavior was low. Despite the HIV-related stigma was only moderate, it decreases the willingness to get tested for HIV. Prevention providers should engage in providing more information about living with HIV to reduce the HIV-related stigma and enable Sub-Saharan migrants to get tested without the fear of discrimination.

## THPED317

### ADDRESSING HIV STIGMA AND DISCRIMINATION: AN IMPORTANT PUBLIC HEALTH PRIORITY TO PREVENT HIV IN NEWLY ARRIVED CALD POPULATIONS IN SOUTH AUSTRALIA

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**Background:** In Australia, culturally and linguistic diverse (CALD) migrants are disproportionately affected by HIV. It is well acknowledged that living with HIV can be associated with stigma and discrimination, but less is known about the experience of CALD populations within countries like Australia, and there is little data on how HIV related stigma and discrimination are experienced alongside other characteristics such as gender, ethnicity, and sexual orientation in these populations. Our study describes experiences of CALD communities of HIV stigma and discrimination living in South Australia and the impact of these experiences on health and wellbeing.

**Methods:** The study employed a qualitative approach, using in-depth interviews and focus groups. Fourteen CALD community leaders who were recruited through community networks participated in in-depth interviews about HIV stigma and discrimination and the wellbeing of their community. Eight staff members of a key organisation working with people with HIV from CALD backgrounds participated in 2 focus groups about working with CALD communities affected by HIV. Seven people with CALD backgrounds living with HIV were recruited through the organisation and interviewed about their experiences of living with HIV in their new country. Data were analysed thematically.

**Results:** HIV stigma and discrimination was seen to be experienced particularly acutely by CALD communities with negative impacts on individuals living with HIV, their families and also surrounding communities within collectivist traditions. Negative impacts included: loss of social support, stress, marginalisation and isolation, as well as potential delays to testing and access to treatment. These had implications for both mental and physical health. Gender, sexual orientation and visa status were important intersections of discrimination.

**Conclusions:** The higher than average rates of HIV in CALD populations and associated stigma are emerging public health issues in Australia. These findings reinforce the importance of implementing programs to address stigma and discrimination including the value of 'positive speakers' from within CALD communities and an understanding of intersecting factors. Likewise providing high quality, and culturally responsive services that build social capital and social support and work in conjunction with the different communities, is vital in addressing HIV in these communities.

## THPED318

### CERVICAL CANCER SCREENING INCREASES HIV AND FAMILY PLANNING UPTAKE IN REFUGEES SETTLEMENTS IN UGANDA

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**Background:** Provision of integrated Sexual Reproductive Health services including cervical cancer screening, Family planning and HIV for persons in Humanitarian crisis is a critical component of any Humanitarian response. The implementation of the Minimum initial services package (MISP) has been promoted and supported for quality SRHR services for persons in Humanitarian crisis. Despite the mutual dependence of HIV and other reproductive Health packages, refugees were reluctant to access some of the services. As part of the implementation of MISP through the SPRINT initiative, RHU implemented a project to provide MISP in refugee settlements in Uganda.

**Description:** The project supported the provision of MISP and other SRHR package of services provided by RHU including Family planning and cervical cancer screening to refugees in five settlements in Uganda. Facility and community based integrated outreaches were conducted 5 refugee settlements in 3 months projects from March 2013 to October 2015. The program raised awareness and ownership of SRHR services through sensitization activities at community level and facility levels; increased uptake of SRHR services and facilitated bi-directional linkages and referral systems and mentored the quality of integrated SRHR service provision using specifically defined indicators. There was over 80% of female clients coming for services primarily and first because of cervical cancer screening.

**Lessons learned:** SRHR services were provided to 53,162 refugee populations including 36,501 Women in reproductive age. While mobilization for services always mentioned all range of services available and mobilisers mentioned HIV followed by family planning, 83% of Women in reproductive age reported that the primary reason for coming to the outreach was to access cervical cancer screening. This increased uptake of other services through the sensitization session and individual counseling during services provision. Theprovision of integrated SRHR services with cervical cancer screening increased uptake of other SRHR services.

**Conclusions/Next steps:** The concept of SRH/HIV integration can be adopted by implementing partners in crisis settings. SRHR integration creates opportunities to access WRA and provide them with information and many choose to take additional SRH services. Cervical cancer screening is a critical component of SRHR/HIV which should be made available to persons in Humanitarian situations.

## THPED319

### UNDERSTANDING UTILIZATION OF KEY SOCIAL AND HEALTH SERVICES AMONG FEMALE SEX WORKERS BY THEIR MOBILITY PATTERN IN ANDHRA PRADESH, INDIA

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**Background:** Female sex workers, due to their nature of work, often move from one place to another. Most of their mobility pattern is due to discrimination at native places, lack of availability of customers, fear of disclosure of their identity. Despite many HIV prevention programs and social inclusion policies, their social status remains low. This study put efforts to understand how they utilize social and health services during their mobility.

**Methods:** The data were used for the study has been collected during April to August 2014 to fulfil the doctoral study. Mixed method approach has been used to collect primary data. Quantitative data has been collected from 156 female sex workers and qualitative data from female sex workers (19) and key stakeholders (10). Structured data collected from 156 FSWs used in this paper. Data was collected on migration mobility pattern, and violence and utilization of services. Univariate and bivariate and multivariate analysis has been used.

**Results:** Nearly Almost 89% of the FSWs were mobile in nature and migrated to various locations for practicing sex work. Nearly 30% expressed that they were 'not at all confident" in utilising health service during migration. The reasons cited are; fear of disclosure of identity (47%), discrimination (21%), hesitate to contact provider (85%) and expensive to consult (13%) provider. During migration 77% FSWs reported that they skipped skipping of any one service. Migratory status and duration were significantly associated with utilization of services among FSWs.

**Conclusions:** Despite availability of government health facilities at free of cost, many of the female sex workers are not approaching those, because of lack of confident, discrimination and disclosure of their identity which force them to depend on self medication or home remedies. A comprehensive approach should be embedded in to the ongoing HIV prevention programs to include social, financial and health security towards female sex workers population.

## THPED320

### FOLLOW-UP OF HIV TRANS-BORDER PATIENTS: THE CASE OF 'SAVE THE CHILDREN' IN SOUTH SUDAN

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**Background:** In 2008 Save the Children initiated a program to provide assistance to People Living with HIV (PLHIV) across borders. The program was implemented in the Save the Children Nimule hospital ART clinic in South Sudan, near the border with Uganda. The clinic serves PLHIV within South Sudan and mobile populations from neighbouring districts in Uganda and Kenya, including long distance truck drivers, business men, and pastoralists.
**Description:** From 2009 to 2011, the program enrolled 776 (Male 365, Female 411) patients and 81 (42 Males, and 39 Females) of these were from Kenya and Uganda, and the remaining 695 were from South Sudan. There was significant difference in the defaulter rates between South Sudanese and foreigners, with South Sudanese patients having a defaulter rate of 2.3% (16 defaulters over 695 patients), while that of foreigners (non-South Sudanese) was 58% (47 defaulters over 81 patients).
**Lessons learned:** Based on this challenging experience, a number of measures were introduced in the program in 2012, to facilitate a more effective follow up patients across the borders:
- Conducted exchange visits with ART centres in Uganda
- Set up appointment calendar to track appointment dates and follow-ups.
- Formed a network of treatment supporters composed PLHIV from villages in Northern Uganda and South Sudan
- Distributed bicycles to facilitate the work of treatment
- Provided monthly incentives to support the treatment supporters.

**Conclusions/Next steps:** As a result of these measures, while the defaulter rate for South Sudanese patients remained stable that of trans-border patients reduced to 1.8% (16 defaulters over 176 patients). Communication and exchange of contacts for clients between cross-border ART clinics has made it easy to ensure ART treatment adherence amongst cross-border mobile populations, whereas the establishment and involvement of treatment supporters from across the border has also facilitated adherence to ART treatment through provision of treatment supports and ensure that clients that are lost to follow up are followed up and brought back to care as well as get feedback from clients who access ARTs on the other ART clinics across the border. This model could be replicated with success in similar situations.

# PEOPLE WITH DISABILITIES

## THPED321

### "THEY KNOW THEY HAVE THE RIGHTS TO SPEAK OUT": BREAKING THE SILENCE AND BUILDING RESILIENCE THROUGH COMPREHENSIVE SEXUALITY EDUCATION WITH LEARNERS WITH DISABILITIES

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**Background:** Young people with disabilities in South Africa are at increased risk of exposure to HIV as they lack access the sexuality education and information, health services and are at increased risk of sexual exploitation. This particular applies to girls with disabilities and those with intellectual disabilities. For boys with intellectual disabilities behavior such as masturbation in public is also reported as a challenge. Sexuality education has been amalgamated into the life orientation curriculum. Evidence shows that these learners are often excluded from sexuality and HIV education, and educators feel not equipped to provide sexuality education in accessible formats.
**Methods:** This paper presents the qualitative part of a formative evaluation of a curriculum innovation for educators of learners with disabilities in KwaZulu-Natal. It presents the experience of teachers with the implementation of the innovation. 100 teachers were trained during a three-day workshop and provided with the tools to implement comprehensive sexuality education in their schools. After a twelve-month implementing period in-depth interviews were conducted with teachers of learners with intellectual disabilities in eight schools. Data was transcribed and analyzed using conventional content analysis and NVIVO version 10.
**Results:** Implementing teachers experienced the training and tools as enabling to provide sexuality education in accessible formats and tackle difficult topics such as sexual orientation or masturbation. They reported improved awareness and assertiveness within their learners, who were able to *break the silence* and understand their sexual and reproductive health and rights. They felt enabled to tackle a number of myth and inappropriate behaviors (masturbation in public). Teachers identified the need to train a whole school, adjust to widely differentiating developmental stages of learners and separate girls and boys when addressing gender specific topics.
**Conclusions:** This project attempts to provide sexuality education to more severely disabled learners. It shows promise to improve teachers skills and confidence. Through its application within the South African mainstream Live Orientation curriculum it also lends itself for integration within inclusive settings. Further testing of this intervention is needed to identify how its tools can be used to enable access to comprehensive sexuality education for all learners.

# OTHER VULNERABLE SOCIAL GROUPS, INCLUDING IN SPECIFIC CONTEXTS

## THPED322

### HEALTH AND WELLBEING OF HIV POSITIVE AND NEGATIVE OLDER PEOPLE IN UGANDA

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**Background:** The population of older people including those living with HIV is increasing in Uganda. As people age, their disease burden tends to increase. It remains unclear how both ageing and HIV affect the health and wellbeing of older people in Uganda. We compared the health and wellbeing of HIV-positive and negative older people.
**Methods:** We analyzed survey data from the longitudinal WHO Study on global AGEing and adult health (SAGE)-Wellbeing of Older People Study (WOPS) in Uganda. This study was implemented in 2009-2010 (wave 1) and between 2012-2013 (wave 2), among people aged 50+ both HIV-positive and HIV-negative. Data on quality of life was captured using the World Health Organization Quality of Life (WHOQOL) questionnaire, and disability using the WHO Disability Assessment Schedule version 2. Hand grip strength was measured using a dynamometer. WHOQOL and disability scores were generated for each study participant based on standard methods. Mean hand grip strength was based on average of best result in both hands.
**Results:** A total of 510 study participants were included in SAGE-WOPS Wave 1, with a mean age of 65.8 years for men and 64.5 years for women. Almost 40% were HIV-positive. A total of 371 (72.7%) participants surveyed in wave 1 were followed up in wave 2. Of those that were lost to follow-up, 63 (12.4%) were known to have died, while the rest could not be traced.
All the HIV positive older people said they were accessing care. More than 50% of the HIV negative older people had taken more than one year without visiting health care centers. At each wave, HIV-positive older people had better WHOQOL and WHODAS scores as compared to their HIV negative counterparts. In addition, HIV-positive older people had higher mean hand grip strength compared to their HIV-negative counterparts.
**Conclusions:** These findings may not reflect better health in HIV-positive older people compared to their HIV negative counterparts, but may reflect better access to health care for HIV positive older people in. Better access to care in turn leads to better quality of life.

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## THPED323

### YUMMY OR CRUMMY? HOW PILL BURDEN AND PALATABILITY AFFECT ART ADHERENCE AMONG HIV-POSITIVE ADOLESCENTS

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**Background:** Between 2005-2013, deaths among HIV-positive adolescents (aged 11 - 19) rose by 50% globally. AIDS is the second leading cause of death among adolescents worldwide, and the leading cause of death among adolescents in sub-Saharan Africa. Pill counts and biomarkers are established techniques for measuring ART adherence and exploring immunological outcomes. However, there is a lack of research on how pill burden and palatability affects ART non-adherence. This mixed methods research examines the experiential dimensions of ART adherence among the world's largest community-traced sample of HIV+ adolescents.
**Methods:** Research integrated quantitative and qualitative methods in design and implementation. Qualitative research guided the content of quantitative tools, while emerging quantitative findings framed the thematic focus of further qualitative research. The quantitative sample consists of N=1,059 (585 HIV-positive girls, 55.1%) ART-initiated adolescents from 53 government facilities who were traced to their communities. Qualitative interviews and other forms of participatory research (N=87, 67%) were combined with over 1,000 hours of participant observation. Novel, socio-behavioural research methods were triangulated to explore the effects of palatability and pill burden on ART adherence. Results from the qualitative research and emerging findings from the quantitative data, are presented here.
**Results:** Past-week self-reported ART non-adherence was 36%, and past-year inconsistent adherence was 48%. 'Adherence reporting' presented conceptual and cognitive difficulties for adolescents, and was often ambiguous and inconsistent. Adolescents' experiences of the taste, smell, size, colour and volume of their medicines were all associated with ART adherence. Inconsistent adherence was associated with pills that tasted bitter, were large, were specific colours (related to unpleasant side-effects), or exceeded a volume of two per day. ART adherence is a multidimensional and multisensory experience that extends beyond the 'pop-and-swallow' approach.
**Conclusions:** This research contributes to the limited literature on the experiential dimensions of ART adherence beyond clinical settings. Current pediatric formulations of ART are often ill-suited to the needs of adolescents. Poor palatability and heavy pill-burden are associated with ART non-adherence. Improving the taste, delivery and accessibility of ART, based on the insights and experiences of affected adolescents, is essential to improve adolescent adherence.

## THPED324

### EXPLORING THE QUALITY OF LIFE OF ORPHANS LIVING IN CHILD-HEADED HOUSEHOLDS IN ZIMBABWE

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**Background:** One of the long term and far reaching effects of the HIV epidemic is the burgeoning orphan crisis. The combination of this orphan crisis and intensified poverty has eroded traditional safety nets as the extended family can no longer take in these orphans. This resulted in the formation of child-headed households. In the absence of an adult and economically active guardian, these orphans often experience multiple deprivations which affect their quality of life.
This study investigated the quality of life of orphans living in child-headed households in Zimbabwe.
**Methods:** The study was conducted in 3 sites in urban and rural Zimbabwe. A mixed methods multi-phase design was employed between April 2013 and January 2016. The first phase was a focused situation analysis, a document review and in-depth interviews with 10 key stakeholders were conducted. A survey was conducted with 96 children living in child-headed households using the World Health Organization Quality of Life psychometric assessment tool. This was followed by an ethnographic study where interviews and observations were conducted with seven children selected from the survey. In the final phase a stakeholder meeting was conducted and guidelines for interventions to improve the quality of life of children in child-headed households were developed.
**Results:** Four social protection programmes supporting child-headed households were identified in the situation analysis. From the survey, 88% indicated that they did not have enough money; 62% did not have social support; and 58% indicated that they often experienced depression, despair and anxiety; only 32% indicated that they were satisfied with their life. The ethnography revealed that children experienced multiple stressors namely food insecurity, lack of school fees, stigma, depression and poor social support networks but showed considerable resilience as they adopted various coping strategies.
**Conclusions:** Quality of life in child-headed households is poor and characterised by multiple material deprivation. These vulnerabilities are not adequately addressed by existing social protection mechanisms, thus further exposing orphans to HIV. However, these orphans showed considerable resourcefulness and resilience as active agents and not passive victims. Therefore, interventions to support child-headed households should look beyond their vulnerabilities, to enhance protective factors and agency of orphans.

## THPED325

### CAPACITY NEEDS ASSESSMENT OF ADOLESCENT KEY POPULATIONS IN ASIA: A THREE-COUNTRY REPORT (CHINA, PHILIPPINES, THAILAND)

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**Background:** Adolescents are more vulnerable to HIV than adults, with one in six new infections in 2013 occurred among 15-19 years olds according to UNAIDS. This is due to low level of awareness, exposure to sexual violence, and age-related barriers in accessing HIV testing and treatment. In contrast, HIV response to adolescents remains weak and inadequate. There has been little explicit focus on the particular needs of adolescents within key population groups.
**Methods:** With support from UNICEF EAPRO, this report aims to surface the issues of adolescent key populations including adolescents living with HIV to support better information towards programming in three countries: China, Philippines, and Thailand. A total of 6 national consultations as well as key informant interviews were organized. Interviews and consultations employed semi-structured, open-ended questionnaires.
**Results:** Adolescent key populations face stigma and discrimination because of misconceptions about HIV and being part of key population groups. In Thailand, for example, adolescents who are assumed to be living with HIV are excluded in schools. In China, adolescent gay boys are isolated from social circles. While some adolescents are willing to access HIV testing and/or treatment, the lack of support from families and a supportive legal environment hinder them from doing so. Further, health service provision in hospital facilities only admits those who are above the age of 18.
**Conclusions:** This report recommends adolescents to be involved in the planning, programming, implementation, monitoring, and evaluation processes. This can be achieved by supporting capacity-building leadership courses conducted by youth-led organizations, such as Youth LEAD's NewGeneration Leadership Training Course, to enable adolescents to participate in these different processes. Community-based organization (CBO)-led led initiatives that provide outreach to adolescent key populations should be scaled up. Building a supportive environment around families and custodians is also recommended to guarantee and support adolescents' access to HIV services.

## THPED326

### THE INVISIBLE VOICES: PORTRAYAL OF HIV/AIDS AFFECTED POPULATIONS IN UGANDA'S PRINT MEDIA

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**Background:** The study examined how *New Vision* and *Monitor* newspapers in Uganda portrayed people affected with HIV/AIDS. The populations of concern were Sex workers, women, clients of sex worker, People living With HIV/AIDS (PLWHA), care givers of PLWHA, truck drivers, men who have sex with men, people with disabilities and married couples. The study analyzed 20 years of HIV/AIDS coverage but was divided into four phases for lucid analysis and comparison between phases. Also state of social, economic, and political factors during these phases were examined. Social, economic and political factors such as education levels, war, poverty etc. affect HIV/AIDS in terms of prevention, prevalence rate, and magnitude of media attention.
**Methods:** This study was part of larger study which examined 20 years ,1992 to 2011, of HIV/AIDS coverage in two major newspapers in Uganda. Quantitative content analysis was used. 1510 news reports were coded by two researchers, whose inter-coder reliability was kappa=09085.

**Results:** The results of the study indicated low, albeit gradual increase in coverage and reference to the affected populations. However, as sources for media reports about HIV/AIDS, a disease that most affects them, their voices were invisible. For example, despite the high coverage of married people as risk group in phase four (n=76), only n=77 (14.7%) were considered as sources compared to 59% and 33.5% of HIV/AIDS experts and government sources.
**Conclusions:** What the media covers, and what/who the media gets information from shapes the content of the message that is eventually produced. Such messages should consider feedback from both the experts and people affected by HIV/AIDS given that their perspectives lend a humane experience and help to create information, or policies that are relevant. Agreement remains that the media does set both public and policy agenda therefore, in the long run, omitting the voice of affected people during coverage could undermine effective policy development and HIV/AIDS prevention efforts.

## THPED327

### DETERMINANTS OF EARLY INFANT DIAGNOSIS AMONG HIV-EXPOSED INFANTS IN BOTSWANA: ANALYSIS OF BOTSWANA AIDS IMPACT SURVEY IV SECONDARY DATA (2013)

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**Background:** In 2013, it was estimated that 44.4% of HIV-exposed infants were tested for HIV by 8 weeks of age in Botswana (BAIS IV, 2013).The purpose of this paper was to investigate demographic and structural factors associated with Early Infant Diagnosis (EID) among HIV-exposed infants in Botswana.
**Methods:** BAIS IV was a national two stage sample survey conducted in 2013. Smart phone tablets were used to collect data. Data was analyzed using SPSS 22.0. The association between EID and demographic and structural factors was determined using bivariate analysis. To test for independent association logistic regression was applied.
**Results:** Age, employment status and level of education had a significant association with EID (p=0.000); younger women (15 and 24 years) were most likely to test their infants compared to older women (40-49 years), while more than half (54.1%) of women with primary education or less compared to 36.9% among those with tertiary education tested their infants. Women with primary education or less, were 3 times more likely to test their infants compared to those with tertiary education (OR= 3.017, 95% p=0.000) having controlled for age and employment status. Similarly, 47.7% of employed women compared to 40.0% among unemployed women took their infants for HIV test at ages 6 to 8 weeks. Women who were on treatment prior/during last pregnancy were 1.2 times more likely to test their HIV-exposed infants compared to those who were not on treatment. At the same time a higher proportion of women enrolled on PMTCT compared to those not enrolled, tested their infants (90.1% vs. 70.4%).
**Conclusions:** Demographic and structural factors being education, age and employment status had a significant association with EID. Contrary to expectation data showed that women with higher levels of education were less likely to test their infants compared to those with lower levels of education. More education needed among women with higher levels of education and are also who are employed. Women enrolled on PMTCT more likely to test their infants hence the need to educate and improve access to HIV/AIDS services. Linkages between PMTCT program and post natal will be strengthened because of these results.

## THPED328

### YOUTH NEEDS ASSESSMENT ON SEXUAL AND REPRODUCTIVE HEALTH SERVICES IN LOW-INCOME COMMUNITIES IN CAPE TOWN, SOUTH AFRICA

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**Background:** A disproportionately high number of new HIV infections in South Africa are among individuals aged 15 to 35. This highlights the importance of increasing access to and utilization of health care services by youth. Research was conducted in Cape Town in order to ascertain the needs of the youth as well as their barriers and preferences related to health services.
**Methods:** Surveys were conducted in the Klipfontein health sub-district with youth in six schools (n = 268) whose ages ranged from 13 - 20 years ($M$ = 15.81, $SD$ = 1.37) where 33% were male and 67% were female. The data analysis consisted of descriptive statistics and frequencies which were analysed using SPSS (Statistical Package for the Social Sciences). The identified needs, barriers and preferences were ranked according to level of severity or saliency.
**Results:** Learners felt that they needed better access to health information and education (59%), specifically information on teenage pregnancy (52%), STIs (45%) and HIV (42%). They preferred to receive health information from teachers (66%), an organisation at their school (57.1%) and from their parents/family (53%). Participants also highlighted the need for access to contraception (49%) and HIV Counselling and Testing (49%). When accessing health services, learners said that the most important factors to them were privacy, friendly staff, confidentiality, convenient locations and convenient hours. The greatest barriers to accessing health services were negative attitudes of the staff, embarrassment about people knowing they are going to a clinic, the need to make an appointment, concerns about confidentiality, staff who do not show concern or respect, and a lack of knowledge about services available.
**Conclusions:** The survey results demonstrate a need for youth-friendly sexual and reproductive health services to be made accessible to learners in Cape Town. Based on youth recommendations, provision of school-based services may address learner needs and reduce barriers to access.

## THPED329

### EXPLORING HIV NEEDS AND CHALLENGES FOR ADOLESCENT KEY POPULATIONS IN INDIA: A STEP TOWARDS ADDRESSING INEQUALITIES IN HIV RESEARCH AND PROGRAMMING

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**Background:** Globally, adolescent key populations (AKPs) are disproportionately affected by HIV. The post-2015 Sustainable Development Goals to end AIDS epidemic by 2030 can be achieved if solutions are developed for AKPs, responding to their HIV/SRH needs. India is the third largest contributor to HIV in the world, epidemic being concentrated largely in key populations. Due to inequity in HIV policy and programming, most interventions have targeted adults, and not addressed the risks faced by AKPs. Participatory structured consultations were held with AKPs, stakeholders and policy makers to understand needs, challenges and possible solutions.
**Methods:** Exploratory study was conducted using qualitative methods at Delhi in 2015. Methods included: mapping, FGDs (with 30 AKPs from 8 states) and KIIs (10 stakeholders). These discussions were digitally recorded, transcribed, translated, and then analysed using content analysis.
**Results:** Study findings indicate that AKPs indulge in high-risk behaviour, however only a few had knowledge on HIV/SRH issues. Findings reveal that structural factors including discriminatory policies/laws make AKPs vulnerable to HIV. AKPs report being subjected to self (guilt) and societal stigma (name calling, non-acceptance by family) and violence (bullying, coercive sex) that exacerbate HIV risks. Due to stigma and criminalizing laws, MSMs and TGs are fearful of disclosing their identities and hence do not seek services. AKPs also reported experiencing negative and judgemental attitude from healthcare providers (HCPs) on issues of sexuality. The need for training and skill building to deal responsibly with AKPs was felt by HCPs. For young FSWs, violence from clients in the form of coercive and group sex, and low condom use was the real challenge. Most AKPs identified peer-led outreach services as effective and acceptable means of working with them.
**Conclusions:** AKPs have largely been excluded from national HIV response. To improve their equity in HIV access and prevention, current research provides evidence to respond to AKPs needs and challenges in national programming. These include: empowering and building capacities of AKPs on HIV/SRH issues; training HCPs in developing non-judgmental attitudes and skills towards AKPs; addressing stigma, discrimination and violence; and piloting peer-led approaches as a strategy to work with AKPs in India.

## THPED330

### OPTIMISM ABOUT THE FUTURE PREDICTS BIOLOGICAL AND PSYCHOSOCIAL FUNCTIONS AMONG CHILDREN OF HIV-INFECTED PARENTS

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**Background:** HIV/AIDS is a strongly-stigmatized disease, which has profound impact not only on the infected individuals, but also on their families. Children of the HIV-infected parents are particularly vulnerable to various negative outcomes, such as depression, problem behaviors and health problems. Research begins to identify effects of children's positive characteristics on their health outcomes. Optimism about the future, defined as the extent to which people be optimistic in their beliefs

about the future, is suggested to be beneficial for HIV-affected children's psychosocial function, but such benefit has not been examined using their health-relevant biomarkers. One of the key biomarkers related to early-life adversity is cortisol, which is the body's primary stress hormone, produced by the hypothalamic-pituitary-adrenal axis. This investigation examines whether optimism about the future could benefit both HIV-affected children's biological (diurnal cortisol rhythm) and psychosocial functions (internalizing and externalizing problems).
**Methods:** A sample of 645 children (8-15 years old; 48.1% girls) of HIV-infected parents was recruited from a rural county in central China. Participants provided saliva samples 4 times a day for three consecutive days: immediately upon waking, 30 minutes after waking, one hour before dinnertime, and bedtime to assess their diurnal cortisol patterns. Optimism about the future, depression, loneliness and problem behavior were assessed via self-report.
**Results:** Children who were more optimistic in their beliefs about the future showed higher cortisol levels at awakening, steeper cortisol slopes, lower total cortisol changes over time (area under the curve with respect to increase, $AUC_I$), lower loneliness and less problem behavior. These associations remained significant after we controlled for demographic factors and stressful life events. Optimism about the future was not associated with cortisol awakening response (CAR), total cortisol output (area under the curve with respect to ground, $AUC_G$), or depression.
**Conclusions:** These results suggest that optimism about the future is linked to favorable psychosocial outcomes and health-related biological functions, through which health outcomes might be influenced. Intervention efforts are needed to improve optimism about the future among children affected by HIV so as to improve their mental and physical health.

## THPED331

### USING MEDIA TO STRENGTHEN THE IMPLEMENTATION OF A PROGRAMME WORKING WITH YOUNG WOMEN

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**Background:** The Soul City focuses on intensifying multi-media SBCC interventions through its programmes. The Rise Young Women's Clubs is a community based Behaviour Change Communication programme that aims to significantly reduce new HIV infections among young women of 15 to 24 years. The programme is aimed at building social cohesion amongst young women by mobilising them to participate in taking responsible action to shape their lives and the communities they live in. It is currently iimplemented in 7 of the 9 provinces in South Africa.The programme started in 2014.
**Description:** The Soul City institute developed and implemented media interventions informed by formative research conducted in 2014, to strengthen the implementation of this programme. The multi-media materials developed for this programme are (print, broadcast television, and social media).
Rise Talk Show is an inter-generational multi-host lifestyle show aimed at young women between the ages of 14-25 years, to create an open environment whereby they can be encouraged to spark bold debate, conversations and discussion on hard hitting gender issues without being apologetic. It also aims to encourage open and honest dialogue.
Rise Magazine is a theme-based publication that contains a mix of content, activities and ideas for collective community action by the clubs. The magazine is a resource for clubs to undertake projects on topic/features linked to the curriculum developed for the programme.
The Rise Monitoring App is a central data repository that allows for efficient monitoring and reporting of the club activities and projects.
Rise Young Women's Movement Mxit Reach App is a is free interactive and fun platform for all young women who want to share their issue, concerns, advice, stories and everything that affects them.
**Lessons learned:** Young women need easy access to information, space to interact - connect with friends and discuss issues, space to get advice and links to services and opportunities.
**Conclusions/Next steps:** Soul City conducted research on the talk show and on the magazine looking at how young women communicate. The findings were that drama, story, talk shows for young women by young women, and reality shows that show what other youth go through are mostly preferred.

# ADOLESCENTS AND YOUNG PEOPLE AND SEXUALITY AND RELATIONSHIPS

## THPED332

### SEXUAL AND REPRODUCTIVE HEALTH (SRH) EXPERIENCES OF ADOLESCENT MUSLIMS IN KAMPALA, UGANDA

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**Background:** Adolescence marks a journey from childhood to adulthood that is characterised by considerable biological, physical and cognitive changes. Exploration of one's sexuality and engaging in risky sexual behaviour are not uncommon for young people of both sexes in this phase of life, making adolescence a period of vulnerability as well as opportunity. This study therefore explores the sexual and SRH experiences of adolescent Muslims.
**Methods:** A cross sectional research design was adopted, qualitative in nature and the study was carried out in a Muslim school within Kampala suburbs. Participants were adolescent Muslims aged 12-19 years. Assent and consent were obtained from participants and guardians to the adolescents. 13 Focus group discussions were held with adolescent Muslims. A sequential exploratory approach was used in the data collection. Voice recorders were used to capture data thus data was transcribed and exported to Nvivo version 10 for data analysis.
**Results:** Adolescents reported lack of SRH informatiom from the Mosque/parents while service providers ask too many questions before providing a service. Adolescents reported to have experienced community stigmatisation as they reported that the communities think negatively of them if they used condoms or had unprotected sex. Adolescents lacked life skills to prevent themselves from sexual engagements with their partners as quoted: 'I *have tried to resist but sometimes the power of nature overcomes.'*The adolescents felt pressured by fellow peers into risky sexual behavior as quoted*; "I had a group of friends and they were all having boyfriends. I felt like maybe I was an outcast in the group, so I decided also to get a boyfriend".* Adolescents currently don't fear HIV quoting that "*Most people say AIDS is a normal disease; you can sustain it for a long period of time when you are on ARVS". Most girls don't worry about HIV, but rather pregnancy* thus a normal peer norm among girls consequently visioning sexual activity as a source of livelihood.
**Conclusions:** Scale up engagement with religious leaders/parents in SRH programming; build life skills among muslim adolescents and train service providers on youth friendly services but also engage partners on rights based programming.

## THPED333

### THE MISSING DISCOURSE OF SEXUAL PLEASURE IN HEALTH PROGRAMMES FOR YOUNG PEOPLE LIVING WITH HIV

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**Background:** The push to integrate HIV and sexual and reproductive health (SRH) programmes for young people emphasizes the delivery of information and commodities to prevent pregnancy and treat illness. Programs do not generally acknowledge adolescent circumstances, including hormonal changes, and the onset of romantic and sexual desires that drive sexual decision-making; as such, they fail to meet the needs of adolescents, particularly those living with HIV. Findings from a qualitative study among young people living with HIV (YPLWH) suggest opportunities to leverage notions of sexual pleasure for improved impact.
**Methods:** YPLWH were trained (n=8) to undertake qualitative interviews with peers (aged 16-25) recruited from support groups (Zimbabwe, n=24) and clinics (South Africa, n=24). Discussions focused on experiences accessing SRH information and services and with sexual activity. English language transcripts were thematically analysed using participatory methods.
**Results:** Data showed that young people defined sex as 'bad and dangerous'; other negative themes emerged. First, young people framed HIV-acquisition as linked to having "misbehaved". Second, engaging in sexual activity - defined as intercourse - was perceived as 'perilous' and 'shameful' due to the risk of transmission. Forms of safer sex and other sensual activities (oral sex, kissing, touching) were not mentioned as alternatives. These sentiments were strongly held by health workers and young people alike. Stigma associated with having sex - both internalised and externalised - framed conversations about initiating sexual activity. This was especially true for YPLWH who had acquired HIV-vertically - as previously "blameless" virgins risked becoming "immoral" through initiation of sex. A final theme was the

emphasis on access to commodities (contraceptives, condoms) as being the route to SRH at the expense of non-judgemental discussions about romantic and sexual relationships.
**Conclusions:** Sex and SRH was framed in terms of risk and moral judgement, protection from disease and pregnancy, and overlapping HIV-related stigma and sexual taboos. Sexual pleasure was absent from discussions. Reframing SRH to leverage pleasure as a motivator to promote healthy romantic and sexual relationships may more widely support sexual health. Such re-framing could not only utilize health workers and facilities, but also youth-friendly media e.g., websites, mobile applications and pocket booklets.

## THPED334

### YOUNG WOMEN'S PERCEPTIONS OF TRANSACTIONAL SEX AND SEXUAL AGENCY IN THE CONTEXT OF RURAL SOUTH AFRICA

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**Background:** Evidence shows that the HIV prevalence among young women in sub-Saharan Africa increases almost five-fold between ages 15 and 24, with almost a quarter of young women infected by their early-mid 20s. Transactional sex or material exchange for sex is a relationship dynamic that has been shown to have an association with HIV infection.
**Methods:** Using five focus group discussions and 19 in-depth interviews with young women enrolled in the HPTN 068 conditional cash transfer trial, this qualitative study explores young women's perceptions of transactional sex within the structural and cultural context of rural South Africa. The analysis also considers the degree to which young women perceive themselves as active agents in such relationships and whether they recognise a link between transactional sex and HIV risk.
**Results:** The findings show that young women believe that securing their own financial resources will ultimately improve their bargaining position in their sexual relationships, and open doors to a more financially independent future. The findings also suggest that there appears to be a more nuanced relationship between sex, love and gifts where money has symbolic meaning, and where money transfers, as gifts, indicate to partners, a young woman's value and commitment from the man. This illustrates the complexity of transactional sex, and that the way it is positioned in the HIV literature ignores that "exchanges" serve as fulcrums around which romantic relationships are organised. Finally, young women express agency in their choice of partner, but their agency weakens once they are in a relationship characterised by exchange, which may undermine their ability to translate perceived agency into HIV risk reduction efforts.
**Conclusions:** This research underscores the need to recognise that transactional sex is embedded in adolescent romantic relationships, but certain aspects of it make young women vulnerable to HIV. This is especially in situations of restricted choice and circumscribed employment opportunities. HIV prevention educational programmes need to be coupled with income generation trainings, in order to leverage youth resilience and protective skills within the confines of difficult economic and social circumstances. This would provide young women with the knowledge and means to successfully navigate safer sexual relationships.

## THPED335

### A TAXONOMY OF BEHAVIORAL ADJUSTMENTS RELATED TO PRE-EXPOSURE PROPHYLAXIS (PREP) AMONG ADOLESCENTS IN SOUTH AFRICA

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**Background:** Risk compensation refers to adjustments in behavior based on changes in perceived levels of risk. There has been concern about the potential for risk compensation due to the clinically protective effects found in efficacy trials of oral antiretroviral (ARV) pre-exposure prophylaxis (PrEP). This concern is particularly expressed with regard to young people in HIV endemic settings, where PrEP scale-up is especially warranted. We conducted a mixed methods study to explore and identify types of PrEP-related behavioral adjustments that may occur among adolescents in the high-risk HIV context of Cape Town, South Africa.
**Methods:** HIV-positive and HIV-negative adolescent participants were recruited using convenience sampling in community and clinic settings; service providers were recruited using snowball sampling. Adolescents completed a survey about perceptions of PrEP efficacy, and took part in focus groups and individual interviews. Similarly, health service providers completed a survey about perceptions of PrEP efficacy and completed individual interviews. Focus groups and interviews were guided by a semi-structured protocol exploring perceptions about predicted behavioral adjustments among adolescents using PrEP. Quantitative data were analyzed using SPSS and qualitative data were analyzed thematically using NVivo. We obtained ethical approvals from University of Cape Town and Brown University.
**Results:** Adolescent participants included 24 Black Africans who completed grade 8 or higher, and 17 service providers working in adolescent clinics. Ninety percent of adolescents endorsed likelihood of PrEP use, and 100% of clinicians endorsed prescribing PrEP for sexually active adolescents in the future. Predicted behavioral adjustments among adolescents due to PrEP included greater disclosure of HIV-status to partners; greater likelihood for condomless sex among sexually active adolescents in a committed relationship; and increased uptake of HIV testing. We found little evidence suggesting that PrEP access would contribute to earlier sexual debut or greater numbers of sexual partners among adolescents.
**Conclusions:** Widespread ARV availability, adult PrEP implementation, and future adolescent PrEP may lead to a range of behavioral adjustments among adolescents in South Africa. Predicted PrEP-related behavioral adjustment among adolescents indicate a need for more research on behavioral counseling that is tailored to the developmental and age-specific needs of this group.

## THPED336

### BEYOND BEHAVIOR: THE ROLE OF SEXUAL ORIENTATION, GENDER IDENTITY AND ATTRACTION IN HIV INTERVENTIONS FOR YOUNG BLACK MSM AND TRANSGENDER WOMEN

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**Background:** HIV prevention efforts have traditionally focused on individual behaviors that place young black men who have sex with men and transgender women (YBMSM/TW) at risk for HIV, without sufficient attention to the role of sexual orientation and gender identity.
**Methods:** healthMpowerment.org (HMP) is a mobile-phone-optimized, Internet-based intervention for YBMSM/TW that provides information, resources, tailored feedback, and social networking platforms to offer and receive social support from peers. Baseline data from 474 YBMSM/TW enrolled in randomized controlled trial of HMP was analyzed to explore identity, attraction and behaviors.
**Results:** The mean age was 24.3 years, 39.5% were HIV-positive, 57.0% reported unprotected anal or vaginal intercourse in the prior three months. Most identified as gay 312 (65.8%), 87 (18.4%) as bisexual, 8 (1.7%) as straight and 67 (14.1%) as other. For many participants, there was lack of congruence between chosen identity, attraction and sexual behaviors in the past three months. Of those who identify as bisexual - only 18.4% reported moderate to high attraction to both males and females and engaged in anal or vaginal sex with both genders in the past 3 months. While most of the sample identified as male (95.6%), 7 (1.5%) participants identified as female, 10 (2.1%) as transitioning and 4 (0.8%) as undecided. One-tenth (n=48) reported being mis-gendered some, most or all of the time; 62.5% reported associated stigmatization. While 66.9% were open with others about their chosen sexual orientation, 21.5% wished they were not that orientation and 7.2% reported wanting professional help to change sexual orientation.

| | Attracted to men only | Attracted to women only | Attracted to both men and women | Not attracted to either gender |
|---|---|---|---|---|
| Gay | 279 (89.4%) | 0 (0%) | 29 (9.3%) | 4 (1.3%) |
| Bisexual | 26 (29.9%) | 3 (3.4%) | 57 (65.5%) | 1 (1.2%) |
| Straight | 2 (25%) | 6 (75%) | 0 (0%) | 0 (0%) |
| Queer/ Questionning/ Other | 45 (67.1%) | 4 (6.0%) | 18 (26.9%) | 0 (0%) |

*[Table 1: Relationship Between Preferred Identity and Attraction]*

**Conclusions:** A high proportion of participants reported incongruous sexual orientation, attraction and behavior. More nuanced understanding of the complexities of sexual orientation, gender identity and behavior among at-risk and HIV-positive YBMSM/TW is needed if HIV interventions are to provide appropriate tailoring and content to address the roles gender and sexuality may play in risk behaviors for HIV transmission.

## THPED337

### IMPROVING ACCESS OF HIV PREVENTION AND SEXUAL HEALTH SERVICES TO ADOLESCENT AND YOUNG MSM IN KARACHI, PAKISTAN

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**Background:** Pakistan is officially an Islamic Republic, in practice Pakistani law is a mixture of both Anglo-Saxon colonial law as well as Islamic law, and both proscribe criminal penalties for homosexuality. Pakistan has an intense epidemic of HIV/AIDS where MSM form the biggest high risk group due to the intolerant social behavior. MSM live under great suppression and few programmatic interventions address to explore complex yet important socio-cultural factor which causes extreme stigma and discrimination to Adolescent and Young MSM. This abstract summarized multiple factors faced by MSM in service delivery and program design in Karachi, Pakistan; making them vulnerable and most key affected population among other marginalized communities.
**Description:** Secondary Quantitative data was collected from service delivery reports of Volunteer Counseling and Testing-VCT of PMHS from May 25, 2012, till December 31, 2015. Ethical, verbal and written consent and other ethical considerations, as per PMHS's Institutional Manual were followed. PMHS's service delivery package for prevention of HIV/AIDS among MSM includes VCT, STIs' management, BCC and Condom & Lube distribution through peer led outreach interventions. Descriptive statistical analysis of the data was done on SPSS.
**Lessons learned:** A total of 4590 MSM agreed to opt for VCT service, 43.83% were from 15 to 24 years (youth group), and 16.71% were from 10 to 19 years (Adolescent group) and they belong to very low income and educational background. In youth group 4.62% and in adolescent group 4.04% were found reactive on rapid test provided at PMHS. Analysis of sexual practice of both groups shows that 76% have multiple male partners and condom usage is also at very low i.e. 17%. Around 72% reported religion as a cause of guilt associated with MSM behavior and 65% are not aware of HIV/AIDS.
**Conclusions/Next steps:** HIV disproportionately affects adolescents and young adults compared with the overall population. There is urgent need for adolescent and youth friendly HIV prevention and Sexual Health Services in program design with emphasized rights driven movements by educating the youth through integrated approach that engaged, Government, Civil Society Organizations, Parents, Students, Media, Religious Scholars and Law enforcement Agencies.

## THPED338

### 'A DIFFICULT CONVERSATION': ADULTS' PERCEPTIONS OF THE BARRIERS TO TALKING ABOUT SEX AND HIV WITH ADOLESCENTS IN RURAL KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Adolescent rates of HIV remain persistently high in South Africa. Adolescence is a period of potentially increased sexual risk, particularly for unwanted pregnancy and HIV. Parent-child communication about these issues can reduce risk but is often difficult for both parties. This paper aims to inform an intervention to encourage intergenerational communication about sex and HIV and also contribute to an in-depth understanding of the barriers from the adults' perspective, often missing in the literature.
**Methods:** Semi-structured qualitative interviews elicited data about perceptions of intergenerational communication. Eighteen adult representatives from within rural and peri-urban communities in Vulindlela, KwaZulu-Natal were purposively sampled to provide a caregiver's perspective. The sample also included 19 key informants, social workers, teachers and health care providers to provide a professional but also community perspective. Data was coded thematically in multiple iterations by two researchers to produce key themes about intergenerational communication.
**Results:** Adults framed young people's sexual activity in negative terms. Therefore discussions about sex were often aimed at instilling fear, focussed on risk and expected abstinence. Caregivers' had contradictory feelings, fearing the risk sex posed but also denying their children's sexual activity. Adults feared sensitive discussions, felt ill equipped for them and worried that discussions would encourage adolescents' sexual activity. Many respondents were influenced by traditional norms about intergenerational communication. Notably the influence of adults' experiences of and negotiations with personal risk in such a high risk and HIV prevalence context also emerged as a barrier.
**Conclusions:** The results highlight the need to equip caregiver's with the means to confidently and capably have a conversation about sex and HIV in order to overcome barriers such as fear, denial and traditional norms and beliefs, and shift the negative framing of young people and sex. The study uniquely highlights the fact that in such high prevalence contexts adults are grappling with personal risks, behaviours and fears that are wrapped up with intergenerational discussions about sex. Where adults are negotiating their own complex sexual relationships, risk and in some cases HIV status they need particular support and skills to be able to have intergenerational communication about sex and HIV.

## THPED339

### AMBIVALENCE AND CONTRADICTIONS: QUALITATIVE STUDY OF HIV PREVENTIVE BEHAVIORS AND THE NEED FOR DUAL PROTECTION AMONG YOUNG MEN AND WOMEN IN RURAL KWAZULU-NATAL, SOUTH AFRICA

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**Background:** South African women under the age of 25 experience a pattern of sustained high HIV incidence that has remained unmitigated for many years in spite of significant program investment. UNAIDS designates young women a 'key target population' for resources and more effective interventions. To gain a better understanding of intervention needs, this qualitative study explored young men's and women's narratives of HIV prevention experiences.
**Methods:** We conducted a qualitative meta-analysis of data from two studies of sexual risk behaviors among male and female adolescents and young adults aged 14-24 in rural KwaZulu-Natal, South Africa. The first study included N=76 in-depth interviews (IDIs), conducted at two time points, with participants aged 18-24 years. The second study included serial focus group discussions with 14-19 year olds (N=65). Coding within three broad themes (HIV/AIDS, preventive behaviors, pregnancy and reproduction) elicited four analytical categories: sexual risk behaviors; attitudes and beliefs about condoms; relationships and trust; and attitudes toward pregnancy.
**Results:** HIV preventive behaviors were strongly relationship-dependent and unintended pregnancy ('falling pregnant') was a primary concern for both young men and women. In casual partnerships, condom use was acceptable and therefore higher. Unintended pregnancy was especially feared with casual partners, who were not perceived as suitable life partners. However, dual method use to protect against both HIV and pregnancy was uncommon. In committed relationships, condom use was lower, and almost non-existent in relationships of several months or more. A strong cultural value placed on fertility among young men and women contributed to ambivalence about consistent condom use in long-term relationships. Pervasive fears of contraception - particularly injectable hormonal methods - resulted in condoms as a default prevention method, although condoms were equated simultaneously with a lack of trust. These ambivalent and contradictory perspectives led to inconsistent prevention practices, especially in condom use.
**Conclusions:** Young people's prevention needs are complex and multifaceted, with frequently conflicting objectives. Addressing multiple contexts of prevention - with tailored sexual and reproductive health approaches - would better address comprehensive prevention needs in this high HIV prevalence setting among the key population of adolescent and young adult men and women.

## SAME-SEX-ATTRACTED, BISEXUAL AND QUEER PEOPLE, INCLUDING YOUNG PEOPLE

### THPED340

### BI BEHAVIOR, BI IDENTITY, OR BOTH? INTERPRETING DISPARITIES AMONG BISEXUAL BLACK MEN IN THE U.S. ACROSS THE HIV PREVENTION AND CARE CONTINUUM: RESULTS FROM THE POWER STUDY

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**Background:** Across the HIV prevention and care continuum in the U.S., bisexual men experience disparities. Although bisexual men have lower HIV prevalence compared with gay men, research has shown that they are less likely to have received HIV tests; more likely to be HIV-positive unaware; and less likely to achieve viral suppression when HIV-positive. However, little research has attempted to differentiate bisexual behavior and bisexual identity in examining these disparities, particularly among Black MSM, who experience the highest HIV incidence rates domestically.
**Methods:** We examined survey and serological data collected at Black Pride events in six U.S. cities between 2014—2015 (n=3426) from the Promoting Our Worth, Equality, and Resilience (POWER) study. Among Black men ≥18 years reporting past-year anal sex with other men (n=2824), we differentiated between gay-identified men who had sex with men only (gay MSMO: 73.6%); gay-identified men reporting past-year sex with men and women (gay MSMW: 7.8%); bi-identified MSMO (8.3%); and bi-identified MSMW (8.3%). Using gay MSMO as the reference category, we conducted logistic regressions contrasting these groups by HIV testing history and serostatus; PrEP use (HIV-negative MSM); being HIV-positive unaware, and viral suppression (HIV-positive MSM). HIV-antibody testing was conducted onsite. Models adjusted for sociodemographics, city sampled, year, and ≥2 past-year sexual partnerships.
**Results:** Compared with gay MSMO, gay MSMW ($p< .01$), bi MSMO ($p< .05$), and bi MSMW ($p< .01$) were less likely to have ever received HIV testing. Bi MSMO ($p< .05$) and bi MSMW ($p< .01$) were less likely to be HIV-positive. However, gay MSMW ($p< .05$), bi MSMO ($p< .05$), and bi MSMW ($p< .01$) were more likely to be HIV-positive unaware. Bi MSMW were less likely to report achieving viral suppression ($p< .05$). Gay MSMW were more likely to report taking PrEP ($p< .01$).
**Conclusions:** Our findings show that, across the HIV care continuum, significant disparities occur among MSM who identify and/or behave bisexually, with bi-identified MSMW experiencing the worst outcomes. An urgent need remains for biobehavioral intervention development specific to bisexual Black men that encourages regular HIV testing, PrEP use, and care linkage/retention, perhaps building on the hopeful findings of PrEP utilization among gay-identified MSMW.

### THPED341

### "LA SOLUCIÓN ES LA TIJERA": HIV PREVENTION PROGRAM FOR LESBIAN AND BISEXUAL WOMEN

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**Background:** The inclusion of lesbian and bisexual women in health promotion agenda is scarce due to social, historical and cultural factors, especially in HIV prevention and research. However, the existing risks in their sexual practices have been scientifically recognized. The total figure of HIV+ LB women globally is unknown, even though there are nearly 7.000 in the United States.
**Description:** This paper presents the results of a program oriented to LB women from Cali, Colombia that aims to promote healthy sexual behaviors and the recognition of sexual and reproductive rights. It was built with a psychosocial framework that combined the Theory of gender and power (Wingood & DiClemente, 2000) and the Model for Social Change (Montero, 2003). It was a 6 session program in which 23 women, between 18 and 25 years old (X= 21.7; DS=1.78), participated. The program evaluation was conducted using mixed methodologies that include quantitative and qualitative tools.
**Lessons learned:** Participants reported a strengthened self-identity, a sense of empowerment in their sexuality, and an expanded knowledge about their sexual and reproductive rights.
However, corresponding with Latin-American and other international findings, the non-use of preventive methods and the lack of knowledge about HIV was reported. This gap could be the consequence of a health and education barrier in the LB community because agents such as family, teachers and health providers might not be trained to provide specialized information. Therefore, including the LB women in these education programs and raising awareness within this agent is mandatory. Moreover, interacting with other LB women and receiving accurate information about sexual health was highly valued by participants. Future programs must use strategies that promote empowerment, rights advocacy, access to community resources and social support networks.
**Conclusions/Next steps:** Programs oriented to LB women must address the way in which pleasure-seeking, risk perception, identity exploration, lack of knowledge, sexual abuse and drugs abuse create a particular vulnerability that sets this population at risk for HIV and other STDS. They should avoid exclusive biomedical perspectives that ignore the existence of social and structural factors that may increase this risk (Lindley & Walsemann, 2013; Logie, 2015).

### THPED342

### HIV KNOWLEDGE, ATTITUDES AND RISK PRACTICES & BEHAVIOR OF SEXUAL MINORITIES IN BOTSWANA

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**Background:** Much of the effort to prevent the spread of HIV and other types of support target the heterosexual population. While the existence of sexual minorities in Southern Africa is a reality, most countries do not have the policy and legislative framework that would allow them to specifically address the needs of such groups as research on sexual minorities is often rare and piecemeal.
**Methods:** This paper utilises Botswana data derived from a 2013 SADC cross sectional survey of sexual minorities in three countries, Zimbabwe, Botswana, and Zambia, aimed at exploring the sexual and HIV risk knowledge, attitudes, and practices of sexual minorities. Convenient sample of adults aged 18-65years across the country participated. Data are analysed in SPSS, using uni-variate and bi-variate techniques and descriptive statistics.
**Results:** A total of 189 Men who have sex with men( MSM) and 193 Women who have sex with women (WSW )young Batswana participated. Over two thirds of males in the sample (69.1%) classified themselves as gay while over a quarter (26.3%) self classified as bi-sexual. Among females, about three quarters (71.7%) classified themselves as lesbian and over a quarter (26.7%) as bi-sexual. A high proportion (96%) of men had engaged in anal sex, with almost three quarters (73%) indicating that their first sexual partner was older than themselves. A majority(77.2%) of the females had penetrative vaginal sex mostly with females about their age. However, just over a third (35.8%) indicated that they had had penetrative vaginal sex with a man. Use of condoms in these sexual encounters varies but generally condoms are not always used.
**Conclusions:** Same sex relationships are a reality and encouraging governments to take responsibility for all its citizens, regardless of cultural norms and values, has to be the mission of all. The design of programmes to this end will assist in enhancing the acceptability of divergent groups in the pursuit of the general good.

### THPED343

### 'SEXING IN THE CITIES': SEXUAL RISKS, PREVENTION KNOWLEDGE AND PRACTICES OF WOMEN WHO HAVE SEX WITH WOMEN IN SOUTH AFRICAN TOWNSHIPS

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**Background:** Although the 'zero-risk' myth has made women who have sex with women (WSW) invisible in the HIV and sexually transmitted infections (STIs) research, policy and programmatic intervention activities in South Africa, I explored sexual practices and risk behaviours to STIs among lesbian and bisexual women. With the 2012 HIV survey[1] in South Africa highlighting the HIV prevalence among women, being twice as high as that of men, all women are at risk, including WSW.
[1] See http://www.avert.org/hiv-aids-south-africa.htm
**Methods:** This study, which was part of a doctoral research project with Utrecht University, in collaboration with the Triangle Project in Cape Town and the Forum for the Empowerment of Women in Johannesburg, was conducted in various townships of Cape Town and Johannesburg. Most participating women identified as lesbian (77%) and black. Data were collected via a mixed method approach of self-administered questionnaires (N=209), in-depth interviews (N=33) and focus group discussion (N=10) with women (18 years and older) who in the preceding year had had sex with women.

Tuesday 19 July
Wednesday 20 July
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**Results:** Preliminary results show that 31.1% had more than 3 partners in the last 12 months, the majority of whom were concurrent. 36.8% stated they had had sex during menstruation, although a significant number (58.4%) knew about protection for WSW during sex, only a small fraction (9.6%) used it. Although the majority had tested for HIV (73.2%), about half did not disclose the results of the HIV test, but 4.3% disclosed they were HIV positive. Consensual heterosexual sex was reported at 12.4% and forced sex was reported at 17.2%.
**Conclusions:** These study findings show that despite the image of invulnerability, HIV is a reality among WSW with a number of risk factors, including forced sex as well as consensual heterosexual sex, but also evidently homosexual sex at play. The findings from this study will provide recommendations for policy and programmatic intervention on HIV and sexual health for WSW in South Africa.

## THPED344

### USE OF PRE-EXPOSURE PROPHYLAXIS AND ASSOCIATED SEXUAL AND SUBSTANCE USE BEHAVIORS AMONG A SAMPLE OF MSM IN THE UNITED STATES

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**Background:** Increasing availability and use of PrEP among MSM has spurred questions about the impact of PrEP on sexual and substance use behavior between MSM PrEP users and non-users.
**Methods:** Survey data were collected in 2016 via advertisement on a social networking app for MSM. Participants completed a 15 minute survey exploring PrEP use, global measures of sexual behavior, and sexual and substance use behaviors during the most recent episode with a main and/or casual sexual partner.
**Results:** 1,758 participants completed the survey. 17.1% (n=214) HIV-negative men reported currently utilizing PrEP, and 37.9% of these men reported missing between 1-3 doses of PrEP in the past month, 62.1 reported missing no doses . There were significant differences in the age of men using PrEP (M=37.45, SD= 10.12) compared to those who do not (M=34.73, SD=12.20), t (1755) = -3.58, p < .001. Significant differences were reported in PrEP use across racial/ethnic groups $\chi^2$ (4, $n$=1,727) = 18.15, p = .001, with Black, Asian, and White men more likely to use PrEP than Latinos. PrEP users reported almost twice as many sexual partners in the past 3 months (M=9.69, SD=12.58) versus non-users (M=4.46, SD=6.89), p < .001. PrEP users reported more casual sexual partners with whom they had condomless anal intercourse (CAI) (M=5.57, SD=9.61) compared to non-users (M=2.19, SD=5.71), p < .001. MSM using PrEP were more likely to engage in condomless receptive anal intercourse (CRAI) compared with men who were not on PrEP $\chi^2$ (1, $n$ = 1,399) = 29.49, $p$ = .001 as well as engage in condomless insertive anal intercourse (CIAI) $\chi^2$ (1, $n$ = 1,398) = 11.44, $p$ = .001. No significant differences were found in substance use behavior during the most recent sexual episodes with main or casual partners.
**Conclusions:** Results from this study indicate among our sample, use of PrEP was associated with greater levels of CIAI and CRAI as well as having more casual sexual partners. However, participants also had generally high rates of self-reported adherence to PrEP, which may reduce the risk of HIV transmission.

## GENDER ISSUES AND GENDERED RELATIONSHIPS

## THPED345

### COMPARISON OF PREVALENCE AND CORRELATES OF INTIMATE PARTNER VIOLENCE AMONG HIV SERO-POSITIVE AND SERO-NEGATIVE PREGNANT WOMEN IN IBADAN, SOUTH-WESTERN NIGERIA

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**Background:** Understanding the differences in Intimate Partner Violence (IPV) experience of HIV sero-positive and sero-negative pregnant women is important in describing the magnitude of the problem and guiding prevention programs. This study determined and compared the prevalence and correlates of IPV among HIV sero-positive and sero-negative pregnant women in Ibadan, southwestern Nigeria.
**Methods:** A hospital-based comparative cross-sectional study was carried out between October-December 2013. Data was collected using a semi-structured, interviewer administered questionnaire adapted from the WHO Multi-Country Study on Women's Health and Domestic Violence questionnaire-version 9. HIV- respondents from the ante-natal clinic of the University College Hospital (UCH) were selected using systematic random sampling technique while serial recruitment was used to select HIV+ respondents from the Prevention-of-Mother-to-Child-Transmission (PMTCT) clinics within the UCH and Adeoyo Maternity Hospital. Data was analyzed using SPSS version-19 and summarized as proportions. Chi-square test was used to determine associations between categorical variables. Predictors of experience of IPV in current pregnancy were determined using logistic regression. Level of statistical significance was set at 5%.
**Results:** A total of 688 respondents were interviewed (343 HIV+ and 345 HIV- pregnant women). The mean ages of the respondents were 31.1±4.7 and 30.2±4.6 years for HIV+ and HIV- respondents respectively. Majority of the respondents 88.1% were currently married. The lifetime prevalence of IPV was 62.5% (70.3% HIV+ vs. 54.8% HIV-, p< 0.001). The prevalence of IPV experienced in current pregnancy was 50.9% (57.4% HIV+ vs. 44.3% HIV-, p=0.001). The predictors of IPV in current pregnancy among HIV+ respondents were witnessing maternal violence in childhood [OR 2.09 (95% CI 1.07-4.11)], partner witnessing maternal violence in childhood [OR 2.18 (95% CI 1.07-4.43)], having attitude supportive of IPV [OR 3.48 (95% CI 1.99-6.09)] and having low relationship satisfaction [OR 1.96 (95%CI 1.02-3.77)]. Among HIV- respondents the only predictor of IPV in current pregnancy was witnessing maternal violence in childhood [OR 1.89 (95% CI 1.02-3.53)].
**Conclusions:** IPV was common in both groups but significantly higher among HIV sero-positive pregnant women. Interventions to prevent IPV should target changing socio-cultural beliefs that encourage violence in relationships and incorporating couple-centered counselling into HIV prevention programs therefore addressing issues on relationship quality.

## THPED346

### POSITIVE SEXUALITY: HIV, GENDER, POWER, INTIMACY AND THE LAW

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**Background:** While a growing body of research points to the shortcomings of the criminal law in governing HIV transmission, there is very limited understanding of how women living with HIV (WLWH) negotiate their sexuality, intimacy and HIV disclosure. Given the ongoing criminalization of HIV non-disclosure and prevalence of gender-based violence, there is a critical need to better understand the gendered dynamics of negotiating sexuality and HIV disclosure among WLWH.
**Methods:** We conducted 53 qualitative interviews with WLWH in Vancouver, Canada between August and December 2015. The interviews were conducted by two experienced researchers, including a women living with HIV and were guided by a semi-structured interview guide, which was developed based on extensive consultation with WLWH and community organizations. Drawing on a feminist analytical framework and concepts of structural violence, the analysis sought to characterize the gendered dimension of negotiating sex and HIV disclosure among WLWH in a criminalized setting.
**Results:** For many women their HIV diagnosis initially symbolized the end of their sexuality due to fear of rejection and potential legal consequences. Women recounted that disclosing their HIV status shifted the power dynamics in their sexual relationships and many feared rejection, violence, and being outed as living with HIV against their will. These fears were exacerbated for women living in poverty, in dependent relationships and for women with a migration background. Even after disclosure of their HIV status, many WLWH feared legal consequences, when their partners refused condoms. WLWH whose partners refused condom use despite HIV disclosure worried about their partners' health status. For these participants their viral counts became to symbolize not only their own health status but also that of their partners.
**Conclusions:** Despite frequently being represented as a law that 'protects' women, our findings indicate that the criminalization of HIV non-disclosure constitutes a form of gendered structural violence that exacerbates risk for interpersonal violence among WLWH. In line with recommendations by international policy bodies, such as, the WHO, UNAIDS and the Global Commission on HIV and the Law, these findings demonstrate the negative impacts of regulating HIV prevention through the use of criminal law for WLWH.

## THPED347

### HUNGER, ALCOHOL USE AND LACK OF POWER IN RELATIONSHIPS EXPLAIN WOMEN'S EXPERIENCE OF RECENT INTIMATE PARTNER VIOLENCE IN URBAN INFORMAL SETTLEMENTS, IN DURBAN, SOUTH AFRICA

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**Background:** Women's experiences of intimate partner violence (IPV) is a key risk factor for HIV-acquisition. Urban informal settlements are growing rapidly and have particularly high HIV-incidence. We sought to understand the prevalence of physical IPV and sexual IPV amongst young women in informal settlements and factors associated with experiencing any physical and/or sexual IPV in the past 12m.
**Methods:** We drew on cross-sectional data from 320 young women aged 18 to from in informal settlements in Durban, South Africa who comprised the control arm of a cluster randomised RCT. Questionnaires collected data on experiences of past year physical IPV and pas year sexual IPV using WHO validated scales, gender attitudes and socio-demographics. We built Guassian random effects regression models for any physical and/or sexual IPV in the past year, controlling for age, education and clustering.
**Results:** Women were young (mean 24.4 yrs CI23.5-25.3); only 34.7% (CI27.8-42.4) had completed schooling. Mean earnings in the past month were low (R166, CI106-225, US$16). 50.1% (CI45.6-54.7%) of women reported experiencing physical IPV in the past 12m; 30.7% (CI26.3-35.2%) reported sexual IPV in the past 12m; and 58.3% (CI53.3-63.2%) reported physical and/or sexual IPV in the past 12m. In adjusted models, recent experience of any IPV was associated with being in a more controlling relationship (aOR1.11, $p< 0.01$), experiencing greater hunger in the past month (aOR4.34, $p< 0.01$), increased alcohol use by women (aOR1.06, $p< 0.05$), experiencing emotional violence from an intimate partner in the past 12m (aOR8.4, $p< 0.001$) and experiencing economic violence from an intimate partner in the past 12m (aOR2.39, $p< 0.01$).
**Conclusions:** Young women in informal settlements experience extremely high levels of recent physical and sexual IPV, placing them at high risk of acquiring HIV. Women who experience this are likely to also experience other forms of violence including emotional and economic violence. Hunger, alcohol use and lack of power in relationships are key risk factors for physical and/or sexual IPV. Therefore, interventions to reduce IPV need to seek to reduce all forms of violence women experience, as well as work to strengthen women's economic power and social power in relation to their partners.

## THPED348

### GENDER, VIOLENCE, AND VERTICAL HIV TRANSMISSION IN LUSAKA, ZAMBIA: DOES INTIMATE PARTNER VIOLENCE AGAINST HIV-POSITIVE WOMEN AFFECT ADHERENCE TO PREVENTION OF MOTHER TO CHILD TRANSMISSION PROTOCOLS?

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**Background:** Prevention of mother-to-child transmission (PMTCT) depends critically on HIV-positive women's adherence to antiretroviral drugs during and after pregnancy. Safe infant feeding practices among HIV-positive postpartum women also reduce the risk of vertical HIV transmission and promote infant survival. Adherence to such protocols, however, remains a challenge across sub-Saharan Africa. Qualitative research has indicated that power dynamics within couples, such as intimate partner violence, may reduce women's use of PMTCT in some contexts; however, a quantitative relationship between intimate partner violence and non-adherence to PMTCT has not been established. This study aims to determine if there is a quantitative relationship between intimate partner violence and non-adherence to PMTCT medication and safe infant feeding recommendations among HIV-positive women in domestic relationships in Lusaka, Zambia.
**Methods:** From March to August of 2014, we verbally administered a cross-sectional survey with closed-ended questions at a large public health clinic in Lusaka, Zambia. HIV-positive postpartum women (n=320), who were currently married or living with a man, provided information on their drug adherence during and after pregnancy, infant feeding practices, relationship dynamics with the husband/partner, and demographic characteristics. Drug adherence was measured based on women's self-reports using a visual analog scale developed by the primary investigator. Infant feeding and intimate partner violence were measured using questions directly from the Zambian Demographic and Health Survey, including the Domestic Violence Module. Multivariate logistic regression in Stata 12 determined the odds of adherence to PMTCT across the cascade of care by women's experiences with violence after adjusting for covariates, including HIV status disclosure to the partner.
**Results:** Experiencing intimate partner violence was associated with decreased odds of adherence to medication during and after pregnancy. Intimate partner violence also reduced the odds of women practicing exclusive breastfeeding for six months. Moreover, different forms of violence affected adherence differentially. Physical violence had a less pronounced affect on non-adherence than emotional and sexual violence. A dose-response relationship between intimate partner violence and non-adherence was also observed.
**Conclusions:** This study provides compelling evidence that intimate partner violence against HIV-positive women deserves increased attention within the global effort to eliminate mother-to-child transmission of HIV.

## THPED349

### GENDER, HIV AND VIOLENCE: A QUALITATIVE STUDY ASSESSING YOUNG PEOPLE'S PERCEPTIONS OF GENDER IN RURAL AND URBAN COMMUNITIES IN UGANDA

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**Background:** Inequitable (or negative) perceptions of gender are often associated with poor health outcomes. Currently, there are global efforts to address inequitable gender attitudes at an early age before these norms become internalized. However, little is known about inequitable gender norms at an early age, their constructs, and how they may influence HIV-related outcomes in high HIV prevalence settings like Uganda.
**Methods:** Data are from a larger study assessing gender perceptions of young people in rural and urban communities near Kampala, Uganda. Twenty-four participants aged 15-24 participated in individual in-depth interviews from June - August, 2015. Interviews were audio recorded, transcribed and analyzed using thematic analysis.
**Results:** Traditional attitudes towards gender roles still exist, and participants affirmed that these are shaped by socially accepted messages and adult behavior on expected behaviors for boys and girls. Similarly, participants stated that media and other external sources (e.g school, print and electronic media) are increasingly becoming important in influencing gender norms. Responses from questions on ideal behavioral expectations reveal that from an early age boys and girls are assigned different duties. Boys are given outside work (e.g., drawing water and cattle rearing), while girls are given inside work (e.g cleaning or child care). Most participants believed that boys should initiate and dictate the terms of sex by determining when, how and with whom to have sex with. Close to half of the participants, more so the less educated, felt that that girls should avoid conflict with their partners and be available for sex on demand. Hence, some girls felt that they are at greater risk of contracting HIV because of their inability to control their sexuality. Although male violence against women, was common and practiced among married participants, most unmarried boys felt that it was "okay" to shout down or hit a girl to "discipline" them.
**Conclusions:** The findings reveal links between socialization processes and gender roles for young people specifically, and associated HIV risk and gender-based violence. These factors are typically not addressed in HIV prevention programs that serve young people and should be considered.

## THPED350

### USE OF GENDER TRANSFORMATIVE MAPPING TOOL IN HIV AND SRHR INTERVENTIONS TO ADDRESS GENDER INEQUALITIES AT COMMUNITY LEVEL IN SOUTHERN AFRICA: SAT CASE

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**Background:** Gender inequalities are a major driver of the HIV and tuberculosis epidemics, and they hinder effective responses to malaria. In the recent years, gender inequalities are rampant at community level. Gender transformative HIV programming therefore is a strategic approach in the HIV response as it changes existing structures, institutions, create the conditions whereby women and men can examine the damaging aspects of gender norms and experiment with new behaviors. SAT recognized the importance of community mapping process in the development of communities and integration of gender in such process. Gender transformative approaches can guide community mapping exercises and inform HIV programming in communities.

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**Description:** Southern African AIDS Trust (SAT) designed a gender transformative community mapping Tool (GTCMT) for use during the programme planning, redesigning as well as for monitoring and evaluation. Its purpose was to systematically and thoroughly identify and analyze community problems and drivers related to SRHR, HIV and broader health issues as well as available resources within the community. Through integrating gender transformative programming, the GTCMT has been designed to assist in addressing social and cultural pressures that negatively impact women's health and adolescents SRHR. The Tool was used during community mapping exercises by SAT Partners in Tanzania, Zambia, Zimbabwe and Malawi.
**Lessons learned:**
· Gender transformative HIV programming is a very relevant and successful model in facilitating change in values, norms and behaviors thereby reducing vulnerability to HIV and mitigating the impact of AIDS and SRHR.
· Use of GTCMT can transform communities by changing mindsets, enabling them to find solutions to their problems.
· Effective application of the Gender transformative approach increases understanding of gender inequalities among community stakeholders.
Gender transformative programming for women and girls and adolescents guarantees social, legal and economic empowerment, improves access to sexual and reproductive health services.
**Conclusions/Next steps:** Gender transformative HIV programming is a very relevant and successful model in facilitating change in values, norms and behaviors thereby reducing vulnerability to HIV and mitigating the impact of AIDS and SRHR. Effective application of the Gender transformative approach increases understanding of gender inequalities among community stakeholders.

## THPED351

### REDEFINING THE ROLE OF MEN IN THE FIGHT AGAINST GBV AND HIV-MEN AS PROTECTORS CAMPAIGN ON ZERO DOMESTIC VIOLENCE AND HIV AMONG WOMEN IN MALAWI

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**Background:** Increased male involvement in interlinked GBV and HIV prevention programmes significantly contributes to reduced incidences of GBV and HIV among women and girls as well as access to HIV prevention and treatment services. Men have for a long time been regarded as perpetrators of domestic Violence and a group so promiscuous and responsible for HIV transmission. This kind of thinking and labelling has contributed to limited involvement and created a gap in GBV and HIV programming.**SAfAIDS, with support from United Nations Trust Fund (UNTF)** implemented a three year project that employed Men as Protectors Clubs as a strategy for male involvement in GBV and HIV prevention.
**Description:** The project was implemented from September 2011 to August 2014 and focussed on influencing change of cultural practices that fuel domestic violence and HIV among women and girls. The beneficiaries were **women** and **girls** (15 and 49) and targeted **traditional leaders, religious leaders, and men** as key change agents. It was implemented in 2 districts of **Phalombe** and **Nsanje** .The project employed the Men as Protectors **(MasP)** model where men were mobilized into their own clubs, MasP clubs were trained and clubs conducted men dialogues sessions, men speak out sessions, community awareness on GBV and HIV, referred survivors and former perpetrators to services delivery points.
**Lessons learned:** 8400 **men** were reached by MaSP Club members. A total of 3771 and 435 men received HTC and VMMC services respectively. **782 men** reported accompanying their wives to health clinics for various health services including Ant Natal Care (ANC), PMTCT and deliveries. ***Domestic violence cases were*** reduced in couples whose men are members of Men as Protectors Clubs i.e no cases were reported in Nsanje between January-June 2014 in T/A Ndamera in Nsanje district.
**Conclusions/Next steps:** Men need their own space to have conversations on issues affecting their lives, families and communities and labelling men as perpetrators of SGBV negatively affects their participation in GBV and HIV prevention efforts. Male participation should form part of GBV and HIV efforts and awareness on inter-linkages between GBV and HIV needs to be strengthened in GBV and HIV programmes.

## THPED352

### "HIDING OUR SEXUALITY IS THE MOST CHALLENGING PART OF OUR LIFE": THE ROLE OF GENDER NORMS ON LESBIAN, GAY, BISEXUAL AND TRANSGENDER YOUNG PEOPLE'S HIV EXPOSURE IN KINGSTON, JAMAICA

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**Background:** Eteronormative views of gender roles cause LGBT youth in Jamaica to experience familial, societal, and institutionalized stigma, and violence. One LGBT community organization in Jamaica received 231 reports of incidents of anti-LGBT violence from 2009-2012. The aforesaid experiences lead many individuals to engage in self-protective strategies to avoid violence that may increase their exposure to HIV. As such, we explored the impact of gender roles, and self-protective strategies among LGBT youth in Kingston, Jamaica.
**Methods:** Seventy-three individual semi-structured interviews were conducted with young (aged 18-29 years) gay/bisexual men (n=20), transgender women (n=20), lesbian/bisexual women (n=20), and key informants working with LGBT populations (n=13) in Kingston, Jamaica. Additionally, we held three separate focus groups with young gay/bisexual men (n=10), transgender women (n=8), and lesbian/bisexual women (n=6) in Kingston. The interviews and focus groups were digitally recorded and transcribed verbatim. Narrative thematic analytic techniques were implemented to analyze themes in the data.
**Results:** Participant feedback indicated the societal view of heteronormative gender roles was incorporated into the intrapersonal (individual), interpersonal (relationships, family), community (religion) and institutional (employment, health care services) layers of LGBT youths' lives. Almost all participants discussed using self-protective strategies—assuming heteronormative gender roles on an occasional or frequent basis while in public. This strategy included changing one's physical appearance and mannerisms to match traditional views of masculinity and femininity and in some cases, engaging in anti-LGBT violence and stigma. Participants also noted anti-LGBT stigma prevented many youth from having meaningful, long-term romantic relationships due to the fear of being 'outed' by community members, and restrictions on public displays of affection. This stigma led many individuals to partake in anonymous sexual encounters with multiple partners which can augment exposure to HIV.
**Conclusions:** The findings denote LGBT youth implement self-protective strategies to reduce experiences of anti-LGBT stigma, and violence. While participants indicate these strategies are effective, they limit youth's ability for self-expression, and increase their exposure to HIV and mental health issues. Additional research must address the impact of gender norms on LGBT youths' sexual practices in Jamaica.

## THPED353

### MASS MEDIA AND GIRLS EMPOWERMENT: BRAZILIAN CAMPAIGN "MY FIRST HARASSMENT"

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**Background:** Violence against women is by far the most notable form of violation of human rights in Brazil. Over the past three decades, more than 92.000 women were murdered. For every day that passes by, 15 women are killed for the sole fact of being women and every 15 seconds one woman is assaulted.
**Description:** In November, 2015, the Brazilian feminist group "Think Olga" launched an online campaign under the hashtag #meuprimeiroassedio (My First Harassment) — in which women described similar experiences. The campaign went viral, reaching more than 100,000 reports in a few weeks. The reports were organized and will be published as a book in 2016, as another strategy to empower Brazilian women and girls.
**Lessons learned:** As the revelations spread on Twitter, WhatsApp and Facebook and women shared the revulsion and even blame they had felt after being harassed or abused, many of them realized something else: that close friends and relatives had suffered similar incidents but never talked about them before. After the campaign, a high school student developed a smartphone app called Sai Pra Lá - roughly translated, "get off" or "leave me alone" - which uses GPS to register where harassment incidents took place.
**Conclusions/Next steps:** The campaign's success reflects the increasing activism of women in a deeply "macho" society, as is the case of Brazil. The internet made our voices visible and more powerful than ever. With social media we will never be alone, and our voice will be hear all over the world.

## FEMININITY, MASCULINITY AND TRANSGENDER ISSUES

### THPED354

#### "MAN 'FI' ACT LIKE A MAN": UNDERSTANDING THE INTERSECTIONALITY OF SEXUAL IDENTITY POLITICS, GENDER PRESENTATION, AND HIV VULNERABILITY FOR YOUNG JAMAICAN MSM

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**Background:** One-third of the 2,500 new HIV infections in 2012 were among young Jamaican men who have sex with men (JMSM). Jamaica, like other Caribbean islands, has well prescribed conceptualizations of maleness and masculinity. Men who deviate from such ascribed definitions of masculinity often face violent, sometimes deadly, homophobic condemnation. In this study we interrogated the intersectionality of sexuality, gender, homophobia, and HIV vulnerability for young gender-nonconforming JMSM.
**Methods:** In this qualitative descriptive study, we used semi-structured in-depth interviews with individuals and focus group discussions as the primary sources for data collection. Thirty young JMSM were recruited in spring 2013 from five parishes in Jamaica. All data were recorded, transcribed verbatim, and analyzed using thematic content analysis.
**Results:** Participants were aged 18-29 years and self-identified as gay or bisexual. The majority articulated to varying degrees a feminine gender presentation, based on a visual analog scale of gender identity, sexuality, and behavior. JMSM in this study lamented that maleness and masculinity were often defined and enforced by heterosexual, hyper-masculine inner-city men; religious ideology and pedagogy; and the selective spaces created by Jamaican popular culture. The ability for some JMSM to express their desired gender freely was restricted to their geo-economic, political, and social environments. For others, efforts to reconcile their feminine presentations with the cultural definitions of masculinity were often futile, leaving them no choice but to flee their communities, engage in commercial sex work or survival sex, or engage in other high risk sexual behaviors; all of which decreased familial social support and suitable employment prospects, increased their risk for HIV infection, and limited their access to vital public HIV prevention and treatment services.
**Conclusions:** Jamaican public health efforts aimed at curtailing the HIV epidemic must be inclusive of those MSM who are gender nonconforming. Accessing governmental and community-based HIV prevention and treatment resources may be difficult for some young JMSM due to the social and cultural constraints defining masculinity in Jamaica. In addition to creating culturally appropriate inclusive public health policies to reduce the HIV burden in Jamaica, nondiscrimination legislation that guarantees equal protection for JMSM is urgently needed.

## EXPERIENCES AND NEEDS FROM THE PERSPECTIVE OF SEX WORKERS

### THPED355

#### 'OUTDATED LAWS, OUTSPOKEN WHORES': DECRIMINALISING SEX WORK IN THE SOUTH AUSTRALIAN CONTEXT

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**Background:** Sex workers globally advocate for the decriminalisation of sex work. It is evident from the literature that decriminalisation is the most appropriate model to govern sex work and has the greatest effect on the course of HIV and STI transmissions when compared to other regulatory models.
In South Australia, sex work is criminalised and consequentially sex workers are left behind; working under laws that impinge on both sex worker health and human rights.
**Methods:** This qualitative study was conducted in Adelaide, 2015. The first sample consisted of ten sex workers recruited from the Sex Industry Network. Interviews were transcribed verbatim. A theoretical thematic analysis was chosen to code the data, then further analysed at the latent level to gain an understanding of sex worker experiences working under criminal laws. The second sample was the parliamentary debates discussing the bill to decriminalise sex work. Again, the data was analysed using thematic analysis, followed by latent level analysis to uncover the barriers halting law reform and the attitudes towards sex work from members of parliament.
**Results:** There was a contrasting understanding of sex work between the samples. The first sample showed that, for sex workers, criminalisation has led to work concerns surrounding occupational health and safety, outreach, barriers to health services, and police involvement within the sex industry. All interviewees showed support for decriminalisation. Traditional morality, violence and trafficking were the major themes found to influence opposition to reform in the second sample and build a case for sex work being presented as problematic, therefore further stigmatising sex work and neglecting health and human rights.
**Conclusions:** Research in South Australia pertaining to sex work is nearly non-existent. The findings of this study therefore contribute to building understandings around the need for decriminalisation. Traditionally, sex worker voices have been silenced in research; this study honours sex worker voices and experiences, and thus makes a unique contribution to both decriminalisation and sex worker literature. Furthermore, decriminalisation has been shown to reduce the prevalence of HIV and STIs, and as such may have implications reducing the spread of these communicable diseases worldwide.

### THPED356

#### PRESENTING THE EVIDENCE: 20 YEARS OF DECRIMINALISATION OF SEX WORK IN AUSTRALIA

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**Background:** In Australia models of sex work regulation vary across each state & territory, providing a unique position to compare the effects of decriminalisation and other legal models. Sex work was decriminalised in New South Wales in 1995 in response to Royal Commission findings of systemic corruption within law enforcement. Decriminalisation removes police as regulators, removes criminal laws, and regulates sex work through a whole government approach utilising standard occupational, planning and industrial mechanisms. After 20 years of lived experience, we reflect on the lessons learned and our aims going forward.
**Description:** As the peak national organisation for sex workers, Scarlet Alliance collects data via national forums, working groups and surveys. Scarlet Alliance conducted a five-stage consultation process with our membership, including sex workers from a range of genders, experiences and backgrounds. We reviewed relevant literature, health research and government reports to examine policy successes and areas in need of reform.
**Lessons learned:** Decriminalisation of sex work in NSW has resulted in high rates of safer sex (Law and Sex Worker Health Study); low rates of sexually transmissible infections (Australia's National HIV and STI Strategies); improved Workplace Health and Safety (NSW Government Brothels Taskforce); few amenity impacts and no evidence of organised crime (Land and Environment Court). Sex workers in NSW can access free health services, free legal advice and have their industrial rights acknowledged and protected. In jurisdictions with licensing or criminal frameworks, sex workers do not have the same access to services, rights or justice.
**Conclusions/Next steps:** Decriminalisation is the best-practice model and is imperative to sex workers' health, safety and rights. It is the optimal model of sex work regulation, supported by the UNFPA, UNDP, UNAIDS, WHO and Amnesty as necessary for HIV prevention, anti-discrimination, human and labour rights. After 20 years of success, advocacy is necessary. Stigma, increasing political pressure to criminalise clients, hostile funding environments, and institutional discrimination remain significant barriers to the uptake of this model. Decriminalisation must be coupled with comprehensive human rights and anti-discrimination protections to be fully effective. The comparative experience of NSW offers an essential evidence base for governments, researchers, health sector and sex workers internationally.

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## THPED357

### WHO DUNNIT? INTENTIONAL AND UNINTENTIONAL CONDOM BREAKAGE IN SEXUAL INTERACTIONS BETWEEN FEMALE AND MALE SEX WORKERS AND THEIR CLIENTS IN MOMBASA, KENYA

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**Background:** Condom breakage hinders HIV prevention efforts. We examined why condoms broke and what actions were taken after breakage by female and male sex workers (FSWs and MSWs, respectively) and their clients in Mombasa, Kenya.
**Methods:** We conducted 75 semi-structured interviews with sex workers and clients recruited from 18 bars/nightclubs in Mombasa to guide intervention development. Eligibility criteria were being ≥18 years, regular patron of venue, having solicited for vaginal/anal intercourse with sex worker/client at that venue in last 3 months, willingness to have the interview audio-recorded, and being visibly sober.
**Results:** Condom breakage was common among FSWs, MSWs and their clients, with most (61/75) having experienced breakage at least once or on numerous occasions. Sex workers blamed clients for most breakages, accusing them of deliberately tearing condoms, wearing condoms inside out or failing to remove the air bubble due to drunkenness. They also said clients generated “too much friction” during sex due to their “big” penises, thrusting too forcefully during sex, or taking too long to ejaculate. Some clients admitted to tearing condoms before sex and to using traditional herbs to increase sexual stamina and delay ejaculation. Other reasons that sex workers and clients mentioned for breakage were inadequate or non-use of lubricants, “dry vaginas,” and MSWs who “squeeze the penis tightly” during anal sex. Breakages were noticed by the majority of participants *during* sex but some only noticed the breakages *after* sex. Most participants in the former group immediately stopped sex and changed the condom. However, a number did not stop or notify sexual partners: clients did not want to interfere with their own sexual enjoyment and sex workers were too afraid to ask the client to change the condom. A number of clients and sex workers also went for HIV testing and/or took post-exposure prophylaxis following condom breakage.
**Conclusions:** Despite the use of condoms, HIV transmission between sex workers and clients might still occur due to frequent condom breakage, which sometimes is intentionally done by clients to enhance pleasure. Condom promotion for both groups should therefore go beyond simply encouraging use, but address user-related factors that contribute to breakages.

## THPED358

### *“LA VIDA ES BONITA, MEDIA VEZ UNO LA SEPA VIVIR”* (LIFE IS BEAUTIFUL ONCE YOU KNOW HOW TO LIVE IT): RESILIENCE AMONG FEMALE SEX WORKERS RECEIVING HIV/AIDS TREATMENT, GUATEMALA CITY

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**Background:** Maximizing retention in care and ART adherence among PLHIV within key populations is essential to improving their health and quality of life, and stemming onward transmission. Existing research on female sex workers’ (FSW) experiences along the HIV care continuum highlights barriers such as stigma and substance use, with little attention to how they overcome such barriers. We use an assets-based approach to investigate resilience among FSW living with HIV (FSWLH) - that is, strategies they use and resources within their socio-structural contexts they draw upon to maintain their care and adherence in the face of adversity.
**Methods:** We conducted individual in-depth interviews with 12 FSWLH in Guatemala City (March-May 2014). This purposive sample was recruited via referrals through a local FSW-led NGO. Most reported being in HIV care and ART adherent. We examined experiences living with HIV and across the care continuum. We analyzed interview transcripts in Spanish utilizing thematic analysis methods in Atlas.ti software (v1.0.2) and narrative summaries of their HIV care and treatment histories.
**Results:** Participants contested stigma and discrimination they faced by reconstructing the meanings of HIV, PLHIV, and sex work, drawing on empowering discourse in their talk, and through activism and community engagement. They thus guarded against impacts of internalizing stigma, such as low self-worth and depression, which negatively influence retention and adherence. Desire to support their children motivated them to continue their struggle, and friends, non-discriminatory family members, partners, and clients bolstered them emotionally and instrumentally. Many opted for a hopeful, positive perspective on life, which helped cope with anxiety and depression. Faith in God provided a sense of strength and obligation to take advantage of available treatment.
**Conclusions:** We show how FSWLH resist stigma and discrimination in their talk and activism, and access support and motivation through social ties and spirituality. These strategies and resources enable them to cope with adversity that undermines retention in care and adherence. HIV programs in the Guatemalan and other contexts can build on these insights. We counter common narratives around FSW within public health discourse that emphasize their vulnerability, often at the expense of learning from solutions they themselves have developed.

## THPED359

### SUCCESSFUL UPTAKE OF PREP BY FEMALE SEX WORKERS IN ZIMBABWE: THE IMPORTANCE OF PEER SUPPORT

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**Background:** PrEP is now recommended for all eligible HIV-negative members of key populations. Sex workers in Zimbabwe are at high risk for HIV and often unable to negotiate condom use with clients and partners. The SAPPHIRE trial a matched-pair cluster-randomized trial, which is testing an enhanced combination prevention and treatment package for sex workers, offers Truvada in its 7 intervention sites with intensified community mobilization and adherence support.
**Methods:** We conducted 21 in-depth interviews in 3 locations with sex workers who had initiated PrEP in the first year of provision in order to understand women’s decision making process regarding uptake. We explored sex workers’ perceptions of risks and benefits, early experiences of taking Truvada, challenges to adherence, and support or resistance from friends, family members and peers.
**Results:** Most women had initial anxieties and some feared PrEP could be a ploy to harm sex workers. Women whose siblings, children, or other relatives urged them to try the drug reported being early adopters, while some were dissuaded at first by their family’s concerns. Discussions with other sex workers, particularly those taking antiretroviral for treatment, offered considerable reassurance, spreading the message that *all* sex workers now had a pill to take to meet their needs. Peer support could overcome barriers from resistant family members, and at least one woman reported breaking up with her partner when he opposed PrEP use. Sex workers used WhatsApp, text messages, and informal conversations in bars to share information about availability of PrEP, remind each other about clinic appointments, and help each other adhere. This was formalised through the “Adherence Sisters” programme in which paired sex workers attended 4 participatory workshops about PrEP and ART.
**Conclusions:** This study from the early stages of a PrEP demonstration project among sex workers in a high prevalence setting suggests this population is willing and able to initiate and maintain PrEP use if they receive adequate encouragement. While family members were instrumental in women’s uptake, peers appeared best placed to sustain women’s adherence. Programmes can facilitate positive communication between sex workers to strengthen mutual support.

## THPED360

### “NOBODY HELPS BECAUSE I AM A SEX WORKER”: SEX WORKERS’ BARRIERS TO HEALTHCARE SEEKING AND EXPERIENCES IN THE SOUTH AFRICAN CONTEXT

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**Background:** Female sex workers (FSW) are exposed to multiple HIV and SRH transmission risks. The criminalisation and stigmatisation of sex work has negatively affected access to healthcare services. Understanding barriers to access could help enhance healthcare seeking among this population.
**Methods:** A rapid needs assessment was conducted with purposively sampled FSWs working in Durban, South Africa in 2013, to establish the extent and scope of sex workers’ HIV and SRH healthcare seeking. Data collection comprised of semi-structured interviews (n=20) and focus group discussions (n=23). Qualitative data were analysed thematically with basic descriptives on the socio-demographic data.
**Results:** Average age of participants was 30 years; sexual debut was at 17 years. Two or more pregnancies were reported by 65.1%. A quarter reported using narcotic substances and 57.9% reported binge drinking. Over a month FSWs reported

18 paying clients and 2-5 non-paying partners. Most reported accessing services at NGO's however these services were limited to HIV testing and male condoms. Although public healthcare facilities had a wider range of services, participants, especially migrant FSWs found it difficult to access services. Services were available but problematic to access due to poor healthcare provider attitudes and experiences of breeches of patient confidentiality. *"...they call one another, saying 'come and see someone who is selling her body; does this person have to get help if she is like this?'"*. Although condoms were relied on for contraception, STI/HIV prevention they were used inconsistently: paying clients (90.2%) and regular partners (55%). Additional barriers were, police violence, as many reported instances of harassment or the confiscation of condoms, and clients often demanding unsafe sex. Those accessing HIV testing at NGO's (39%) reported limited linkage to care. Many accessed STI treatment at a clinic (42%), and services, such as family planning and pap smears, were noted as needed but not accessed (23.3%). Other needed services were TB services, ARTs, trauma counselling and alcohol rehabilitation.
**Conclusions:** In order to improve FSWs health seeking practices, issues such as stigma, ease of access, range of SRH and HIV services provided by NGOs, low use of contraceptive methods must be prioritised.

## THPED361

### MEASURING THE IMPACT OF INTERPERSONAL COMMUNICATION ON HIV TESTING IN MADAGASCAR

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**Background:** Statistics show a low prevalence of HIV in Madagascar, 0.4% among 15-49 year olds, (UNAIDS, 2011) and 1.2% among female sex workers (Study on Bio-Behavioral Among Sex Workers, National Committee on Fight Against AIDS2013).
PSI Madagascar uses its network of socially franchised health clinics (Top Reseau) to offer HIV services to high risk populations such as sex workers. Peer educators in collaboration with Top Réseau clinics use interpersonal communication (IPC) to promote the availability of this service. This paper examines whether the IPC intervention activities led by peer educators for female sex workers is resulting in higher rates of HIV testing in Top Réseau facilities.
**Methods:** A quantitative survey was conducted among female sex workers in July 2014 in 8 Top Réseau sites. Sex workers were recruited using probability proportional to size from a sampling frame of hotzone (an area where sex workers wait for the clients) that was created prior to the the survey. A total of 1,041 female sex workers ages 18 to 49 years were interviewed in 8 Districts where PSI-franchised facilities Top Réseau are located. The analysis used prospective matching for exposed and unexposed individuals using coarsened exact matching (or CEM). Logistic regression and ANOVA procedures were conducted using STATA version 13.0 to determine the impact of interpersonal communication on HIV testing uptake.
**Results:** 74.4% of the sex workers reported ever testing for HIV. 76.8% among sex workers exposed to IPC interventions reported testing compared to 49.6% among those not exposed ($p < 0.001$).
IPC interventions were associated with increased perception of testing availability with 95.4% among exposed, compared to 84.8% among non-exposed ($p < 0.05$).
Those exposed were also more likely to report the ability on what to do to get to HIV testing services (91.2%) versus those sex workers not exposed (74.4%) ($p < 0.01$).
**Conclusions:** The findings show that IPC communication activities are an effective way to encourage HIV testing among female sex workers. The program has to develop an environment that supports the continued use of IPC for HIV testing.

## THPED362

### CHARACTERIZING THE PATTERNS OF HIV DISCLOSURE TO CLIENTS AMONG SOUTH AFRICAN FEMALE SEX WORKERS IN PORT ELIZABETH

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**Background:** Female sex workers (FSW) in South Africa have consistently been found to have a disproportionately high burden of HIV even in the context of the largest HIV epidemic in the world. Disclosure of HIV status is encouraged between couples; however, less is known about determinants of disclosure of HIV status between FSW and their male clients.
**Methods:** 410 adult FSW were recruited using respondent-driven-sampling (RDS) in Port Elizabeth, South Africa from October 2014-March 2015 and completed a structured survey instrument and HIV counseling and testing. Stata version 14.1 and Pearson's chi-square statistics were used to conduct the analysis.
**Results:** Of the 410 participants, 214 knew they were living with HIV and were included in the analysis. Of these known HIV+FSW, the mean age was 27.8 (SD=5.7) and 74 (34.7%) reported disclosing their HIV-positive status to paying clients. FSW were more likely to disclose if they also disclosed to non-paying partners (47.4% vs.25.5%, $p < 0.05$) or if they told their family they were practicing sex work (43.0% vs.29.1%, $p < 0.05$).
Communication about a paying client's HIV status was also associated with increased FSW disclosure to new (85.7% vs.26.3%, $p < 0.01$) and regular clients (92.6% vs.27.0%, $p < 0.01$). FSW were less likely to disclose to clients they met online (23.2% vs.40.2%, $p < 0.05$) or to those with whom they arranged sex in a hotel or guesthouse (29.5% vs.42.9%, $p < 0.05$), whereas they were more likely to disclose if they met clients at a brothel (54.2% vs.32.3%, $p < 0.05$).
There was no significant relationship found between disclosure behavior and the FSWs' HIV treatment, depression, violence, substance abuse or condom use with clients.
**Conclusions:** These results suggest that FSW are more likely to disclose their HIV status to clients if they have more open communication patterns with clients, non-commercial intimate partners and family, or are in a familiar environment.
Moreover, a safer sex work working environment combined with efforts to increase communication skills may be able to improve disclosure. Service delivery partners and government should work to create more supportive and safe environments to improve uptake of HIV prevention and treatment services.

## THPED363

### SELLING SEX THROUGH THE LENS OF THOSE LEFT BEHIND: YOUNG PEOPLE'S EXPERIENCES AND NEEDS

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**Background:** Whilst since recent decades HIV responses are mobilized to support adult sex workers, research, funding and HIV-services for young people -foremost minors- who sell sex are lacking. Supported by Aids Fonds' Stepping Stones initiative, community-based organisations of sex workers and youth assessed the experiences and needs of young people selling sex in order to generate understanding of this group left behind.
**Methods:** Between 2014-2015, qualitative research entailing complementary in-depth interviews, focus-group discussions and questionnaires assessed the needs of young people - including minors - through a snowball sampling technique. Across Botswana, Egypt, Ethiopia, and Zimbabwe, along with regional assessments in Latin-America and East and Southern Africa, explorative studies analysed contexts of selling sex in relation to income generating activities, violence, knowledge of rights and access to (health)services in daily-life. Noteworthy, data collected among respondents above the age of eighteen includes experiences of selling sex below the age of eighteen.
**Results:** Among sample size N=635 (n=44 in Ethiopia),(n=41 in Botswana),(n=49 in Egypt),(n=250 in Zimbabwe),(n=125 across Kenya, South Africa, Uganda and Zimbabwe),(n=100 across Brazil, Colombia, Dominican Republic and Honduras) divided between age categories 14-18, 19-20 and 20-25, most respondents started selling sex before the age of 18, sell sex due to poverty, and conform to peer pressure to upgrade lifestyles. They face stigma and discrimination by healthcare providers and violence from clients and pimps. Specifically, knowledge of and access to sexual and reproductive health and rights is limited to non-existent, whilst existing services focus on exempting young people from selling sex. A large proportion conceals medical conditions or visits traditional healers. Before reaching legal adulthood, most are denied access to services without consent of an adult.
**Conclusions:** Needs of young people selling sex are to gain access to (health)services and knowledge of sexual and reproductive health and rights, regardless of age. Results imply to sensitize health care providers towards reducing stigma and discrimination and moreover to avoid sole emphasis on rehabilitation. A course forward implies for HIV responses to enable equity rights for young people selling sex, foremost minors, which may impede vulnerabilities to the pandemic by leaving no one behind.

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## THPED364

### MIGRANT SEX WORKERS IN AUSTRALIA

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**Background:** Migrant sex workers are recognised as a priority population in Australia's HIV/STI strategies. The dearth of reliable research on migrant sex workers has led to poor policies and programs that create barriers to effective HIV prevention. This is exacerbated by damaging stereotypes, misinformation and increased stigma and policing wrought by the global anti-trafficking movement, undermining prevention efforts and creating harm.
**Description:** Scarlet Alliance in partnership with Australian Institute of Criminology conducted the first large-scale research of migrant sex workers across Australia. The research included non-migrant sex workers to enable comparisons in demographic profile, work conditions, condom use and access to services. The migration experiences and motivations for migrating were also examined. Importantly the research included critical input of migrant sex workers in every level of the research design, dissemination and analysis.
**Lessons learned:** Peer-led research was a great success with over 1000 predominantly female sex workers engaged, with small representation of male and trans sex workers, 594 surveys deemed valid for analysis. Added to valuable research data, employing peers in all critical aspects resulted in many benefits. This will be the first time the full findings of the research will be presented at a conference. Many of the results reinforced reliable research in the area such as data on condom use and English proficiency and education levels. Other data, challenged what is perceived in this area, notably around the use of contracts to enable migration and sex work, access to services and sources of support and information and the perpetrators of threat to migrant sex workers. Data on work, migration experiences, condom use, sources of information, access to services will be presented.
**Conclusions/Next steps:** Successful HIV-prevention efforts require a more holistic understanding of migration and mobility for sex workers. The lived realities of migrant sex workers in Australia contradict public and policy discourses. This misunderstanding has led to harmful interventions and programs that have created significant barriers to effective HIV-prevention. It is hoped the findings of this research will inform evidence based policy, practices and service delivery for migrant sex workers.

## OWNERS, MANAGERS AND MANAGEMENT OF SEXUAL SERVICES AND ESTABLISHMENTS

## THPED365

### SEX WORK AND LABOUR RIGHTS IN SOUTHEAST ASIA

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**Background:** Sex workers in Asia face a range of labour rights violations such as harassment and violence, lack of labour contracts, excessive working hours and lack of health insurance and other forms of social protection. These violations increase the risk of HIV infection and create barriers for accessing HIV testing, treatment and support services.
**Description:** The ILO and community groups of sex workers carried out qualitative research on working conditions among sex workers in Cambodia, Thailand and Vietnam in 2014-2015 which identified instances of denial of labour rights and barriers to effective HIV service delivery. Sex workers led the research in collaboration with trade unions, employers and labour ministries.
**Lessons learned:** The ILO research identified numerous challenges sex workers face in seeking decent working conditions. The majority are in precarious employment and do not have labour contracts. Most are misled about their working conditions when they are hired and have little means to negotiate improvements with their employers. Violence was extremely common arising from employers, clients and police. The majority of workers are required to work over 10 hours a day, 7 days a week without breaks. Fines and penalties for absences to seek healthcare or attend to other personal or family needs are common.
Based on these findings, ILO supported sex worker organizations to advocate for improved labour policy and better working conditions in their workplaces. Advocacy has led to improved working conditions, which has in turn increased sex workers' access to HIV testing and treatment services. In Cambodia, the Ministry of Labour issued a policy that provided labour protection to establishment based sex workers.
**Conclusions/Next steps:** A sound evidence based and social dialogue between sex workers and government and can lead to concreate changes in national policy and improved working conditions.
Improved working conditions leads to increased access to health and HIV services.

## CLIENTS OF SEX WORKERS: EXPECTATIONS AND DEMANDS

## THPED366

### *'I FEEL SAFER, IT IS BUSINESS, NO COMMITMENTS'*: OPPORTUNITIES AND OBSTACLES FOR CONDOM USE AMONG MALE AND FEMALE SEX WORKERS IN MOMBASA, KENYA

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**Background:** For more than three decades now, the place of condoms in the prevention of HIV and other STIs has dominated global discussions and the design and implementation of prevention programs. With the high prevalence of HIV among female sex workers (14.1%) and MSM (15.2%) being reported in Kenya (National AIDS Control Council [NACC] 2009), combination prevention programs have been rigorously implemented in the last six years. The objective is understand practices and discourses around HIV prevention and condom use among female sex workers and MSM sex workers.
**Methods:** The ethnography study used qualitative methods - observations of condom distribution in guest-houses; numerous conversations with clients of female sex workers, female and male sex workers and with key informants; three focus group discussions with female and male sex workers; 30 in-depth interviews with female sex workers; biweekly group discussions with economic diary participants; six-months daily life diaries of two MSM sex workers and two female sex workers; and numerous observations and discussions with a male and female sex worker on their daily experiences.
**Results:** While condoms were openly distributed to female sex workers in the company of their clients on paying for guest house room, the same was invisible amongst male sex workers. With condoms use, male clients of female sex workers felt more comfortable in embracing non-committal and safe casual sex relationships. Even though taking condoms does not equate to usage among female sex workers, it was clear that condom uptake is poor amongst MSM male sex workers, partly for the fear of one being suspected of being HIV positive and therefore lose clients/money.
**Conclusions:** Contrary to the notion that one may lose clients if they introduce condoms into casual sex negotiations, clients may, in fact, gain confidence and trust when condoms are introduced, discussed and used. Additionally, non-use of alcohol may contribute to increased condom use among female sex workers. There is need to engage clients of MSM sex workers in conversations on condom use.

# Violence, wellbeing and sex work

## THPED367

### Physical and sexual violence, perceptions of police, and barriers to condom use among women who started selling sex as minors in Lesotho

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**Background:** In Lesotho HIV prevalence is among the highest globally, and four times higher among girls aged 15-17 than among boys. Sex work is criminalized, and HIV prevalence among female sex workers (FSW) is >70%. In addition, 86% of all women have experienced gender-based violence, and studies have called for more rigorous evidence on abuse and the exploitation of children. In this context, minors (< 18 years old) who sell sex may be particularly vulnerable to gender-based violence and HIV risks.
**Methods:** FSW aged 18+ (n=744) were recruited through respondent-driven sampling in Maseru and Maputsoe from February-September 2014. They completed an interviewer-administered survey including a question about the age at which they started selling sex. We examined correlates of selling sex as a minor through multivariable logistic regression analyses for each city.
**Results:** Specific numeric results are presented in Tables 1-2. Compared to those who started selling sex as adults, early initiators were more likely to have been raped and physically abused. They had higher odds of avoiding carrying condoms to prevent getting in trouble with police and buying all their condoms rather than receiving some or all for free. Early initiators were more likely to describe their relationship with the police as bad or good rather than neutral.

| | Started selling sex under 18 (23.6%, 96/407) | Started selling sex 18+ (76.4%, 311/407) | OR (95% CI) | aOR (95% CI) |
|---|---|---|---|---|
| Age at time of survey (mean) | 21.8 | 25.7 | 0.80 (0.74-0.86) | 0.80 (0.74-0.86) |
| Ever avoided carrying condoms out of fear of trouble with police | 18.8% (18/96) | 10.0% (31/311) | 2.08 (1.11-3.92) | 2.49 (1.20-5.16) |
| Was ever forced to have sex | 54.2% (52/96) | 38.3% (119/311) | 1.91 (1.20-3.03) | 2.05 (1.23-3.42) |
| Condom acquisition: Buy all | 19.0% (18/95) | 7.1% (22/309) | Ref. | Ref. |
| Get all for free | 67.4% (64/95) | 76.7% (237/309) | 0.33 (0.17-0.65) | 0.36 (0.17-0.78) |
| Buy and get for free | 13.7% (13/95) | 16.2% (50/309) | 0.32 (0.13-0.76) | 0.34 (0.13-0.89) |

*[Prevalence and correlates of initiation of selling sex as a minor among female sex workers in Maseru, Lesotho]*

| | Started selling sex under 18 (16.4%, 53/323) | Started selling sex 18+ (83.6%, 270/323) | OR (95% CI) | aOR (95% CI) |
|---|---|---|---|---|
| Age at time of survey (mean) | 23.9 | 30.0 | 0.87 (0.82-0.92) | 0.87 (0.82-0.93) |
| Relationship with police: Neutral | 5.7% (3/53) | 19.6% (53/270) | Ref. | Ref. |
| Bad | 9.4% (5/53) | 4.8% (13/270) | 6.79 (1.44-32.16) | 5.97 (1.17-30.43) |
| Good | 84.9% (45/53) | 75.6% (204/270) | 3.90 (1.17-13.03) | 4.78 (1.37-16.73) |
| Experienced physical violence ever | 41.5% (22/53) | 18.9% (51/270) | 3.05 (1.63-5.70) | 2.75 (1.40-5.42) |
| Notes: Analyses are not adjusted for respondent driven sampling weighting. Sensitivity analyses adjusting for number of years selling sex produced similar results. | | | | |
| The adjusted model includes variables that were statistically significant (p<0.05) in bivariate analyses. The Akaike Information Criterion was used to select the most parsimonious model. | | | | |

*[Prevalence and correlates of initiation of selling sex as a minor among female sex workers in Maputsoe, Lesotho]*

**Conclusions:** Funders of HIV prevention services have given increased attention to understanding specific vulnerabilities among adolescent girls. Minors who sell sex are a very vulnerable group whose determinants of risk can be studied retrospectively through research with adult FSW. Increased protection of these women and decreased enforcement of laws prohibiting selling sex represent an important component of a comprehensive response to decrease significant HIV acquisition and transmission risks observed here.

## THPED368

### Association between alcohol consumption and gender-based violence (GBV) among female sex workers (FSW) in Iringa, Tanzania

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**Background:** Female sex workers (FSW) in Tanzania experience very high levels of gender-based violence (GBV) (i.e. physical and sexual violence). In 2013, 52% of FSW in Tanzania experienced physical violence and 47% experienced sexual violence in the past 6 months. Violence can increase women's risk for HIV directly through sexual assault/forced sex, and indirectly through risk behaviors including unprotected sex. Studies from other countries in sub-Saharan Africa suggest that GBV against FSW often occurs in the context of heavy alcohol consumption, suggesting that alcohol consumption may place FSWs at increased risk for GBV.
**Methods:** A Phase II randomized controlled trial of a community empowerment-based combination HIV prevention intervention is being conducted in Iringa, Tanzania. By January 2016, 254 FSW were enrolled into an ongoing longitudinal cohort. Women completed an interviewer-administered baseline survey that measured GBV, HIV status, general alcohol consumption, alcohol consumption during sex work, and socio-demographic characteristics. Using multivariable logistic regression, we conducted two separate analyses assessing the association between both, alcohol consumption in general, and alcohol consumption during sex work, with experiencing any GBV in the past 6 months.
**Results:** Approximately 42% reported experiencing any GBV in the past 6 months. Alcohol use was high with 73.3% engaging in heavy alcohol consumption in the past month. Twenty-seven percent (27%) reported never/rarely consuming alcohol during sex work, while 44% sometimes, and 28% always/almost always consumed alcohol during sex work. Adjusting for marital status, age, and frequency of sex work in the past 30 days, heavy alcohol consumption was associated with twice the odds of experiencing GBV in the past 6 months (aOR= 2.0; p< 0.05). Additionally, FSWs who always/almost always consumed alcohol during sex work were 2.6 times more likely to have experienced GBV in the past 6 months compared to FSWs who rarely/never drink alcohol during work (aOR=2.6; p< 0.001).
**Conclusions:** Our findings demonstrate that heavy alcohol consumption in general and during sex work are significantly associated with recent experience of GBV. These findings indicate the need to incorporate alcohol harm reduction approaches into HIV interventions for FSW in Tanzania to prevent future violence, and ultimately reduce HIV risk.

## THPED369

### Understanding factors associated with HIV infection amongst female sex workers in Soweto: a proof of concept study

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**Background:** Globally, sex workers (SWs) bear a disproportionate HIV burden. Despite South Africa entering its 5th decade of the HIV epidemic, very little is understood about the determinants of HIV amongst female sex workers (FSWs).
This study aims to describe HIV infection, psychosocial and behavioural risk factors for HIV amongst FSWs in Soweto, South Africa as part of a proof of concept pilot study to evaluate a targeted peer led HIV prevention and treatment intervention.
**Methods:** The study used a cross sectional, respondent driven sampling (RDS) methodology amongst 40 FSWs. Participants completed a comprehensive survey and were tested for HIV, CD4 and viral load.
**Results:** Our findings show that the majority (83%) of the 64% of FSW, who were HIV infected, knew their status. Of those who knew their status 55% were on ARVS, and only 8/11 reporting adherence were virally suppressed. Just under a half of FSW (41%) reported a sexual assault in the preceding 12 months. Depression(84%)

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and post traumatic stress disorder (56%) were frequently reported mental health issues. Condom use was low, with 21% stating that they consistently used condoms with clients.
**Conclusions:** Our study demonstrated the urgent need for innovative interventions to combat the unacceptable high rates of HIV , violence exposure and mental health issues in FSW. The lack of HIV viral suppression despite treatment points to the need for tailored adherence support to minimise resistance and onward transmission. There was support by FSW for peer led interventions. Our work demonstrates the need to design targetted interventions that address the specific needs of this vulnerable population.

## THPED370

### QUALITATIVE STUDY OF COPING STRATEGIES USED BY HIV-POSITIVE KENYAN FEMALE SEX WORKERS EXPERIENCING INTIMATE PARTNER VIOLENCE

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**Background:** Intimate partner violence (IPV) is an important health and human-rights problem for HIV-positive women, and may compromise their ability to reduce the risk of secondary HIV transmission. We aimed to understand coping strategies used by HIV-positive Kenyan female sex workers (FSWs) who experience IPV.
**Methods:** Between November 2013 and August 2014, we purposefully selected HIV-positive FSWs in Mombasa, Kenya. Participants reported having experienced IPV from a current or most recent regular emotional partner who was not a casual partner or a client. We conducted 11 two-part interviews including an initial intensive interview and a brief follow-up interview, and 2 focus-group discussions. Data were coded and analyzed using content analysis. We employed the ecological framework of violence against women to understand women's adaptive strategies to cope with IPV. Results were presented to a modified member check, which included FSWs who had not participated in the interviews or focus-groups.
**Results:** Despite experiencing recurrent IPV, all women intended to stay with their abusive emotional partner. They employed a range of strategies to cope with IPV. Consistent with the ecological framework, avoidance was a common theme on the personal level. Women avoided thinking of the violence, focusing instead on their children and work. Some resorted to alcohol use or suicide attempts. At the interpersonal level, acceptance, resistance, and minimization of violence emerged as key strategies for coping with violent emotional partners. Most women normalize their partners' violent behaviors. To avoid recurrent IPV, some women reported agreeing to unprotected sex. Others reported no problem negotiating condom use with their emotional partner. At the family/community level, about half of the women reported seeking help for IPV, typically from a sibling, friend, or church member. Most women avoided reporting IPV to the police, because they felt that police were ineffective or untrustworthy.
**Conclusions:** These HIV-positive Kenyan FSWs have developed coping strategies for IPV. Some, such as alcohol use and unprotected sex, may have negative consequences for women's health, and may pose a risk for secondary HIV transmission.

## THPED371

### COUNTY KEY POPULATIONS SUPPORT SYSTEMS AS MEANS TO REDUCE VIOLENCE AND VULNERABILITY TO HIV INFECTION AMONG SEX WORKERS: A CASE STUDY OF NAKURU COUNTY, KENYA

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**Background:** Violence cases in Nakuru County among female Sex Workers (FSWs) are of great concern. The 2014 Polling Booth Survey conducted by NASCOP revealed that 11% of FSWs reported to have been ever beaten or physically forced to have sex in 2014 and this later rose to 15% in 2015 (NASCOP 2015). In the same survey, FSWs that had been beaten or arrested by the law enforcers rose from 44% (2014) to 61% (2015). Between October 2015 and January 2016 six cases of FSW deaths perpetrated by their male clients was also reported.
Violence has direct and indirect impact on increasing FSWs vulnerability to HIV infection and therefore the role of County Key Population (KP) support system in reducing violence and vulnerability of FSWs to HIV becomes important.
**Description:** In order to launch a response and mitigate violence faced by FSWs, a County Health Management Team (CHMT) was established under the leadership of County health staff. Different stakeholders that included FSWs representatives, HIV program implementing partners, police, lawyers and higher county leadership were made members of CHMT. This CHMT also acted as a county Technical Working Group (TWG) to provide program directions and creating an environment that helped reduce violence against FSWs.Through the TWG, several sensitization's for police, KP, bar and lodge owners and Civil Society Organizations were conducted.
**Lessons learned:** Violence cases reported by KP programs were at 44 inMarch-2014and this dropped to 13 by September 2015. Number of incidents of violence reported and addressed during the same periods increased from 55% to 71%. The County TWG managed to conduct five sensitization forums for different stakeholders who included; KPs, Law enforcers, Bar and Lodges managers and civil society organizations. The KPs also formed a Whats App group as a platform for reporting cases of violence and getting swift response and support from the Members.
**Conclusions/Next steps:** By involving all key stakeholders in the County, a more responsive support system to manage violence faced by KPs was put in place. The platform has been used for experience, knowledge sharing and empowering sex workers to advocate for their rights.

## THPED372

### RISK FACTORS ASSOCIATED WITH VIOLENCE TOWARDS SEX WORKERS IN BOTSWANA, NAMIBIA, SOUTH AFRICA AND ZIMBABWE

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**Background:** Violence is one of the most important factors affecting the vulnerability of sex workers to HIV/AIDS. Violence stops sex workers accessing necessary information, support and services that help to protect them from HIV/AIDS. It also puts them in situations that make them more vulnerable to HIV/AIDS. Modelling estimates show that a reduction of almost 25% in HIV infections among sex workers may be achieved when physical or sexual violence is reduced. Psychical and sexual violence increase HIV infection and decrease condom use. This study looks at the risk factors associated with violence against sex workers.
**Methods:** Trough a participatory mixed methods design 2086 sex workers were reached in Botswana, Namibia, South Africa and Zimbabwe (Survey, N=1762, in-depth interviews/life stories, N=171, and FGDs, N=153). The standardized survey was established with sex worker- led groups and distributed through peers. The survey focussed on violence, perpetrators, social capital, health determinants and risk and mitigation factors.
**Results:** Overall violence experienced was high (Physical Violence 79%, Economic violence 72%, Sexual violence 77%, Emotional Violence, 89%). Logistic regression analysis showed that street-based sex workers and sex workers that work through internet are more at risk for violence then their venue-based peers (P< .001), as are sex worker that disclose their profession (P< .01 ), that are being arrested (P< .001) and use drugs and alcohol during work (P< .01). (In)consistent condom use and being HIV positive , showed mixed results in the different countries. In most countries being HIV positive increased the risk of violence.
**Conclusions:** Criminalizing laws and policies make sex workers more vulnerable for HIV and violence, trough arrest, stigma & discrimination and incomprehensive support packages. Condom distribution is an essential part of HIV prevention for sex workers. But without inclusion of training on safe negations skills, violence can be provoked and therefore increase the risk of HIV infection.

## THPED373

### MEDIA ADVOCATE ON TRANSGENDER SEX WORKERS IN CHINA THROUGH DOCUMENTARY AND PHOTO EXHIBITION

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**Background:** Transgender sex workers are originally outputted from Shenyang, a northeastern city in China during the past 25 years to southern part of China. Due to the severe social discrimination from mainstream media and the social public, these transgender women sex workers had to migrate to distant cities or even countries,

say, Thailand, Singapore and Malaysia to make a fortune. In order to increase their social visibility and acceptance, it is crucial to document this specific population and generate non-discrimination publications to the society.
**Methods:** With regard to increasing the visibility of transgender sex workers, we have spent 3 and a half years to shoot documentaries and take photos to document this specific population in China. During the past 3 years, we have organized 11 times of photo exhibitions and 8 times of documentary screening in different cities of China, such as Beijing, Shenyang, Guangzhou, Hong Kong and Bangkok. There were two ways of collecting photo and video materials:
1) we recruited a transgender photographer to live with these transgender people and document their daily scenes;
2) we organized a series of media empowerment trainings to enable them to document their own life.
**Results:** By far we have composed two individual documentaries and more than 2,000 well-polished photos. Through organizing photo exhibitions and documentary screening, we have propagate the key results directly to some 1,200 people from the society. With the help of our propagation, we have help establish more than 12 local non-government organizations and student unions that serve transgender people as well as people living with HIV. Another positive impact is that through organizing photo exhibitions and documentaries screening, we successfully attracted the attention of mainstream media. So far, our events have been reported by more than 20 different mainstream media companies.
**Conclusions:** Although in China the visibility and social acceptance to transgender people and sex workers has been improved in many first-tier cities, it is still unsatisfying, for in a lot of second-tier cities transgender sex workers are still stigmatized and discriminated. Media advocate as well as policy-based advocate should be more combined to make the situation much better.

## THPED374

### DISCLOSURE OF VIOLENCE AMONG FEMALE SEX WORKERS IN INDIA: EVIDENCE FROM AVAHAN PHASE-III EVALUATION

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**Background:** Disclosure of violence is one of the key indicators in violence prevention and reduction programmes among high risk group population, especially among female sex workers (FSWs) in India. Physical and sexual violence experienced by FSWs, perpetrators of violence, disclosure and non-disclosure of violence, association with membership in Community Organizations (COs) are examined in this study.
**Methods:** Data were drawn from Avahan phase-III baseline evaluation survey conducted among 4098 FSWs across five states in India in 2015. The data were collected on experience of physical and sexual violence, STI symptoms, condom use, social protection, financial security. The analytical samples include FSWs who experienced either physical or sexual violence in past six months. Descriptive statistics, frequency, bivariate and multivariate logistic regression techniques were used for analysis.
**Results:** About 10% of FSWs experienced either physical or sexual violence. The major perpetrators of violence are intimate partners (45%), stranger/client (31%) police (6%), and others (18%). Among the FSWs who experienced violence, 48% disclosed about the last incident to the community organization while 52% did not disclose. Reporting last incident of violence perpetrated by strangers/clients were 1.8 times more likely higher than the violence perpetrated by intimate partners (55 % vs. 41 %, AOR: 1.882, 95% CI: 1.186- 2.620. FSWs not registered in CO were less to report last incident of violence to CO (9353 vs 25%, AOR 0.251, 95%CI, 0.127-0.496). Similarly FSWs who were not involved in collective action in past six months were less likely to report the last incident to CO (54% vs. 40%, AOR 0.592, 95% CI: 0.388-0.904).
**Conclusions:** Not disclosing experience of violence by FSWs is quite high which could be a major barrier in addressing of violence reduction. Immediate efforts are required to understand the reasons for non-disclosure based on which interventions can be developed. Community collectivisation, strengthening of community based organizations and designing gender-based interventions with the involvement of intimate partners should be prioritised in the prevention programs.

## THPED375

### ANTICIPATED AND EXPERIENCED VIOLENCE AMONG MALE AND FEMALE SEX WORKERS IN KENYA AND THEIR RELATIONSHIP TO UTILIZATION OF GENERAL AND HIV-SPECIFIC HEALTH SERVICES

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**Background:** High levels of violence faced by sex workers is a human rights issue in urgent need of response. Data on the levels and sources of this violence, and its effect on health, is needed for advocacy and targeted intervention. As part of a study on stigma with male (MSW) and female sex workers (FSW) in Kenya, the USAID-and-PEPFAR-funded Health Policy Project, four civil society organizations, National-AIDS-Control-Programme (NASCOP), Kenya-Medical-Research-Institute (KEMRI) and the University of Nairobi collected data on violence and its relationship to utilization of health services in four sites in 2015.
**Methods:** Quantitative cross-sectional survey using a modified RDS process resulted in a snowball sample of FSW (497) and MSW (232). Key measures included: anticipated and experienced physical and sexual violence; avoidance or delay in seeking needed health service; type of service avoided/delayed. Multivariate analysis examined the relationship between physical or sexual violence in the past 12 months and delay/avoidance/delay of general or HIV-specific health services, controlling for key background variables, including self-reported HIV status.
**Results:** MSW and FSW reported high rates of violence (table 1), and anticipation or experience of violence led to higher odds of avoiding or delaying general and HIV-specific health services (table 2). For example, MSW who experienced sexual violence were significantly more likely to avoid/delay HIV services than MSW who had not (OR: 3.1, p=0.01). FSW who anticipated sexual violence were 2.5 times (p=0.00) more likely to report avoiding HIV services.

| Table 1:Source or Type of Violence | Anticipated (FSW, n=497) | Experience (FSW, n=497) | Anticipated (MSW, n=232) | Experienced (MSW, n=232) |
|---|---|---|---|---|
| Family | 48% | 31% | 56% | 12% |
| Community | 39% | 41% | 54% | 21% |
| Police | 55% | 45% | 53% | 22% |
| Physical Violence | 67% | 63% | 74% | 33% |
| Sexual Violence | 62% | 49% | 57% | 26% |

*[Table 1]*

| Table 2 | Avoided or delayed HIV services Odds Ratio (P-value) | | Delayed all health services Odds Ratio (P-value) | | Avoided all health services Odds Ratio (P-value) | |
|---|---|---|---|---|---|---|
| | FSWs | MSWs | FSWs | MSWs | FSWs | MSWs |
| Anticipated physical violence | 1.46 (.22) | 2.23 (.07) | 1.93 (.01) | 2.19 (.08) | 2.06 (.00) | 2.00 (.09) |
| Anticipated sexual violence (rape) | 2.49 (.00) | 2.38 (.02) | 1.56 (.06) | 1.05 (.91) | 2.14 (.00) | 2.60 (.01) |
| Experienced physical violence | 1.86 (.04) | 2.11 (.05) | 1.68 (.02) | 1.15 (.75) | 1.33 (.21) | 1.73 (.13) |
| Experienced sexual violence (rape) | 1.39 (.20) | 3.1 (.01) | 1.51 (.05) | 1.14 (.78) | 1.56 (.03) | 1.09 (.82) |

*[Table 2]*

**Conclusions:** Anticipated and experienced violence are prevalent and negatively associated with general and HIV-specific healthcare seeking. Programming and policies to prevent and mitigate violence towards sex workers should also aim to improve links and access to essential health services; improving the wellbeing of sex workers, as well as the communities they live and work in.

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## THPED376

### DOCUMENT HUMAN RIGHTS VIOLATION AMONG TRANSGENDER SEX WORKERS AND ADVOCATE FOR EQUAL HUMAN RIGHTS BY SCREENING DOCUMENTARIES IN DIFFERENT COUNTRIES

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**Background:** In China there are hundreds of transgender s sex workers living in Shenyang, Shanghai, Guangzhou, and Beijing. Due to the severe discrimination towards this population, transgender women find it extremely difficult to apply for a regular job in the society. In our previous research carried out in 2014, 94 percent of those transgender women are now working as sex workers, which serves as a crucial factor for aggravated discrimination by the public. The discrimination and ignorance from the society and legislation leads more human rights violation cases among transgender sex workers.
**Description:** In the past two years, we have interviewed and documented more than 60 transgender sex workers from different parts of China. So far we have composed 2 different short documentaries, which reveal the real life of transgender sex workers in China. In order to protect the privacy of this vulnerable population, we have not uploaded these documentaries onto mainstream media. Instead we screened the documentaries in different workshops, trainings and college classes. In 2015, one of the documentaries named *Magic* was selected to screen by Sex Worker Film & Arts Festival in San Francisco, Boston LGBT Film Festival, and Bangalore Queer Film Festival in India.
**Lessons learned:** After the documentaries been screened in 8 different universities and more than 20 times screening in different film festivals and workshops worldwide, we have found out that most of the audience were shocked by the human rights violation cases on transgender sex workers, such as the violation from local policemen, clients and other sex workers. Also, the higher HIV infection rate (about 40%) aroused public attention, too. The third focus was on the use of crystal meth among transgender sex workers.
**Conclusions/Next steps:** The human rights violation among transgender sex workers could not be ignored, since this is the key factor that affects their vocational discrimination and medical discrimination as a consequence. In the near future, we are going to hire a number of lawyers to pursue several judicial proceedings to achieve legal transform, and these documentaries would serve as evidences to increase the possibility.

## THPED377

### PROVISION OF INTEGRATED SEXUAL AND REPRODUCTIVE HEALTH AND HIV PREVENTION SERVICES FOR FEMALE SEX WORKERS

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**Background:** Sex workers in Zambia report that they are frequently exposed to HIV and STIs, and have multiple risks for infection, including multiple sexual partners, and barriers to the negotiation of consistent condom use. Sex workers are often in no position to control these risk factors in Zambia, because of the legal, political and social environment, and the context they live and work in - making them vulnerable to HIV and other STIs. Young Happy Healthy and Safe (YHHS) has increased the provision and uptake of integrated health services for sex workers aged 18-24, increased their access to SRH services and HIV prevention and thus improved their health and that of the wider population. An average of 120 sex workers access information and health services monthly.
**Methods:** To increase access to non discriminatory HIV and sexual and reproductive health and rights services to sex workers, YHHS worked with stakeholders from the health sector, police, Human Rights and NGOs. Through partner support, YHHS provided effective interventions for the prevention and referral of HIV, cervical cancer and STIs among sex workers and their clients. Through partnerships, a non discriminatory friendly environment for easy access to integrated health services by sex workers was created. The project also worked with the taskforce which included all the key partners such as the Zambia police for gender based violence.
**Results:** From January 2015 to December 2015: 198 sex workers accessed HIV counseling and testing, 115,000 male and female condoms were distributed, 56 sex workers accessed Maternal and child health services and a total of 425 were reached with SRHR , HIV prevention messages and 17 reported gender based violence to the police.
**Conclusions:** Working with different stakeholders using a project taskforce, peer educators, and access to information hubs, health services were made available, accessible, and acceptable without stigma and discrimination. As part of future project scale-up and planning, the feedback documented from monitoring and evaluation informed YHHS the changes that occurred before and after intervention such as increased female sex worker access to services.

## SOCIAL NETWORKS AND ASSOCIATIONS OF SEX WORKERS

## THPED378

### PERFORMING *PUTA* POLITICS AND ITS ROLE IN THE RESPONSE TO AIDS IN BRAZIL

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**Background:** The sex worker movement in Brazil has been a reference on the international landscape for its protagonist role in constructing a rights-based response to AIDS. This ethnographic and historical research documents their activism and how they navigated political setbacks and broad shifts in the country's approach to HIV.
**Methods:** Research was conducted over a 36-month period from November 2011 through October 2014 and included archival research, participant observation with sex worker rights organizations, oral histories with 21 sex worker rights activists and 44 interviews with AIDS activists and government health, rights and security administrators in three Brazilian cities.
**Results:** Facing institutional and political challenges, sex worker activists used cultural forms to draw attention to injustices, challenge gender and sexuality norms and reduce the stigma that continues to surround prostitution by making visible that which is commonly seen as immoral and/or transgressive. For example, a social media protest campaign declared happiness with their profession after a similar HIV prevention campaign was censored by the Ministry of Health and a *Daspu* fashion show and soccer game demanded the right to work in response to violent World Cup police crackdowns. Archival research uncovered the historical roots of this form of politics that purposefully breaks with protocol and refuses victimization. Gabriela Leite's statement in a 1989 article about the first national meeting on AIDS and prostitution is illustrative: "I felt that people were distant from everything and that the doctors were, of course, involved in a debate with themselves. So the next morning, I came back in a low cut black dress, high heels, exaggerated make-up and I talked about my life".
**Conclusions:** The concept of *puta politics* is proposed to refer to this form activism that breaks down hierarchies and barriers between institutional structures and the street by strategically drawing on the flexibility and multiplicity inherent in the *puta* [whore] subjectivity to advance the goals of the sex worker movement. By confronting stigma as the primary driver of the AIDS epidemic among sex workers, the performance of *puta politics* advances a human-rights-affirming approach to the epidemic that places sex workers at the forefront.

## THPED379

### SEX WORKERS OUTREACH PROJECT INC.: MULTICULTURAL PROJECT

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**Background:** As a migrant sex worker in Australia I have experience working in a variety of legal regulation systems in different countries and have been a migrant sex worker peer educator at SWOP NSW for five years. the government and media use the idea of "sex slavery" to create moral panic and makes efforts to address the labor exploitation of migrant sex workers and legal pathways for sex work and migration more difficult. Furthermore, it creates stigma and barriers for migrant sex workers to access HIV/AID prevention, medical services and support.
**Description:** The Sex Workers Outreach Project, NSW (SWOP) is Australia's longest established community based peer education sex worker organisation focused on HIV, STI and Hepatitis C prevention and health promotion for sex workers. Many of our service users are from culturally and Linguistically Diverse (CALD) communities. The SWOP Multicultural Project is staffed by Chinese, Thai and Korean speaking sex workers who provide non-judgmental and culturally specific support needed for truly peer to peer services. Peer translated resources, peer interpreting support, workplace outreach, and sex industry specific health and safety training workshops are provided in workers' first languages. We assist migrant sex workers to access non-discriminatory medical services and HIV/AIDS related social support. Advocating for

decriminalisation is also a key in our work to decrease stigma and discrimination.
**Lessons learned:** Political factors and Media create the use of force, fraud or coercion to transport an unwilling victim into sexual exploitation image of migrant sex workers that provoked real public anxiety and moral panic . The project have empower migrant workers to positive image and provide services to worker become determinate and autonomy towards their own sexual health and occupation.
**Conclusions/Next steps:** Culturally and linguistically diverse peer educators are most effective in providing peer support to migrant sex workers. It is essential for migrant sex workers to feel safe and not judged for them to engage with services. Through providing translated resources and workplace health and safety training workshop in workers first language the Multicultural Project at SWOP has successfully increased migrant sex workers access to HIV prevention education and support.

## Specific practices, impacts and responses for distinct substances and modes of administration (including alcohol use, injecting drug use and non-injecting drug use)

### THPED380

#### Impacts and responses for substance use among Canadian women living with HIV: a latent class analysis

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**Background:** Substance use can increase the risk of multiple negative health effects for women living with HIV (WLWH), in particular jeopardizing adherence to antiretroviral therapy (ART) and lowering the likelihood of optimal treatment outcomes. We analyzed substance use patterns among a national cohort of WLWH in Canada to determine associations between substance use, social determinants of health, and ART adherence.
**Methods:** Latent class analysis was used to model patterns of substance use among WLWH in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS), a multi-site community-based research study. Seven indicators were included: alcohol, tobacco, cannabis, recreational drugs (Cocaine/Ecstasy/MDMA/Acid/Mushrooms), misused prescription drugs (Benzodiazepines/Diluadid/Oxycotin/Oxycodone/Talwin and Ritalin/T3s and T4s), stimulants (Mathamphetamine/Crack/Speed), and opiates (Heroin/Speedballs/Morphine/Methadone). Fit statistics indicated best class solution. Multinomial logistic regression with class membership as the dependent variable identified independent covariates.
**Results:** Of 1,363 WLWH: median age was 43 (IQR: 35-50); 41% identified as Caucasian, 30% African, Caribbean, or Black-Canadian, and 22% Indigenous; 87% were heterosexual, and 6% were currently engaged in sex work. Among those on ART, 73.4% reported ≥95% adherence. We uncovered 6 latent classes of substance users: Abstainers (26.3%); Tobacco Users (8.8%); Alcohol Users (31.9%); Tobacco, Alcohol, and Cannabis Users (13.9%); Users of Non-Illicit and *Some* Illicit Drugs (recreational, stimulants) (9.8%); Users of Non-Illicit and *All* Illicit Drugs (9.3%). Bivariable analyses revealed increasing proportions of Indigenous women and sexual minorities, and decreasing incomes, resiliency scores and adherence with each subsequent class. Results were mirrored in multivariable analyses. Women identifying as Indigenous v. Caucasian (AOR: 1.71 (95% CI: 0.88, 3.32)) and LGBTQ v. heterosexual (2.24 (1.09, 4.6)), and those with resiliency scores < median (2.41 (1.37, 4.22)), incomes < $20,000 (3.6 (1.78, 7.28)), and **adherence < 95% (2.41 (1.37, 4.22))** were more likely to be 'Users of Non-Illicit and *All* Illicit Drugs' than Abstainers.
**Conclusions:** There is considerable heterogeneity in substance use patterns among WLWH in Canada. Latent classes with increasing types of substances used were associated with lower ART adherence and increased societal marginalization. Addressing substance use and improving ART adherence requires responses that meaningfully involve WLWH in transforming the socio-structural barriers that threaten their health.

### THPED381

#### Rewired: treatment and peer support for men who have sex with men who use methamphetamine

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**Background:** Methamphetamine use is a significant contributor to HIV transmission risk in men who have sex with men (MSM). Approximately 11% of the MSM in Australia use methamphetamine, with use even higher (up to 35%) among MSM living with HIV (LHIV). This compares to 2% of the general population.
*Rewired* is a model developed to reduce harm associated with methamphetamine use in MSM, inclusive of MSM LHIV. This specialist program combines an evidence-based, harm reduction treatment group with a peer support group led by MSM LHIV. The model adapts best practice substance use interventions, and tailors these for MSM using methamphetamine.
*Rewired* assists MSM to manage, reduce or cease methamphetamine use and reduce, drug-related and sexual risk. *Rewired* overtly addresses the interplay between methamphetamine use, sex and HIV.
**Description:** The centre-piece of *Rewired* is a free, six-week group treatment program for MSM that equips MSM with skills and strategies to better manage their methamphetamine use and general health and wellbeing. The group focuses on topics including relapse prevention, methamphetamine and the brain, sleep and nutrition, HIV, sex,pleasure, mental health, and mindfulness. Participants are also provided the opportunity to join a post-treatment program peer support group run by MSM LHIV trained and under clinical supervision.
**Lessons learned:** *Rewired* evaluation demonstrated treatment group efficacy, with significant reductions in methamphetamine use and psychological distress and increases in personal wellbeing measured through validated pre- to post-program psychometric scales; these positive outcomes were maintained at 3,6 or 12 months post treatment. Qualitative data also revealed the importance of peer support and a specialist program for this population. It was demonstrated that the integration in treatment of MSM regardless of HIV status provided an effective intervention model.
**Conclusions/Next steps:** The *Rewired* program for MSM who use methamphetamine demonstrates the potential for a specialist approach to reduce harm and HIV transmission risk in this vulnerable population and would be readily translatable to similar developed-country settings.

### THPED382

#### On point: recommendations for prison-based needle and syringe programs in Canada

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**Background:** Canada's prison population is comprised of a disproportionate number of Indigenous and Black prisoners, as well as individuals from low-income backgrounds with little formal education who use drugs and have mental health care needs. Against this backdrop, rates of HIV and HCV are respectively 10 and 30 times higher in prison than in the general population, and even higher among women and Indigenous prisoners. Although the HIV and HCV epidemics behind bars are principally fueled by the sharing of drug injection equipment, prison-based needle and syringe programs (PNSPs) are prohibited.
**Description:** To support PNSP implementation, a research study was conceptualized to determine a "best practice" framework for PNSPs in Canadian prisons. The study consisted of: (1) a stakeholder meeting that brought together former prisoners, researchers, health care providers and representatives from HIV, Indigenous, women's health, harm reduction, and prisoners' rights organizations; (2) travel to observe PNSPs at three prisons in Switzerland employing different modalities of distribution; and (3) a data collection phase involving consultation with 30 former prisoners (9 women and 21 men) and 10 community and medical professionals from across the country.
**Lessons learned:** Research participants shared a high level of support for PNSPs and agreed about potential health benefits, including PNSP capacity to reduce HIV and HCV transmission behind bars. The study led to six recommendations for the effective establishment of PNSPs in Canada, emphasizing the importance of: program ac-

cess and confidentiality; education regarding safer drug injection; a hybrid approach to injection equipment distribution; consultation with relevant stakeholders; the active role of prisoners in determining how PNSPs work; and the need to address drug use as a social and health issue.
**Conclusions/Next steps:** The report has been shared with relevant government entities, including the Ministers of Public Safety, Health and Justice. It will also be employed as a resource to complement other initiatives for PNSP implementation, including an ongoing lawsuit to compel the Canadian government to introduce PNSPs in federal prisons.

## Interplay between drug use and sexual transmission

### THPED383

### Methamphetamine use increases the likelihood of condomless anal sex (CAI) among Vietnamese men who have sex with men (MSM) who have low sexual sensation-seeking scores

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**Background:** Methamphetamine use and CAI have been identified as HIV risky behaviors. However, evidence of an association of methamphetamine use with CAI among MSM has been found inconsistently. Particularly, evidence from middle and low income countries are lacking. The aim of this study was to describe HIV-related sexual behaviors among MSM in Vietnam and explore the relationship between sex-related methamphetamine use and CAI.
**Methods:** From September through December 2014, 622 MSM were recruited in Hanoi and Ho Chi Minh City, Vietnam. We collected information on demographic characteristics, sexual behaviors, use of amphetamine-type stimulants (ATS) and other recreational drugs, sexual sensation seeking, depressive mood, homosexuality-related stigma and belief in the efficacy of different HIV prevention strategies. We calculated descriptive statistics for demographic and sexual behaviors. We assessed the potential modification of the effect of sex-related methamphetamine use on CAI by sexual sensation seeking. The association of sex-related methamphetamine use with CAI was assessed by generalized linear modelling using modified Poisson regression and robust error variances.
**Results:** Majority of the 622 participants (74.0 %) exclusively had sex with other men. In the last three months, 75.7% reported any CAI, 23.2% reported engaging in sex work and 14.3% had used methamphetamine during sex. In the last twelve months, 21.1% reported group sex (of which 44.3% reported any CAI. Reporting any CAI was associated with living in Ho Chi Minh City vs. Hanoi, being versatile during anal sex, a greater degree of sexual sensation-seeking, and more strongly agreeing that withdrawal before ejaculation is effective in preventing HIV. Effect-modification analysis showed that sex-related methamphetamine use was related to higher probabilities of engaging in CAI among men who had low sexual sensation seeking scores of 2.6 or lower but not for men with higher scores.
**Conclusions:** We found a high rate of CAI reported by MSM participants. The effect of sex-related methamphetamine use on CAI was modified by levels of sexual sensation seeking, suggesting that methamphetamine use may facilitate men who otherwise do not seek riskier sex to engage in CAI. HIV and harm reduction interventions should consider targeting MSM who use methamphetamine for sex and sexually-adventurous men.

### THPED384

### Touchbase: online harm reduction for MSM PLHIV who use drugs

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**Background:** Substance use in men who have sex with men (MSM) living with HIV (LHIV) contributes to poorer health outcomes, treatment adherence and onward transmission. In Australia, MSM LHIV experience rates of illicit drug use far greater than the general population, including a prevalence of methamphetamine use of up to 35%.
Despite these figures, there is a lack of culturally appropriate harm reduction resources targeting MSM living HIV.
*Touchbase*, the first of its type, is an online health promotion intervention that provides harm reduction for MSM LHIV who use drugs integrated within an alcohol and drug information resource for the broader gay, lesbian, transgender and intersex (LGBTI) community.
**Description:** This resource provides accurate, non judgemental information to users, family and peers of the most common drugs used by LGBTI Australians. Each substance included addresses issues and risks specifically for PLHIV, including maintaining treatment adherence, minimising drug interactions and reducing drug-related and sexual risk.
**Lessons learned:** Critical to the success of this digital intervention has been engagement of MSM LHIV in both the pre-implementation formative work and the post implementation evaluation to develop and maintain relevance. These experiences show:
· The language and visuals of online resources need to be accessible, accurate and tailored to the subculture;
· Information needs to be provided in engaging ways that are non judgemental and avoids authoritarian language;
· High appeal and useability among MSM LHIV;
· Harm reduction information specific to MSM LHIV can be successfully integrated within a broader harm reduction resource for LGBTI and within a platform that also addresses stigma and marginalisation of MSM LHIV.
**Conclusions/Next steps:** The development and evaluation of *Touchbase* provides a model for an accessible, culturally relevant, non stigmatising digital intervention to reduce harms associated with drug use for MSM PLHIV.
Digital platforms using accurate, culturally appropriate and engaging information have the potential to be an effective tool in HIV prevention and support for the issue of illicit drug use among MSM LHIV.

### THPED385

### Sexual risks of non-medical prescription opioid users in New York City

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**Background:** Non-prescribed use of prescription opioids (POs) has become widespread in the USA and elsewhere. The southern Indiana HIV/HCV outbreak is one result. We address two relatively little-studied questions: The extent of sexual risk behavior by PO users and of their having sex in settings that might function as bridges to other populations.
**Methods:** 455 youth aged 18 - 29 who reported using POs non-medically and/or heroin in past 30 days were recruited using Respondent-Driven Sampling to recruit a diverse sample by reimbursing participants who recruited PO-user peers. Recruitment began with 20 seeds. Eligibility was assessed by self-report, visual PO (pill) identification quiz, urine drug screening, and, for those reporting recent drug injection, visual assessment for injection marks. Eligible participants completed a computer-assisted, interviewer-administered questionnaire including sociodemographics, drug use, and sexual behaviors.
**Results:** Participants were 33% female and 66% white non-Hispanic (i.e., not racially subordinated). Only 25% reported consistent condom use with opposite-sex partners. The table describes sex partnerships over last 90 days. Although only 7% of men and 6% of women reported having sex in a group setting in the last 90 days, this was not associated with their age at time of interview, and lifetime group sex

was common: among men, only 145 (48%) reported never having had group sex; 18% reported sex at one group sex event, 10% at two, and 5% at 10 - 300 group sex events. Among women, only 58 (43%) reported never having had group sex; 13% reported sex at one group sex event, 9% at two events, and 5% at 10 - 20 events.

| Sex partnerships in the last 90 days | # of partners of the given type in the last 90 days | | | |
|---|---|---|---|---|
| | 0 | 1 | 2 - 4 | 5+ |
| Total sex partners | 12% | 45% | 31% | 11% |
| Female sex partners (Male respondents only) | 4% | 47% | 34% | 15% |
| Male sex partners (Female respondents only) | 5% | 58% | 32% | 6% |
| Male sex partners (Male respondents) | 96% | 1% | 2% | 0% |
| Female sex partners (Female respondents) | 89% | 8% | 2% | 1% |
| Sex partners who inject drugs | 56% | 31% | 10% | 2% |
| Sex partners they had sex with in a group setting | 93% | 1% | 5% | 1% |

*[Table]*

**Conclusions:** PO users' unprotected sex multiple partners and group sex attendance puts them and others at high HIV risk. Interventions should be developed and evaluated to increase condom use and (depending on context) PREP use by PO users both in dyadic events and at group sex events.

## THPED386

### GENDER DIFFERENCES IN SEXUAL BEHAVIORS AND CONDOM USE WITH TEMPORARY PARTNERS AMONG AMPHETAMINE-TYPE STIMULANT USERS IN CHINA

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**Background:** Previous studies have suggested the significant association of amphetamine-type stimulant (ATS) use with HIV infection among various at-risk populations. The present study aimed to explore gender differences in sexual behavior and condom use with temporary partners among ATS users in China.
**Methods:** The cross-sectional data were collected from 901 ATS users (504 males vs 397 females) at two compulsory detoxification institutes in China in 2014, who were recruited and investigated using a self-administered questionnaire. We assessed the status of sexual behavior and condom use among the respondents. Bivariate comparison and multiple regression analysis were performed to assess the association of condom use with different dimensions of sexual behavior.
**Results:** Bivariate chi-square analyses indicated that males were less likely to use condom for sex with temporary partners ($\chi^2$=20.1, $p < 0.001$), or think other ATS users can get HIV/AIDS ($\chi^2$=11.5, $p < 0.001$), and more likely to have sex after taking drugs ($\chi^2$=170.4, $p < 0.001$), or have contracted STDs ($\chi^2$=44.1, $p < 0.001$). Multiple regression analysis indicated that age (β=-.03, p < 0.01 for males, β=-.07, p < 0.01 for females) and ATS use (β=-.17, p < 0.05 for males, β=-.31, p < 0.05 for females) were significantly negatively related to condom use regardless of gender. The male respondents who had contracted STDs (β=-.30, p < 0.05), or were from higher-income families (β=-.29, p < 0.05) were less likely to use condom for sex with temporary partners. The females respondents who tended to have sex after taking drugs (β=-.25, p < 0.05) were less likely to use condom, while those who had higher perceived level of STD knowledge (β=.47, p < 0.01) and who had higher-level perception of others' risk of getting HIV/AIDS (β=.47, p < 0.001) were more likely to use condom.
**Conclusions:** The findings indicate that ATS use is significantly associated with increasing frequency of engaging in unprotected sex, especially among female users. Therefore, interventions such as sexual health and HIV prevention education for ATS users should differentiate between males and females, especially among older population.

# SOCIAL NETWORKS AND ASSOCIATIONS OF DRUG USERS

## THPED387

### THE INFLUENCE OF SOCIAL NETWORK ON DRUG USE AND HIV RISK BEHAVIORS AMONG METH USERS IN THREE CITIES OF INDONESIA

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**Background:** Crystal-meth use has become an emerging issue in Indonesia which covers about 1.2 million users across the archipelago. Research suggests that social networks have significant influence on drug use and also on HIV risk behaviors. This study aims to provide better knowledge on the mechanism by which social network influences on drug use and HIV risk behaviors among crystal-meth users in three big cities of Indonesia.
**Methods:** A qualitative research design was developed to produce a deeper understanding of the influence of social network of meth users on patterns of meth use and its implication to HIV risk. Thirty eight meth users in Jakarta, Medan and Makassar were interviewed using semi-structured interview guide. Analysis on social network's properties was performed to describe the mechanism by which social network' influence on drug use and HIV risk behaviors.
**Results:** Thirty eight informants named 116 friends as regular partners of using meth in the last 30 days. Most of them are their friends who live in the same neighborhood or work place, the others are sexual partners. Drug use initiation is mainly encouraged by their peers in the neighborhood or schools at early episode of life (< 15 years old of age). The network provides knowledge on the drug, the effect of the drug and the network of drug selling. In the later life, the social network's role is to provide significant help in borrowing money, pawning things, pooling money, or providing drugs. The temporary cessation or relapse in using meth is also influenced by the network. The network usually have a script in using meth in which seeking sexual pleasure is part of their use due to perception that meth is associated with sexual desire. Most informants report that they have multiple sexual partners and condom use are not common when they have sex.
**Conclusions:** The study finds that meth use is influenced by engagement in the social network which situated within experience of the informant across their lives. An HIV intervention focusing on sexual transmission should address this population, which is currently overlooked by the existing intervention.

# INTERSECTING STIGMAS AND MARGINALIZED IDENTITIES

## THPED388

### DESTABILISING HETEREONORMATIVITY, DESTIGMATISATION OF SEXUAL AND GENDER DIVERSITY IN AFRICA

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**Background:** Sexual orientation and gender identity remain one of the largest barriers to access to rights, including healthcare, in Africa today. In almost every country across the continent there is institutionalised stigma and discrimination against sexually and gender diverse people. Stigma and discrimination is a known driver which prevents people who are lesbian, gay, bisexual and transgender from accessing HIV information and prevention. As threats have intensified, LGBT activists have been calling on governments and NGOs to respond to this crisis.
**Description:** AIDS Accountability International initiated the Destabilising Heteronormativity project. The first of its kind on the African continent, a multi-country, multi-partnered project which tackles hetereonormativity, the underlying norms which drive stigma and discrimination towards sexually and gender diverse people. If people who are LGBT mostly suffer discrimination at the hands of a society which is driven by hetereonormativity then we have to tackle the norms underlying it. The uniqueness and strength of this project lies in its lens, where a multi-pronged approach is used with a diverse range of partners. Building regional partnerships have been key to the project. This regional collaboration allows for people to build a movement of allies together with sexually and gender diverse partners.
**Lessons learned:** To destabilise hetereonormativity and tackle stigma and discrimination we have to work at multi-levels which engages a diverse range of partners at local and regional level. This project has been a timely and much needed intervention at a time where stigma and discrimination has been intensifying across the continent. The hostile context towards LGBT people requires collective effort at addressing sexual and gender diversity. It requires addressing harmful norms and

attitudes which prevents sexually and gender diverse people from accessing their basic human rights. Allies are key in this intervention, particularly religious leaders, political leaders, researchers and health care workers.

**Conclusions/Next steps:** The first phase of the project is complete and in 2016 AAI is embarking on Phase 2. The importance of this project lies in the fact that it is African project run by Africans on sexual orientation and gender identity. This is also a knowledge producing project for Africans by Africans.

## THPED389

### HIV STIGMA AND GENDER INEQUITY AMONG CISGENDER AND TRANSGENDER WOMEN LIVING WITH HIV IN HYDERABAD, INDIA

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**Background:** HIV stigma in India has been recognized as a barrier to early detection of HIV, disclosure of HIV status to partners, and accessing healthcare services. The goal of this study was to explore how stigma differentially affects cisgender women and *hijras/*transgender women living with HIV in Hyderabad, India, particularly in terms of experiencing depression and utilizing medical care.

**Methods:** The study's theoretical framework integrated gender role theory with Goffman's conceptualization of stigma. A mixed methods design was used in two interrelated phases. In Phase 1, 150 individuals living with HIV (50 heterosexual cisgender men, 50 heterosexual cisgender women and 50 *hijras*/transgender women) were recruited to complete a structured survey, conducted in either Hindi/Urdu or Telugu. HIV stigma scale scores were used to predict depression and medical care utilization, controlling for demographic variables. Stepwise multiple linear regression models were run on the statistical program *STATA 13*. In Phase 2, thirty individuals (15 cisgender heterosexual women and 15 *hijras*/transgender women), were recruited to complete in-depth interviews on their experiences with HIV, gender roles and nonconformity, poverty, caste and religion. Interviews were intended to understand the gendered experience of HIV stigma and to contextualize the answers from the survey. Interviews were translated, transcribed and thematically analyzed by two independent coders, using *NVivo 10.* Consensus was reached on all coding decisions.

**Results:** Interactions between gender and stigma had a statistically significant impact on health outcomes for cisgender and transgender women, namely in increasing risk for depression and decreasing utilization of medical care. Qualitative data revealed that for cisgender women in India, HIV stigma is impacted by restrictive gender roles, a limited ability to refuse or delay sex or marriage, and the prioritization of male partners' health over females. For *hijras*/transgender women in India, sex work and gender nonconformity were important factors in impacting HIV stigma.

**Conclusions:** Interventions to improve the health of people living with HIV in India need to take into account the specific needs of both cisgender women and *hijras*/ transgender women. Interventions that decrease the gendered experience of stigma will likely also improve women's health care utilization and ameliorate women's mental health.

## THPED390

### ASSOCIATIONS BETWEEN MULTIPLE TYPES OF STIGMA AND DISCRIMINATION AND SEXUAL RISK BEHAVIOR AMONG YOUNG BLACK MEN WHO HAVE SEX WITH MEN AND TRANSGENDER WOMEN IN THE UNITED STATES

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**Background:** In the United States, young, black men who have sex with men and transgender women (YBMSM/TW) are the only populations with increasing HIV incidence. Stigma and discrimination related to sexuality, race, and HIV contribute to this health disparity by influencing risk factors for primary and secondary HIV transmission and hindering prevention, testing, and treatment.

**Methods:** healthMpowerment.org (HMP) is a mobile-phone-optimized, Internet-based intervention designed to reduce sexual risk behaviors among HIV-positive and HIV-negative YBMSM/TW. Baseline data from 474 HMP randomized controlled trial participants were analyzed to determine bivariate and multivariate associations between stigma and discrimination related to sexuality, race and HIV and one or more episodes of unprotected anal intercourse (UAI) in the last 3 months.

**Results:** Participants' mean age was 24.3. Most identified as gay (65.4%) or bisexual (18.1%). Others identified as queer (1.5%), transgender (1.9%), questioning (2.1%), straight (1.7%), and other (9.3%). The majority reported negative or unknown HIV status (60.5%) vs. positive HIV status (39.5%). Overall, 66.1% reported at least one episode of UAI in the last 3 months. UAI did not vary significantly by HIV status. In bivariate analyses of those who reported HIV-negative/unknown status, higher levels of perceived HIV stigma and perceived homophobia were marginally associated with UAI (p=0.07 and p=0.09, respectively). The relationship between experienced racial discrimination and UAI was significant (p=< 0.01). In multivariate analysis, racial discrimination was associated with a greater likelihood of UAI (OR 1.18; CI 1.03-1.34) after controlling for age, education and income. For HIV-positive participants, higher levels of experienced HIV discrimination (p=0.02), perceived HIV discrimination (p=< 0.01), perceived HIV stigma (p=0.02) and racial discrimination (p=0.02) were associated with UAI in bivariate analyses. Experienced sexual minority stigma was marginally associated with UAI (p=0.06). In multivariate analysis controlling for age, education and income, greater perceived HIV discrimination was associated with increased likelihood of UAI although the relationship was only marginally significant (OR 1.07; CI 0.99-1.14).

**Conclusions:** YBMSM/TW experienced multiple, intersecting types of stigma and discrimination. Examining the unique effects of these factors on UAI can identify priority areas for structural and individual-level interventions to help reduce risk of HIV transmission among this population.

## THPED391

### THE PRODUCTION OF HIV STIGMA AND CONSTRUCTION OF RACE AND GENDER STEREOTYPES IN PREVENTION AND CARE MATERIALS IN SOUTH AFRICA: A FOCUS GROUP STUDY

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**Background:** What kind of stereotypes about people living with HIV (PLWH) do HIV campaigns produce? In our efforts to motivate people to avoid contracting HIV do we unintentionally create stigma? This paper reports on a study investigating the production of HIV stigma in HIV prevention and care campaign materials in South Africa, particularly exploring how HIV stigma intersects with stereotypes around race, class and gender.

**Methods:** Focus group discussions with South African tertiary education students used carefully sampled prevention and care HIV campaign materials to generate discussion around HIV and PLWH. A social constructionist method of analysis was used to identify how HIV and people living with HIV were constructed in these discussions sparked by campaign materials. Data collection is ongoing and the expected sample size is between 100-120 tertiary education students.

**Results:** Preliminary results indicate that participants orient to race, gender and class as salient categories for responding to the materials and that constructions of HIV and PLWH intersect with these categories. Stereotypes about race, gender and class categories are implicitly assigned to PLWH by association. Individual accountability and responsibility are key themes identified by participants both with respect to the materials and HIV risk in general. Participants frame PLWH and those at risk for HIV as sexually irresponsible and accountable for their HIV statuses, positioning them as individually 'blameworthy' via a failure to engage in protective practices. Tensions in the construction of HIV between prevention and care oriented campaign materials are evident, with participants constructing an HIV positive status as both fatal and manageable.

**Conclusions:** The findings indicate that HIV campaign materials are responded to by targets as stigma-inducing; that HIV prevention campaigns often produce the very stigma that HIV care campaigns attempt to dismantle; and that even care campaigns subtly introduce stigma by implication through intersectional identification with race, gender and class.

## THPED392

### THE SOCIOECONOMIC DIMENSIONS OF HIV STIGMA: EXPLORING STATUS AND RESOURCE EXPLANATIONS

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**Background:** HIV-related stigma and discrimination can negatively impact the health and well-being of persons living with HIV (PLWHIV) and hinder prevention goals. As others have emphasized, HIV stigma-reduction efforts require a multifaceted approach rooted in an understanding of how power differences perpetuate stigmas. We seek to better understand the role of economic power on HIV stigma. Our *status* hypothesis asserts that informational, attitudinal, and cultural factors within economically disadvantaged ingroups and more advantaged outgroups heighten conditions for stigmas directed at status-disadvantaged PLWHIV. Our *resource* hypothesis contends that resource access challenges expose economically disadvantaged PLWHIV to systems and interactions with a higher propensity for HIV stigma. We assess the extent to which these status and resource hypotheses may be supported among an exploratory sample of PLWHIV.
**Methods:** The *People Living with HIV Stigma Index* was piloted in the US in 2014 among 70 PLWHIV residing primarily in Southeast Michigan. The questionnaire measured 12-month stigma/discrimination experienced by PLWHIV. Logistic regression models estimated the effects of status and resource disadvantage on the likelihood of experiencing social or institutional stigma, and of defending (self/others) against HIV stigma. *Status disadvantage* measures included sex work history and unemployment. *Resource disadvantage* measures included homelessness and food insufficiency. We further assessed whether social support offset disadvantage effects.
**Results:** After controlling for significant demographic traits, both homelessness and food insufficiency were associated with a 5-times greater likelihood of experiencing *social stigma*. After also accounting for social support, PLWHIV with a history for homelessness were 4-times more likely than others to experience social stigma, but food insufficiency lost significance. Food insufficiency was associated with a 3- to 4-times greater likelihood of experiencing *institutional stigma* compared to others, with or without (respectively) adjustment for social support. Measures of status disadvantage were not associated with social or institutional stigma. Over 60% reported *challenging stigma* in the prior years, with no differences associated with disadvantage.
**Conclusions:** Resource, not status, disadvantage was associated with increased exposure to social and institutional stigma. There were no resource or status differences in challenging HIV stigma. We discuss implications of our findings for future research and stigma-reduction efforts.

## THPED393

### THE IMPACT OF RESILIENCE UPON EXPERIENCES OF STIGMA: FINDINGS FROM THE STIGMASURVEYUK2015

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**Background:** Psychological resilience is a measure of the ability to properly adapt to stress and adversity, with low resilience being linked to clinical depression and anxiety. Questions from the validated Connor-Davidson Resilience Scale (CD-RISC 10) were included in the STIGMASurveyUK2015; we investigate how resilience can impact upon the level of stigma felt by people living with HIV (PLHIV).
**Methods:** The STIGMASurveyUK2015 was co-designed by PLHIV, clinicians and researchers. People were recruited through >120 cross-sector community organisations and 47 HIV clinics to complete an anonymous online survey about their experience of living with HIV. A resilience score was calculated for participants who had answered >7/10 questions about resilience, the mean of all completed responses was taken to impute the score for missing responses.
**Results:** The mean resilience score of the 1,568 participants who completed the survey was 26.5 (SD 8.2), this is comparable with similar studies among PLHIV. Through cluster analysis, 429 (27%) were classified as having low, 611 (39%) medium, and 528 (34%) high resilience. Resilience scores were correlated with time since HIV diagnosis, with those diagnosed prior to 2005 likely to have lower resilience than those diagnosed in more recent years (53% vs 39%, p< 0.001). Those with low resilience were more likely than those with high to have been diagnosed with depression (71% vs 22%) and to have experienced stigma through discrimination (verbal/physical abuse and exclusion) (46% vs 23%), anxiety (53% vs 24%) and/or avoiding social/sexual experiences (54% vs 32%)
(all p< 0.001), furthermore, avoidance was more likely to be attributed to their HIV (34% vs 19%, p=0.001). No significant link was observed between resilience score and age, gender, sexuality or ethnicity. Thematic analysis of participants' experiences of living with HIV identified that those with low resilience most commonly reported "social isolation" and "negative experiences", whereas those with high resilience focussed on "adopting healthier behaviour" and "empowering experiences".
**Conclusions:** The majority of PLHIV in the UK scored highly on resilient measures. Participants with low resilience were more likely to experience stigma and to report negative experiences of living with HIV. This tool could be useful as a screening tool in clinical settings.

## THPED394

### ECONOMIC HARDSHIP AND INTERNALIZED STIGMA: EARLY RESULTS FROM THE US PEOPLE LIVING WITH HIV STIGMA INDEX-DETROIT

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**Background:** In the US and worldwide, HIV-related stigma and discrimination are consistently identified as key barriers to HIV prevention, treatment, care, and support. The PLHIV Stigma Index project was designed to train and support people living with HIV (PLWH) to measure and address stigma and discrimination in their settings with culturally and locally appropriate responses. In the US the PLHIV Stigma Index was piloted in Metropolitan Detroit in 2014 and 2015. Because of the racial and economic disparities in the US, particular attention in the analysis was placed on exploring relationships between these disparities and internalized stigma.
**Methods:** PLHIV were trained as interviewers and used a structured questionnaire to interview 70 persons living with HIV: 69% Black, 17% White, 59% Cisgender male, 31% Cisgender female, 10% Transgender, and 30% ages 18-25. Three measurements of internalized stigma--internalized negativity, anticipated stigma and social avoidance due to HIV status--were analyzed by age, race, key population status, gender, and economic hardship. Economic hardship was measured by experiences of homelessness, food insecurity and unemployment.
**Results:** Nearly 80% of our respondents experienced self-blame and/or guilt in the previous twelve months, 89% feared negative reactions from others, and 90% engaged in at least one form of social avoidance. Over 56% of our respondents had at least one form of economic hardship. A history of homelessness was associated with 10-times greater likelihood of reporting higher-than-average internalized negativity. Race and gender were not associated with differences in internalized stigma.
**Conclusions:** Most of the people in our sample experienced internalized stigma and discrimination for multiple reasons that included and went beyond their HIV status. The experience of economic distress, however, stands out for its strong correlation to increased internalized stigma. By contrast, respondents who felt most able to address stigma were those who were connected with or knew about HIV support groups, or services. Current efforts to support economically distressed PLHIV in metro Detroit focus on supporting HIV positive leadership training for PLHIV and other community members by educating them about HIV stigma and building networks and support systems for self-empowerment.

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## THPED395

### ACCESS TO CARE, STIGMA AND SYSTEMIC VIOLENCE AGAINST HIV-INFECTED WOMEN IN THE PACIFIC REGION OF COLOMBIA

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**Background:** HIV-infected women in the Pacific region of Colombia often face regional violence, extreme poverty, and forced migration. These women are unacknowledged in the national health agenda and health services are not designed with rural patients in mind, resulting in reports of high morbidity and mortality, but no systematic regional data exists on this population that could be used to inform the development of more appropriate services.
**Methods:** An anonymous, non-representative semi-structured questionnaire of 70 HIV-infected women in two Pacific states assessed access to care, stigma, ethnic/racial discrimination, and quality of life; data was triangulated with qualitative information collected throughout interviews.
**Results:** The majority of women reported being infected by a stable partner, and were diagnosed late. Forty-one percent were denied services at least once, and fifty-six percent travel to another municipality for care, traveling an average of two hours each way. More than one-fifth of the sample reported violations of confidentiality by health workers with respect to their diagnosis. One hundred percent reported stigma associated with their HIV diagnosis. Women in the sample reported less access to education and economic resources than the general population, and almost half reported having not eaten any meals on more than one day in the past week. Forty percent of women had suffered consequences from the armed conflict including internal displacement and physical and sexual violence, and thirty-nine percent reported domestic abuse.
**Conclusions:** Women infected by a stable partner are outside of typical risk groups targeted by current prevention efforts, treatment and services. Access to services are complicated by distance, lack of money for transportation, and childcare/homemaker duties. Stigma and discrimination worsen economic conditions of these women, and high rates of confidentiality violations and unresponsive civil services along with high rates of physical, emotional and sexual violence have caused mistrust in the justice and health systems.
Healthcare services must be adapted to serve the needs of poor, rural, female patients. These services must guarantee transportation costs and nutritional supplements in order for patients to successfully continue treatment.

# RACISM AND OTHER FORMS OF ETHNICITY-BASED SOCIAL EXCLUSION

## THPED396

### EXPERIENCES OF DISCLOSURE AND DISCRIMINATION AMONG BLACK AND OTHER MINORITY ETHNIC GROUPS IN THE UNITED KINGDOM: FINDINGS FROM THE STIGMASURVEYUK 2015

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**Background:** The HIV epidemic in the UK disproportionately affects persons from ethnic minorities. We used the community-led STIGMASurveyUK2015 conducted among people living with HIV (PLHIV) to examine differences in the experiences of HIV-related stigma and discrimination between people from black, Asian and other minority ethnicities (BAME) and white UK born people (non-BAME).
**Methods:** The HIVStigmaSurveyUK2015 invited PLHIV through >120 cross-sector community organisations and 46 clinics to complete an anonymous web-based questionnaire. The inclusion of BAME people was defined by community groups. Descriptive, univariate and multivariate regression analyses were performed.
**Results:** Among 1,576 participants, 583 (37%) identified as BAME, including those of black ethnicity (58%), white-non UK born (19%), Asian (6%) and other ethnicities (16%). BAME mean age was 43 years (range 17-76), 53% were men, 44% women and 3% trans. 87% of black persons identified as heterosexual, 65% of white-BAME, 57% of Asian and other ethnicities as MSM vs 81% as MSM for non-BAME.
Significantly fewer BAME felt in control about the disclosure of their HIV status (82%% vs 92% p<0.001) and had disclosed their status to friends (64% vs 86%, aOR:2.1, 95%CI:1.6-2.) and employers/co-workers (38% vs 50%, aOR:1.5, 95%CI:1.1-2.0) than non-BAME, adjusted for sexuality and gender. 18% of BAME felt that they had no or low levels of support when disclosing to their sexual partner, family, friends, or co-workers/employers vs 10% among non-BAME (p<0.001). Disclosure in the healthcare was high in both groups: 93% for BAME vs 97% for non-BAME. However, fewer BAME felt supported than non-BAME (79% vs 88% p<0.05). Moreover, 40% of BAME reported being treated differently in healthcare during the last 12 months vs 29% of non-BAME (p<0.001) and among these a higher proportion of BAME avoided care when needed compared to non-BAME
(71% vs 57% p<0.001).
**Conclusions:** In the UK, PLHIV from BAME communities are particularly vulnerable to HIV-related stigma and discrimination, with less control over and support during disclosure of their status and more experiences of discrimination in healthcare. These findings call for culturally and settings targeted interventions to address HIV-related stigma and discrimination that severely affect PLHIV access to healthcare and support.

# EXPERIENCES AND IMPACTS OF HOMOPHOBIA AND TRANSPHOBIA

## THPED397

### SOCIAL ECOLOGICAL IMPACTS OF HOMOPHOBIA AND TRANSPHOBIA ON HIV VULNERABILITIES AMONG GAY, LESBIAN, BISEXUAL AND TRANSGENDER PEOPLE IN SWAZILAND

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**Background:** While Swaziland has a broadly generalized epidemic, gay, bisexual and other men who have sex with men (MSM) have distinct HIV acquisition and transmission risks in Swaziland. Little is known, however, about the lived experiences of these men as well as transgender persons, and lesbian, bisexual and other women who have sex with women (WSW) in Swaziland. We used a social ecological theoretical framework to explore experiences of homophobia and transphobia, and the impacts of homophobia and transphobia on HIV vulnerabilities, among lesbian, gay, bisexual and transgender (LGBT) people in Swaziland.
**Methods:** We conducted semi-structured in-depth interviews with MSM (n=23); WSW (n=16); and transgender persons (n=12) in Mbabane and Manzini, Swaziland. We conducted key informant interviews (n=13) with persons working on LGBT, HIV and human rights issues, and with media, educators and peer research assistants. Interviews were conducted in siSwati, digitally recorded and transcribed verbatim, then translated into English. We analysed interviews using narrative thematic techniques to identify and report themes.
**Results:** Participants discussed multi-level experiences of homophobia and transphobia at intrapersonal, interpersonal, community, and structural levels that collectively appear to potentiate HIV vulnerabilities. Intrapersonal experiences of internalized stigma reduced self-esteem, which lowered safer-sex self-efficacy and contributed to sexual risk practices. At the interpersonal level, participants discussed engaging in multiple, concurrent, and heterosexual relationships to hide their sexuality. Participants described alcohol use as a strategy to cope with homophobia/transphobia, and LGBT community socializing centred in bars/clubs. Homophobia intersected with HIV-related stigma to produce beliefs that LGBT persons were 'demonic', 'promiscuous', and responsible for the HIV epidemic. Participants reported experiences of homophobic 'corrective' rape targeting gender non-conforming persons. At the structural level, the criminalization of homosexuality and discrimination in healthcare settings limited LGBT persons' access to HIV prevention, including education, condoms and lubricant.
**Conclusions:** Findings reveal the utility of the social ecological model in understanding multi-level impacts of homophobia and transphobia that elevate HIV vulnerability among LGBT persons in Swaziland. Comprehensive approaches to HIV prevention should consider addressing distal drivers of HIV—such as homophobia and transphobia—to ensure access to the HIV prevention and care continuum, including new prevention technologies, among LGBT persons in Swaziland.

## THPED398

### DEPRESSION AND SEXUAL BEHAVIOR STIGMA AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN THREE WEST AFRICAN NATIONS

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**Background:** Growing evidence suggests that the prevalence of depression among MSM is higher than that of non-MSM in many parts of the world, with studies citing high levels of stigma as a potential contributing factor. However, data on the prevalence and correlates of depression from low- and middle- income countries including West Africa are limited.
**Methods:** Data were collected using respondent-driven-sampling from MSM aged 18 years and older across multiple cities in Cote d'Ivoire (N=1,101), Cameroon (N=307), and Senegal (N=727). Participants were administered a survey including questions about lifetime experience or perceptions of sexual behavior stigma. Positive screens for depression were measured using a cutoff of 10 or greater on the PHQ-9. Logistic regression was used to explore bivariate associations of stigma with depression.
**Results:** Prevalence of depression among MSM ranged from 10.7% in Cameroon, 15.9% in Cote d'Ivoire, and 24.1% in Senegal. Prevalence of sexual behavior stigma was most commonly reported in the context of broader social settings, for example with verbal harassment being reported by 30.6% in Senegal, 37.1% in Cameroon, and 38.3% in Cote d'Ivoire.
However, MSM also reported sexual behavior stigma in the context of family and healthcare settings. In all countries, the odds of depression were significantly higher among those who had felt excluded by family members, been verbally harassed, or been blackmailed (Table 1). In Cote d'Ivoire, stigma from all settings (family, healthcare, and broader society) was significantly associated with increased odds for depression.

| | Senegal | | Cote d' Ivoire | | Cameroon | |
|---|---|---|---|---|---|---|
| | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| Felt excluded by family | 3.52 | 2.15, 5.77*** | 1.66 | 1.05, 2.64* | 2.85 | 1.24, 6.52* |
| Felt like family members gossiped | 3.01 | 1.96, 4.61*** | 1.78 | 1.28, 2.47*** | 2.04 | 0.92, 4.51 |
| Felt rejected by friends | 3.26 | 1.98, 5.38*** | 1.92 | 1.35, 2.72*** | 2.37 | 0.98, 5.74 |
| Afraid to seek health services | 1.27 | 0.82, 1.97 | 1.97 | 1.39, 2.78*** | 1.85 | 0.80, 4.26 |
| Avoided seeking healthcare services | 1.28 | 0.80, 2.02 | 2.85 | 1.97, 4.12*** | 2.04 | 0.90, 4.61 |
| Treated poorly in a healthcare center | 2.01 | 0.78, 5.19 | 3.04 | 1.47, 6.26** | 4.66 | 1.83, 11.88** |
| Gossiped about a healthcare worker | 1.40 | 0.68, 2.89 | 2.14 | 1.34, 3.42** | 3.41 | 1.51, 7.70** |
| Felt like police refused to protect | 1.87 | 1.00, 3.48* | 4.03 | 2.28, 7.13*** | 2.43 | 0.84, 7.05 |
| Felt scared to be in public | 1.45 | 0.95, 2.23 | 2.53 | 1.71, 3.75*** | 3.90 | 1.39, 10.96** |
| Verbally harassed | 2.14 | 1.49, 3.08*** | 2.48 | 1.78, 3.45*** | 2.44 | 1.15, 5.19* |
| Blackmailed | 1.60 | 1.10, 2.33* | 3.39 | 2.39, 4.82*** | 3.08 | 1.43, 6.63** |
| Physically hurt | 2.80 | 1.78, 4.41*** | 2.72 | 1.85, 4.01*** | 2.11 | 0.91, 4.91 |
| Forced to have sex | 1.48 | 0.98, 2.23 | 2.17 | 1.45, 3.23*** | 2.47 | 1.05, 580* |
| OR = Odds Ratio<br>CI = Confidence Interval<br>***p<0.001, **p<0.01, *p<0.05 | | | | | | |

*[Table 1. Bivariate Associations with Depression]*

**Conclusions:** Depression among MSM was found to be prevalent in these three West African nations and strongly linked to experiences or perceptions of sexual behavior stigma. Extensive efforts are needed to scale up mental health interventions in the African context, and reducing or mitigating stigma is a necessary step to improving mental health outcomes for these men.

## THPED399

### PATHWAYS FROM HOMONEGATIVITY TO HIV RISK AMONG BLACK SOUTH AFRICAN MEN WHO HAVE SEX WITH MEN

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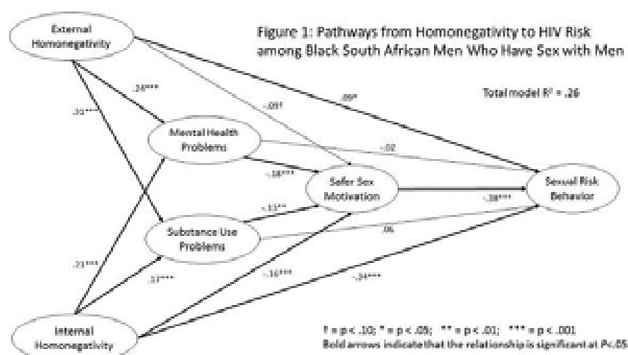
**Background:** Homonegativity, a negative evaluation of expressions of same-sex sexuality, has external and internal components. Externally it includes informal and institutional discrimination against people who practice same-sex sexuality. Internally, homonegativity manifests itself as negative feelings, thoughts and behaviors about one's same-sex sexuality. Homonegativity is related to various health problems and behaviors.
We assessed pathways from homonegativity to HIV risk behavior (see Figure 1) among a sample of black South African men who have sex with men.
**Methods:** 480 black MSM in the metropolitan area of Tshwane, South Africa, recruited through respondent-driven sampling, reported on experiences with external homonegativity (discrimination), internal homonegativity (internalized homophobia, gender dysphoria, sexual identify confusion), substance use (hazardous drinking (AUDIT), drug use (DAST-9)), mental health (boredom, hopelessness, self-esteem, self-confidence, unhappiness, depression), safer sex motivation (IMB constructs) and sexual risk behavior (frequency of UAI over the past 6 months). Measures were standardized and pooled to create indexes. We conducted a path analysis using sets of linear regression analyses.
**Results:** The median frequency of UAI over the past 6 months was 1 [IQR: 0-3]. Figure 1 shows the results of the path analysis.




*[Figure 1. Pathways from Homonegativity to HIV Risk among Black South African Men Who Have Sex with Men]*

Internal and external homonegativity predicted UAI through mental health problems and substance use problems via safer sex motivation. Internal homonegativity also predicted UAI through safer sex motivation. The impact of mental health and substance use problems on UAI was via safer sex motivation. Internal and external homonegativity also independently predicted UAI directly. These variables explained 26% of the variance in UAI.
**Conclusions:** Homonegativity, both internal and external, has a direct and indirect impact on sexual risk behavior among black South African MSM. In order to be effective, HIV prevention efforts addressing this critical population incorporate attention for stigma faced directly and indirectly by black South African men who engage in same-sex sexuality.

## THPED400

### AN URGENT ADVOCACY ACTION IN MOROCCO: THE FIRST CASE ACQUITTING A PERSON LIVING WITH HIV FROM VOLUNTARY SEXUAL TRANSMISSION

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**Background:** The response to HIV / AIDS in Morocco intends to be coordinated, participatory, transparent and accountable. Yet important sectors are not aware of two important political components of this response namely: the National Strategic Plan on HIV/AIDS and the National Strategy on "AIDS and human rights".

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This is shown in the case of a woman living with HIV following ARV treatment, married and accused of "voluntary sexual transmission of HIV" to two men she had consensual sexual relations with. The legal recourse did not come from the two men in question but from the police. It was therefore, in our view, a serophobia campaign wrapped into a trial for adultery in which the husband was secondarily charged with willful transmission of HIV to his wife. Both husband and wife were victims of stigmatizing and discriminatory social representations from the police, the public prosecutor and the media.
**Methods:** Thanks to a watch on people living with HIV (PLHIV) human rights' violations, the ALCS became aware of this case and opted for a strategy of urgent intervention.
3 advocacy axes were defined:
• A media campaign to act against serophobia
• Awareness raising among police officers
• Preparation of an advocacy strategy with three human rights lawyers: it was articulated on the constitutional bases that prohibit discrimination, the national response strategies and the substantive defects detected in reports from the judicial police.
**Results:** the woman was discharged. This jurisprudence will be used to affect future legal situations. The prefect of police of the city of Tangier organized a meeting at the police headquarters where were invited all heads of police services in the region and during which we outlined the axes of the national response strategies, as well as the main axes of our advocacy against discrimination and stigmatization of key populations and PLHIV.
**Conclusions:** We need to strengthen an approach based on rights and reinforce the skills of officials in the Ministry of Health to communicate on the national HIV strategy to other departments. A specific advocacy targeting police officers, prosecutors and judges is also necessary.

## THPED401

### THE ECONOMIC COST OF HOMOPHOBIA IN LOW- AND MIDDLE-INCOME COUNTRIES

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**Background:** Despite noticeable progress in the inclusion of gay men and other men who have sex with men (MSM) in society, homophobia, stigma and discrimination are still largely prevalent. This discrimination based on sexual orientation has a cost: unemployment, denied promotion, poor mental health, suicide, and vulnerability to HIV infection. The objective of this study is to develop and present a model for estimating the economic cost of homophobia in all low and middle-income countries (LMIC).
**Methods:** We estimated the productivity and health-related costs of homophobia. The productivity cost is represented by the earnings differential between gay men and their heterosexual counterparts. The health-related cost is represented by the value of life-year loss due to homophobia. We calibrated the model for 162 countries by developing a Homophobic Climate Index that takes into account both the institutional homophobia, characterised by the laws and legislations recognising, protecting or criminalising homosexuality, and the social homophobia, represented by the level of acceptance and justifiability of homosexuality. The cost of homophobia has been estimated for each country with a lower and an upper bound, where the population of gay men and other MSM represents 1% or 3% of the male (15-64) population respectively.
**Results:** Our results show that for all LMIC countries, the cost of homophobia ranges between US$ 30.8 - 92.3 billion per year, representing 0.12-0.37% of GDP. This share is twice higher than the one found in high-income countries (0.06-0.18 % of GDP). More importantly, the cost has a nonlinear progression; it increases disproportionately with higher homophobia. As such, the economic cost of homophobia among the bottom ten most homophobic countries reaches 0.19% - 0.58% of GDP, four times the share in the top ten most inclusive LMIC countries. Latin America is the region where the cost of homophobia represents the lowest share of GDP (.05- 0.16%).
**Conclusions:** Homophobia is a human tragedy and takes lives. The cost is particularly high in low and middle-income countries. Such results highlight the importance of fighting against discrimination promoting inclusive policies for sexual minorities, particularly among low and middle-income countries as an efficient engine of economic and social development.

## THPED402

### MOVING FROM INSULT TO INCLUSION: HOMOPHOBIA AND TRANSPHOBIA IN ASIA-PACIFIC EDUCATIONAL INSTITUTIONS

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**Background:** LGBT young people are globally at increased risk of self-inflicted violence including suicide, often as a consequence of harassment and exclusion experienced in schools and other settings. Homophobia and transphobia has also been associated with sexual and substance use behaviours that increase the risk of acquiring HIV infection. This study is the first to assess the prevalence, types and impact of violence among LGBT students in Asia-Pacific, wellbeing outcomes impacting on HIV vulnerability, and prevention/response mechanisms.
**Methods:** Systematic analysis of >500 published/unpublished reports, peer-reviewed literature, media reports and programme evaluations from 40 countries in Asia-Pacific, as well as direct input from over 400 key stakeholders in the region. Results were validated at a regional consultation with >100 civil society, government and academic partners from 15 countries.
**Results:** The majority of LGBT students report being bullied, up to 80% in South Korea, and have higher rates than non-LGBT peers. 10 countries document institutional discrimination and exclusion, including misrepresentation in textbooks/curricula, and gender-specific regulations/facilities. Gender non-conforming youth, including third gender and transgender persons, report higher levels of peer and teacher victimization in India, Nepal, New Zealand and Vietnam. Help-seeking is infrequent; 68% of Thai victims hadn't told anyone, 1/4 of whom said "nothing would happen even if someone were told." 71% of bullied same-sex attracted and gender questioning (SSAGQ) Japanese boys reported anxiety, and 13% depression, while 21% of bullied Australian SSAGQ has skipped school, and 24% had drops in marks. Indonesia, Mongolia, Philippines and Viet Nam studies found associations between self-stigma and risk behaviours impacting on HIV transmission. Only 2 countries address SOGIE-based bullying in national policy, 5 mainstream SOGIE in national curriculum, 1 institutionalizes SOGIE-inclusive pre-service education at-scale, and 3 have extensive links to counselling/health services.
**Conclusions:** High levels of verbal, physical and sexual harassment, abuse and violence are experienced by LGBT young people in Asia Pacific schools, having a toxic impact on mental health and educational performance and achievement - with potential lifelong impacts on employment options and economic earning potential. Prevention and response mechanisms are woefully inadequate and far from the SDG principle to "leave no one behind".

## THPED403

### PATH ANALYSIS OF THE INFLUENCE OF TRANSGENDER IDENTITY STIGMA AND HIV-RELATED STIGMA ON DEPRESSION AND LIFE SATISFACTION AMONG HIJRAS/TRANSGENDER WOMEN IN INDIA

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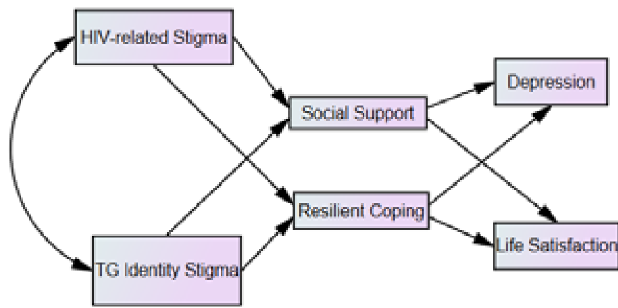
**Background:** Limited empirical studies are available on the influence of multiple stigmas on the mental health and well-being of transgender women (TGW) in India. We examined the influence of transgender identity stigma (TGS) and HIV-related stigma (HIVS) on depression and life satisfaction among TGW in India. We hypothesised that resilient coping and social support would mediate the relationship between TGS/HIVS on depression and life satisfaction (See the diagram).
**Methods:** We administered structured survey questionnaire among 300 hijras/TGW recruited through community agencies from 3 urban (Mumbai, Delhi and Kolkata) and 3 rural (Sangli, Kancheepuram and Kumbakonam) sites. Except TGS scale, standardised scales were used for collecting data on the study variables. We conducted path analysis using IBM SPSS Amos-21 and assessed the significance of the total, direct, and indirect pathways through bootstrap confidence intervals.
**Results:** TGS had a significant total effect on depression and life satisfaction, but HIVS did not. Similarly, TGS (but not HIVS) had significant direct effects on social support and resilient coping, and both social support and resilient coping independently had significant direct effects on depression and life satisfaction. While social support mediated the effect of both TGS and HIVS on depression and life satisfaction, resilient coping mediated the effect of only TGS, not HIVS.
**Conclusions:** Our findings indicate the key role of TGS on depression and life satisfaction among TGW, and the mechanisms by which TGS might exert its effect. The findings have implications for inclusion of multi-level stigma reduction programmes to promote the mental health and well-being of TGW in India.




[Path analysis: Influence of HIV-related stigma and TG stigma on Depression and Life Satisfaction]

## THPED404

### STIGMA TOWARDS MEN WHO HAVE SEX WITH MEN IN NIGERIA: NOVEL METHODS AND WIDE-RANGING IMPACTS FOR HIV, SEXUALLY TRANSMITTED INFECTIONS AND MENTAL HEALTH

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**Background:** Criminalization and stigmatization of homosexuality may have important effects on healthcare engagement and disease incidence among men who have sex with men (MSM) in sub-Saharan Africa (SSA). Understanding these effects can inform interventions to improve health for MSM. This study aims to assess patterns and predictors of stigma and whether a composite measure of stigma is associated with increased HIV prevalence, sexually transmitted infection (STI) prevalence, STI incidence, and suicidal ideation among Nigerian MSM.
**Methods:** The Trust study is a prospective cohort study of Nigerian MSM using respondent driven sampling in Nigeria that started in 2013. Socio-demographic characteristics, suicidal ideation, stigma, HIV and STI status at enrollment and STI incidence over time were included. Latent class analysis was used to develop stigma classes. Predictors of class and distal outcomes were added and the analysis was clustered by city.
**Results:** Three stigma classes of low, medium, and high emerged (see Table) with 60% of the 1,371 individuals in the medium or high classes. Participants who were higher socio-economic status, more open about their homosexuality, and engaged in receptive anal sex were significantly more likely to be in the high stigma class compared to the low stigma class. As stigma class increased from low to medium to high, the proportion of each outcome increased (HIV prevalence: 23%, 36%, 53%, $\chi^2$ p< .001; STI prevalence: 14%, 20%, 23%, $\chi^2$ p=.043; STI incidence: 8%, 10%, 15%, $\chi^2$ p=.110; suicidal ideation: 18%, 32%, 47%, $\chi^2$ p< .001).

| | Full Sample (n=1371) | | Three-class Stigma Model (98%, 1349)* | | |
|---|---|---|---|---|---|
| | | | Low (40.0%, 541) | Medium (47.3%, 636) | High (12.7%, 172) |
| Stigma Indicator | N | % | Conditional item probabilities: | | |
| Family Made Discriminatory Remarks | 277 | 20.2 | 0.01 | 0.27 | 0.57 |
| Friend Rejection | 266 | 19.4 | 0.02 | 0.22 | 0.63 |
| Fear of Seeking Health Care | 402 | 29.3 | 0.12 | 0.36 | 0.60 |
| Police Refused to Protect Them | 212 | 15.5 | 0.05 | 0.15 | 0.52 |
| Scared to Walk in Public | 256 | 18.7 | 0.05 | 0.18 | 0.63 |
| Verbally Harassed | 445 | 32.5 | 0.00 | 0.43 | 0.97 |
| Blackmailed | 323 | 23.6 | 0.01 | 0.30 | 0.71 |
| Physical Violence | 272 | 19.8 | 0.01 | 0.21 | 0.77 |
| Rape | 232 | 16.9 | 0.08 | 0.20 | 0.33 |

All questions are asked of participants as have they ever experienced each item and was it because they have sex with men.
* 22 participants were excluded because they had a missing response for at least 1 stigma indicator.

[Table 1. Results of the latent class analysis for the three-class model]

**Conclusions:** Using novel methods, this analysis revealed that stigma is pervasive among Nigerian MSM, particularly among those who were more open about their sexuality, and is associated with increased risk of HIV, STIs, and suicidal ideation, suggesting a need to address stigma in strategies to improve MSM engagement with HIV prevention and the HIV Care Continuum.

# STIGMA AND DISCRIMINATION REGARDING PEOPLE WHO USE/INJECT DRUGS, SEX WORKERS, SEXUAL MINORITIES AND OTHER SOCIAL GROUPS AFFECTED BY HIV

## THPED405

### EXPERIENCES OF STIGMA AND DISCRIMINATION AMONG LESBIAN, GAY, BISEXUAL AND TRANSGENDER YOUNG PEOPLE IN KINGSTON, JAMAICA

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**Background:** In Jamaica homosexuality is criminalized, and there is reported violence targeting lesbian, gay, bisexual and transgender (LGBT) persons. Young gay, bisexual and other men who have sex with men in Jamaica have HIV rates of 28%--the highest in the Caribbean. Stigma and discrimination elevate exposure to HIV and reduce access to HIV prevention. Scant research has explored the lived experiences of LGBT youth in Jamaica. We explored stigma, discrimination and coping among LGBT youth in Kingston, Jamaica.
**Methods:** We conducted individual semi-structured interviews with young (18-29 years old) gay/bisexual men (n=20), transgender women (n=20), lesbian/bisexual women (n=20), and key informants working with LGBT people (n=13) in Kingston, Jamaica. We also held three focus groups with young gay/bisexual men (n=10), transgender women (n=8), and lesbian/bisexual women (n=6) in Kingston. We digitally recorded and transcribed verbatim interviews and focus groups. We applied narrative thematic analytic techniques to analyze themes in the data.
**Results:** Participant narratives revealed stigma and discrimination targeting LGBT youth in Jamaica spanned interpersonal (family, friends), community (religion, media), and structural (healthcare, laws, police, housing, employment) facets of life. Stigma and discrimination threatened health and wellbeing, with impacts felt at intrapersonal (reduced self-esteem, fear, isolation, substance use) and structural (limited housing and employment access) domains. Participants discussed experiences of verbal, physical, and sexual violence (including 'corrective rape') directed towards LGBT persons. Family rejection and employment barriers contributed to high rates of homelessness, poverty, and engagement in survival sex work. Violence perpetrated by police, community and clients converged with poverty and stigma to increase exposure to HIV. Healthcare provider stigma limited access to HIV prevention, treatment, care and support. Stigma was exacerbated for lower socio-economic status and gender non-conforming youth. Coping strategies included LGBT support networks, community building, and advocacy.
**Conclusions:** Findings highlight stigma and discrimination contribute to precarious living for LGBT young people in Jamaica. Stigma targeting LGBT people limits access to health care, housing, employment, justice, and HIV prevention services. These structural vulnerabilities elevate exposure to HIV, violence, and mental health challenges. Interventions are required to address the complexity of social and institutional exclusion experienced by LGBT youth in Jamaica.

## THPED406

### EXPERIENCES OF STIGMA IN A SAMPLE OF HIV-POSITIVE GHANAIAN MEN WHO HAVE SEX WITH MEN (MSM): A QUALITATIVE STUDY

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**Background:** In Ghana, men who have sex with men (MSM) bear a high burden of the HIV epidemic.
In addition, same-sex sexual practices and HIV are highly stigmatized. Yet, there is limited knowledge about experiences of stigma as a result of MSM identity and/or HIV status in this sub-population. This qualitative study explored various experiences of HIV- and sexual identity-related stigma and the impacts of 'felt' and 'enacted' stigma on Ghanaian MSM living with HIV.
**Methods:** Between May and July 2015, in-depth, semi-structured interviews were conducted with 30 MSM living with HIV in Accra, Ghana. Participants were recruited through key informants and snowball sampling. Eligibility criteria for the study were: (1) birth-assigned male sex, (2) ages 18 years or older, (3) HIV-positive serostatus, and (4) history of oral or anal sex with another male. Following informed consent, interviews were conducted in a private office at a local NGO. Interviews were transcribed verbatim and data was analyzed using an open and axial coding approach with qualitative data analysis software (NVIVO 10).

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**Results:** The average age of participants was 29.1 years (S.D. = 7.7) and more than half (N=16, 53%) self-identified as gay/homosexual. The results demonstrated that:
1) participants had experienced stigma related to HIV- and/or MSM- status from family, friends, community members, and clinical staff and in clinical, community, and workplace setting,
2) stigma from family and friends were mainly tied to known and perceived sexual orientation and gender expression while stigma from clinical staff were tied to HIV status, and;
3) experience of stigma resulted in some participants' reluctance to seek HIV-related medical services, avoid social settings, lose employment, and internalize negative messages regarding HIV and homosexuality.
**Conclusions:** Anticipation of or experiences with stigma might dissuade Ghanaian MSM from participating in ongoing HIV response efforts. Providing sensitivity training to healthcare providers and public campaigns to discourage HIV- and MSM- related stigma may help remedy this problem. Devising innovative strategies to combat stigma on basis of sexual orientation and HIV status might help reduce disparity in HIV and increase health-seeking behavior among MSM populations in Ghana.

## THPED407

### COMMUNITY MOBILIZATION AND ORGANIZING FOR PEOPLE WHO USE DRUGS IN UGANDA

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**Background:** Uganda Harm Reduction Network (UHRN) is a youth-led drug user network established in 2008 to respond to drug use in Uganda. The network advocates for practical interventions aimed at supporting and addressing issues of men and women who use drugs. The network also seeks to provide a national platform for health and policy programs that promote good practices and advocate for a supportive environment for the adoption, implementation and expansion of harm reduction programs for people who use drugs (PWUDS) in Uganda.
**Description:** UHRN focuses on community mobilization through outreaches, advocacy for human rights protection for drug users and drug policy reform, call for donor support for HIV-related harm reduction services, sustainable livelihood programs and advocacy for the inclusion and adoption of comprehensive harm reduction package such as; Needle and Syringe Exchange programmes (NSE), Opioid Substitution Therapy (OST) and other drug dependence treatments (detox and non coercive rehab), HIV prevention, (HCT), Antiretroviral therapy, Prevention and treatment of STIs, Condom programmes for drug users and their partners, Targeted education and communication (IEC ) for PWUDs and other partners, Vaccination and diagnosis and treatment of viral hepatitis and Prevention, diagnosis and treatment of TB.Conducted 14 HCTs in partnership with MARPI Mulago, and out of the HCT done 280 drug users were found positive, Conducted 8 Community dialogues on HIV and SRHR targeting drug users, Conducted 2 community meetings with police officers and drug users, Reached 5,918 drug users have been reached with HIV/AIDS and TB information, out of these 269 are injecting drug users. 27 PWUDs referred to Butabika hospital for mental and psychotherapy treatment, Procured 91,210 pieces of male condoms procured and distributed to drug users, 721 brochures with health tips and information about UHRN were disseminated to the community targeting drug users.
**Lessons learned:** Working as a collective network allowed for strong collaboration and strengthened the work of the group, beyond what individual organisations may have achieved.
**Conclusions/Next steps:** Conduct massive mobilization of drug users to create awareness and demand for quality and non discriminatory care, right to information and right based services delivery.
Build PWIDs capacity and to resist violation and seek legal redress.

## THPED408

### SOCIAL COHESION, HIV STIGMA AND HIV/STI OUTCOMES AMONG FEMALE SEX WORKERS LIVING WITH HIV IN THE DOMINICAN REPUBLIC

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**Background:** Social cohesion has been shown to be an effective strategy to improve consistent condom use (CCU) and reduce HIV/STI risk among female sex workers (FSW). However, these relationships have not been studied among FSW living with HIV for whom limited interventions have been developed to date.
We assessed the association between social cohesion, CCU and STI among FSW living with HIV and the potential mediating effect of HIV and sex work stigma in this association.
**Methods:** Using data from the *Abriendo Puertas* cohort (n=268) of FSW living with HIV in the Dominican Republic, we conducted multivariate logistic regression and we fit three structural equation models (SEM) to further examine these pathways. Models 1 and 2 separately tested HIV and sex work stigma as pathways between social cohesion and CCU with clients and steady partners. Model 3 included HIV and sex work stigma and an interaction term to test their layered effect.
**Results:** Logistic regression demonstrated a statistically significant relationship between social cohesion and CCU with clients (AOR = 1.65, CI: 1.11 - 2.45) and STIs (AOR: 3.76, CI: 1.159 - 12.162). In SEM, we found that in model 1, social cohesion was associated with HIV stigma and with CCU with clients, but not with CCU with steady partners. HIV stigma was a significant pathway between social cohesion and CCU with clients and steady partners, pointing to a mediating effect. In model 2, social cohesion was associated with CCU with clients but not with steady partners; and cohesion was not associated with sex work stigma, indicating *no* mediating effect. In model 3 there were no significant associations except for one between social cohesion and CCU with clients, with no evidence of a layered mediating effect.
**Conclusions:** Findings indicate that social cohesion has a significant protective effect on CCU and STIs and should be promoted among FSW living with HIV. Findings also indicate that HIV stigma mediates the effect of social cohesion on CCU with clients, highlighting the critical need to address HIV stigma within the context of comprehensive, community-based approaches to improve HIV/STI outcomes among FSW living with HIV.

## THPED409

### SEX WORK IN TIMOR-LESTE: NAVIGATING SOCIAL, CULTURAL AND LEGAL IMPEDIMENTS TO A RIGHTS-BASED HIV/AIDS RESPONSE

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**Background:** Timor-Leste is a young, low-income country in Southeast Asian with a population of approximately 1.2 million people. As in many contexts, sex work in Timor-Leste occupies a delicate social, cultural and legal space which can be an impediment to sound human rights-based public health responses for female sex workers (FSW). As part of a national size estimation of key populations at risk of HIV/STIs in Timor-Leste, this qualitative study explored the nature of these structural factors and their interplay with the implementation of HIV/STI programs for FSW.
**Methods:** Drawing on ethnographic approaches, semi-structured interviews were undertaken using field notes, including recording of verbatim quotes, with 24 FSW and relevant secondary informants across Timor-Leste. Interviews covered the legal, cultural and social context for sex workers. Data were analysed with involvement of the third author (a local researcher well-connected to the populations) using an inductive thematic analysis approach where common themes and discrepant cases were coded with attention to the participants' reported experiences and key events.
**Results:** While experiences varied across participants and districts, many FSW reported family- and community-level stigma, with 'shame' and loss of dignity often associated with sex work. In some districts, *tara bandu* (*lit.*: 'to place a ban'), a form of traditional law used to regulate 'undesirable' behaviours, had reportedly turned sex work further underground. One particular *tara bandu* (originally instated to protect women from discrimination and/or sexual abuse) had reportedly been applied to sex work, with social isolation and heavy financial penalties imposed on FSW. Despite the semi-legal status of sex work in Timor-Leste, informants in urbanised settings reported high levels of persecution from law enforcement.

**Conclusions:** Even in a relatively small context such as Timor-Leste, a large variation was reported in the degree to which sex work was accepted. Ongoing social and law enforcement challenges for FSW highlight the need for continued investment in sex work advocacy and community building.

## THPED410

### WHO'S AFRAID OF THE HOMOSEXUAL? HIV-RELATED MISCONCEPTIONS IN THE LEBANESE CONTEXT

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**Background:** This research was designed to fill a serious information gap in advocacy work relating to sexual and gender rights in Lebanon. So far advocacy in the field has been localized and based on individual incidents, and has not expanded to include Lebanese institutions and society at large. This research aims to provide critical and previously unavailable information by measuring and qualifying attitudes towards sexual and gender rights in Lebanon through surveying key constituencies and communities as well as the public at large.
**Methods:** The project takes the form of eight surveys of key stakeholder sectors with particular relevance to the status and future of gender and sexual rights in Lebanon. These include: high school teachers, health professionals, legal experts, human resource specialists, political party officials, religious leaders, media, and security. More specifically, we look at both quantitative and qualitative data collected among 240 professionals from those key stakeholder sectors in relation to misconceptions surrounding homosexuality, among which the assumption that HIV infections are confined to the gay community, as well as an evaluation of the degree of stigma associated with HIV infection.
**Results:** Results show that the misconception that "most homosexuals have HIV/AIDS" varied from 37% for legal professionals and 34% for political leaders to 7% for the media. A significant proportion of respondents remained undecided, ranging from 33% for health professionals to 47% for political leaders. This suggests that the "movable middle" constitutes an important proportion of responses which could be capitalized on in further advocacy efforts. In addition, follow-up showed, for instance, that a shocking 83% of respondents working in the medical field believed that there was a link between homosexuality and transmittable illnesses, citing reasons like "unnatural intercourse always leads to transmittable infections" and "homosexuals are usually promiscuous".
**Conclusions:** This study aims to ultimately provide an accurate and well-researched basis for future advocacy initiatives, specifically elucidating where efforts should be most concentrated given the greater socio-political milieu. Without this information, current and subsequent advocacy campaigns will not yield optimal results as key questions about the exact nature and location of challenges and opportunities are still vague and disputed.

## THPED411

### THE IMPORTANCE OF MEASURING AND ADDRESSING ANTICIPATED STIGMA AND DISCRIMINATION: ASSOCIATIONS WITH SEEKING GENERAL AND HIV-SPECIFIC HEALTH SERVICES AMONG MALE AND FEMALE SEX WORKERS IN KENYA

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**Background:** HIV-related stigma and discrimination (S&D) is an established barrier to HIV prevention, testing, linkage to care and adherence to treatment. Less is known about how S&D specific to sex work, particularly anticipated (fear of) stigma, affects healthcare seeking behavior. In response, the USAID-and PEPFAR-funded Health Policy Project collaborated with four civil society organizations, the National AIDS & STI Program, the Kenya Medical Research Institute, and the University of Nairobi to conduct a cross-sectional study measuring the prevalence of different types of stigma and their relationship to health seeking behavior among male and female sex workers (MSW/FSW) in 2015.
**Methods:** A modified respondent-driven sampling process resulted in a snowball sample of 497 FSW and 232 MSW across four sites. Anticipated stigma and its relationship to health seeking was assessed through direct questions, as well as through multivariate logistic regressions to determine whether MSW/FSW who anticipated different types of stigma at least once in the past 12 months were more likely to delay or avoid seeking HIV-related services while controlling for other variables, including self-reported HIV status.
**Results:** Significant proportions of MSW and FSW reported that they avoided or delayed needed health services in the past 12 months due to anticipated stigma (table 1). FSW anticipating verbal (OR 2.43, p-value=0.027), physical (OR 2.05, p-value=0.045), or sexual (OR 2.56, p-value=0.005) manifestations of stigma were more likely to delay seeking needed HIV-related services than FSW who did not. MSW anticipating sexual (OR 2.33, p-value=0.022), physical (OR 2.23, p-value=0.068), or housing (OR 2.21, p-value=0.05) stigma were more likely to avoid or delay needed HIV-related services. Both FSW (OR 2.62, p-value=0.019) and MSW (OR 2.85, p-value=0.039) anticipating health worker stigma were significantly more likely to report complete avoidance of needed HIV-related services.

| Table 1: Avoided/delayed services in the last 12 months due to fear of... | MSW | FSW |
|---|---|---|
| Disclosure of selling sex | 47% | 53% |
| Disclosure of having sex with men | 49% | N/A |
| Stigmatizing treatment at health facility for selling sex | 48% | 65% |
| Stigmatizing treatment at health facility for being MSM | 55% | N/A |
| Being asked to be tested for HIV or tested without consent | 25% | 36% |

*[Table 1]*

**Conclusions:** Anticipated stigma can affect willingness to utilize health services and undermine the HIV response. Measuring different types of stigma and their effects is important for designing targeted stigma-reduction programs.

## THPED412

### SOCIAL SUPPORT AND RESILIENT COPING AS MEDIATORS OF THE IMPACT OF SEXUAL MINORITY STIGMA ON MENTAL HEALTH: EVIDENCE FOR A PSYCHOLOGICAL MEDIATION FRAMEWORK

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**Background:** Few studies have assessed how sexual minority stigma affects the mental health of self-identified men who have sex with men (MSM) and transgender women (TGW) in India, populations with a high HIV burden. We tested whether social support and coping act as mediators of the effect of sexual minority stigma on mental health as informed by Hatzenbuehler's Psychological Mediation Framework.
**Methods:** We conducted a cross-sectional survey among MSM (n=300) and TGW (n=300) recruited from 3 urban (Mumbai, Delhi, and Kolkata) and 3 rural (Sangli, Kancheepuram and Kumbakonam) sites in India. Standardised scales were used to measure depression (outcome variable), MSM stigma/Transgender identity stigma (predictor variables), and social support and resilient coping (tested as moderators and parallel mediators). The mediation and moderation models were tested separately for MSM and TGW, using Hayes' PROCESS macro in SPSS.
**Results:** Participants' mean age was 29.7 years (SD 8.1). MSM stigma and transgender identity stigma were significant predictors (significant total and direct effects) of depression, as were social support and resilient coping. Among MSM and TGW, both social support and resilient coping mediated (i.e., significant specific indirect effects) the effect of stigma on depression, supporting the Psychological Mediation Framework. We did not find evidence for the moderating role of social support and resilient coping on the effect of sexual minority stigma on depression.
**Conclusions:** We found empirical evidence for the mediating role of social support and resilient coping on the impact of sexual minority stigma on depression among MSM and TGW. In addition to stigma reduction interventions at the societal level, future interventions should focus on improving social support and promoting resilience among MSM and transgender women.

## THPED413

### STIGMA, DISCRIMINATION AND HEALTH SEEKING AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN BOTSWANA

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**Background:** Interventions to prevent the spread of HIV and other types of support target the heterosexual population with very little targeting sexual minorities such as men who have sex with other men. Due to criminalization and its concomitant hostilities, the activities of such sexual minorities have remained secret and/or underground, and subject to social stigma, ostracism/alienation and contempt.
**Methods:** This paper utilizes Botswana data derived from a 2013 SADC funded Sexual Minorities cross sectional survey in three countries, namely Zimbabwe, Botswana and Zambia, to explore the sexual and HIV risk knowledge, attitudes and practices of MSM.
Data were analyzed in SPSS, using univariate and bivariate techniques and descriptive statistics. Some qualitative data were also used to explicate quantitative findings.
**Results:** The results show that while only 4.2 percent indicated that they felt afraid to seek health care due to their sexual orientation, over a fifth (22.1%) were denied health care because of their sexual orientation; and over half (57%) experienced either verbal or physical abuse and 10.8% experienced police or legal discrimination, and 14.5% experienced blackmail because of their sexual orientation. Over a quarter (28.1%) felt that healthcare workers were not capable to meet their health seeking needs because of their sexual orientation.
**Conclusions:** Although a small proportion reported fear of accessing healthcare services, a larger proportion were either denied access, experienced resentment or were exposed to physical abuse or harassment after disclosing their sexual orientation. This indicates the need to promote equal access to healthcare services for sexual minorities as for the heterosexual community.

## THPED414

### CONNECTION BETWEEN SEXUAL BEHAVIOURS OF HIV-POSITIVE MSM AND DISCRIMINATION THEY FACE FROM OTHER MSM: FINDINGS FROM A QUALITATIVE FORMATIVE RESEARCH IN TAMIL NADU, INDIA

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**Background:** Literature has documented that HIV-positive MSM (HIV+MSM) who have experienced discrimination might engage in risky sex. However, limited information is available from developing countries on how sexual behaviours of HIV+MSM as perceived by other MSM could lead to discrimination. As part of a qualitative formative research to refine a theory-based sexual risk reduction intervention for HIV+MSM, we explored the connections between the perceptions of HIV-negative/unknown status MSM on the sexual behaviours of HIV+MSM and their discriminatory attitudes/behaviours towards HIV+MSM.
**Methods:** In 2015, we conducted focus groups and in-depth interviews with 34 MSM (16 HIV+MSM; 18 HIV-negative/unknown status MSM) in urban/ruralTamil Nadu, India. Narrative thematic analysis was conducted using NVivo-10.
**Results:** HIV-negative MSM did not trust that HIV+MSM would be using condoms and opined that HIV+MSM should not be sexually active, should not come to cruising/sex work sites, or should engage only in non-penetrative sex. Outing the HIV status of MSM to potential sexual partners (including clients of sex work) was not seen as discrimination, but justified as a necessary act to prevent others from getting HIV. HIV-negative MSM reported distancing oneself from HIV+MSM, treating them as 'untouchables' in community settings, and even blackmailing them to reveal their HIV status to their partners if they do not stop having sex. HIV+MSM seemed to have internalised these negative attitudes among HIV-negative MSM about the sexlife of HIV+MSM and reported being abstinent, not engaging in sex work, reduction of the number of sexual partners, and always using condoms during anal sex. However, HIV-positive MSM did report that they have at least a few supportive MSM friends and steady partners.
**Conclusions:** Lack of understanding about the sexual rights of HIV+MSM have led HIV-negative MSM to deny fulfilling sexual life for HIV+MSM, and abstinence as a pre-requisite for getting support from other MSM. Sexual risk reduction interventions among HIV+MSM need to take into account the link between sexual behaviour of HIV+MSM and discrimination within MSM communities. Intervention at the MSM community level is needed to promote acceptance of HIV+MSM within MSM communities and to raise awareness about the sexual rights of HIV+MSM.

## THPED415

### CREATING AN ENABLING ENVIRONMENT FOR SCALED UP HARM REDUCTION SERVICES FOR PEOPLE WHO USE DRUGS THROUGH CAPACITY BUILDING AND SENSITIZATION OF PARTNERS AND STAKEHOLDERS IN TANZANIA

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**Background:** In Tanzania people who use drugs (PWUD) are highly stigmatized. Laws and policies that criminalize drug use contribute to this, as does a lack of knowledge in the general society. This stigmatisation undermines resource mobilisation for HIV prevention (and other) services for PWUD and in many ways increases the risks of PWUD to HIV and other blood-borne infections. Besides it limits research that could contribute to evidence-based decision making.
**Description:** Since 2012 Médecins du Monde (MdM) provides training and sensitization sessions to partners and stakeholders of its harm reduction (HR) program in Dar es Salaam. Almost 7,000 stakeholders have been reached: 270 representatives from NGOs and CBOs; 600 medicals; 100 para-medicals; 5,000 police officers and recruits; 260 religious and local leaders; 80 members of PWUD networks; 340 councillors, mayors and members of district and regional health management teams; and 40 journalists. Sessions focus on the relation between drug use & HIV; HR packages & principles; effects of stigma; human rights; and drug policies.
**Lessons learned:** Monitoring of trainees shows that their knowledge has significantly improved and that practically all of them positively changed their attitude towards PWUD. This has led to a sharp decrease in police harassment and to improved access to health services for PWUD. Besides more NGOs & CBOs became interested in providing comprehensive HR services to PWUD. Lastly, including PWUD as co-facilitators increased mutual understanding as well as self-esteem and assertiveness of those PWUD involved.
**Conclusions/Next steps:** The environment for PWUD has changed dramatically in Dar es Salaam and - to a lesser extent - in the country, thanks to MdM capacity building and sensitisation work, alongside high level advocacy activities. MdM has increased its sensitisation, advocacy and capacity building activities outside Dar es Salaam, with the goal to enhance the scale up of comprehensive HR services for PWUD in Tanzania.

## THPED416

### HIV-RELATED STIGMA AND DISCRIMINATION AMONG WOMEN: FINDINGS FROM THE STIGMASURVEYUK 2015

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**Background:** Women make up a third of the 85,500 people accessing HIV care in the UK in 2015. The STIGMASurveyUK 2015 provides the opportunity to examine the lived experiences of HIV-positive women in the UK.
**Methods:** The STIGMASurveyUK 2015 was co-designed by people living with HIV (PLHIV), clinicians and researchers. Adults living with HIV in the UK were recruited through community HIV organisations and NHS clinics to complete an online survey. Descriptive, univariate and multivariate regression analyses were performed.
**Results:** Among 1576 participants, 378 (24%) were women, of whom 19 (5%) identified as trans. Mean age was 44 (range 19-76 years): 337 (89%) identified as heterosexual, and 269 (71%) as a black, Asian and other ethnic minority (BAME).
58% (146/250) of BAME women reported activity in a faith group in the last year compared to 14% (15/106) white British/Irish women (p< 0.001); 22% (48/218) of women reported becoming more active in their faith group since diagnosis compared to 12% (47/407) of men (p=0.001).
In the past 12 months 28% (106/372) of women reported feeling blame towards others in relation to their HIV status compared to 21% of men (245/1164, p=0.001).

Fewer women reported experiencing rejection by a sexual partner (18% vs 33% of men, p<0.001). More transwomen reported worrying about verbal harassment (50%, 9/18 vs 21%, 74/346) and experienced exclusion from family gatherings (39%, 7/18 vs 17%, 60/342) than other women.
In primary healthcare settings, women were more likely to report low control over disclosure of their status (aOR 1.65, *CI 1.05, 2.59)* and little support following disclosure (aOR 1.99, *CI 1.23, 3.21*) compared to men after adjustment for demographics. 53% (8/15) of transwomen reported being treated differently to other patients at their GP (53%, 8/15) cf 15% (49/318) of other women; almost half (7/16) reported hearing negative comments from a healthcare worker about their HIV status or PLHIV compared to 17% (54/324) of other women.
**Conclusions:** Women feel less support in healthcare settings with regard to their HIV, and transwomen experience disproportionate levels of discrimination. Interventions to increase sensitivity and support within the healthcare and faith settings are advisable.

## THPED417

### A QUALITATIVE STUDY OF PREP STIGMA, PRIDE AND PREDICTED COMMUNITY BENEFITS AMONG MSM AND MALE SEX WORKERS

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**Background:** PrEP implementation raises questions about potential impacts on stigma, attitudes, and norms in MSM communities. Media reports on "Truvada whores" suggest some negative attitudes about PrEP among MSM, and a popular view that PrEP users are irresponsible or promiscuous. We interviewed MSM and male sex workers to explore attitudes toward PrEP, awareness of PrEP stigma within the MSM community, and expectations of how PrEP may change community norms and HIV-related stigma.
**Methods:** We conducted in-depth interviews with 31 MSM and 25 male sex workers in Providence, RI, in 2013-14, building on results of 8 prior focus groups (n=38). Participants were HIV-negative or of unknown status and reported recent unprotected anal sex with an HIV-positive or unknown-status partner. Interviewers provided information about PrEP and explored PrEP knowledge, acceptability, predicted social stigmas or benefits associated with PrEP, and predicted changes in community norms. Interviews were audiorecorded and analyzed in NVivo.
**Results:** Knowledge of PrEP was low, but some participants had heard of stigma associated with PrEP use. When informed of PrEP, some MSM expressed stigma-related concerns about using PrEP, including fears of seeming promiscuous, HIV-positive, or ill. Several MSM in primary partnerships, including sex workers with female partners, noted that PrEP use would imply infidelity; for these men, the need for covert use made daily PrEP less acceptable. But most participants reported low predicted stigma, or noted that stigma would not impede their own use. Some described PrEP as a potential catalyst for reducing HIV stigma among MSM, and even suggested that PrEP would promote community inclusion of HIV-positive individuals and increase MSM community empowerment. Several sex workers also viewed PrEP as a lever for personal change, suggesting that PrEP use is proof of increased self-worth and can provide a foundation for other health behaviors.
**Conclusions:** Strategies are needed to help PrEP users educate partners, family, and peers to reduce potential misconceptions driving PrEP stigma. But both MSM and male sex workers express positive expectations of PrEP as an agent of community and individual empowerment. PrEP outreach efforts and messaging should leverage these expectations to maximize PrEP acceptability.

## THPED418

### COGNITIVE FACTORS MEDIATE THE ASSOCIATIONS BETWEEN PERCEIVED DISCRIMINATION AND HEALTH BEHAVIORS IN HEAVY DRINKING HIV-INFECTED MSM

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**Background:** Men who have sex with men (MSM) are the risk group in the U.S. with the highest incidence and prevalence of HIV. Modern HIV treatments are highly effective although various barriers to optimal health exist, including problematic alcohol use—especially notable for its high prevalence, i.e., 2-4x higher in HIV-infected vs. uninfected samples (Azar et al., 2010). In addition, HIV-positive MSM face discrimination due to both their sexual orientation and HIV status. Discrimination towards HIV-positive MSM occurs across multiple levels of society, including interpersonal, structural, and institutional, and can include overt rejection or discriminatory acts, criminalization of HIV nondisclosure to sex partners, and more. In this study, we test a hypothesized model in which the association between (A) HIV-related or sexual orientation-related discrimination and (C) health behaviors (medication nonadherence, cigarette smoking, condomless anal sex, drug use, alcohol problems) is hypothesized to be mediated by (B) cognitive factors.
**Methods:** We used baseline (pre-randomization) data from 185 participants in an alcohol reduction trial. We recruited primary care patients at an urban LGBT health center. Participants were HIV-positive, male, over age 18, met NIAAA heavy drinking criteria (avg 14+ drinks/week or 1+ binge/month), reported sex with another man in the prior 12 months, and those taking HIV medications were on a stable regimen for 3+ months. We used psychometrically valid survey instruments when available (e.g., CES-D, SIP, Multiple Discrimination Scale, etc.).
**Results:** Participants, mean age of 42.2, had been living with HIV for an average of 9.8 years. Most identified as White (73%) or Black (22%), with 17% endorsing Latino ethnicity. Nearly all (94.6%) were prescribed ARVs. Men reported an average of 5.8 drinks/day on their 16.5 drinking days (of the last 30). The model evidenced acceptable fit, $\chi^2(18)=9.17$, $p > .05$; RMSEA=0.05; CFI=0.97. HIV-related discrimination did not significantly predict the mediators; sexual orientation-related discrimination predicted both hostility and depression, each of which predicted alcohol-related problems; depression predicted medication non-adherence.
**Conclusions:** Future research should investigate factors through which HIV-related discrimination is associated with health behaviors in heavy drinking HIV-infected MSM. Interventions for heavy drinking HIV-infected MSM should address sexual orientation-related discrimination.

# PUNITIVE LAWS AND ENFORCEMENT PRACTICES REGARDING HIV TRANSMISSION, DRUG USE, SEX WORK, SEX BETWEEN MEN, SODOMY AND/OR SEX OUTSIDE OF MARRIAGE

## THPED419

### #REPEAL19A: A SUCCESSFUL CAMPAIGN AGAINST THE CRIMINALISATION OF HIV IN VICTORIA, AUSTRALIA

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**Background:** The criminalisation of HIV transmission, exposure and nondisclosure persists in most parts of the world, despite widespread criticism of its impact on public health and human rights. HIV-specific criminal laws have been particularly criticised by international agencies including UNAIDS and the Global Commission on HIV and the Law.
**Description:** The #Repeal19A campaign targeted Australia's only HIV-specific criminal offence, section 19A of the Crimes Act 1958 in the state of Victoria, as part of an advocacy strategy developed during the lead-up to the AIDS 2014 International AIDS Conference in Melbourne. We constructed a compelling case for repeal of the law, drawing together legal, public health and human rights arguments; brought together a coalition of supportive agencies from the HIV, LGBTI rights and human rights sectors; used the media to build a community consensus for change; and advocated with the leadership of the major political parties in the period leading up to and during the conference. As a consequence of commitments given during the conference, section 19A was repealed by a unanimous vote of the Victorian parliament in May 2015.
**Lessons learned:** The repeal of section 19A is a major part of the legacy of hosting AIDS 2014 in Melbourne. Our campaign showed that a targeted and well-researched advocacy case can be developed in a complex area of public policy to build a compelling narrative for political change. We increased awareness of the issue of criminalisation among the gay community and obtained a clear commitment from government to ensure HIV is treated as a public health issue.
**Conclusions/Next steps:** The criminalisation of HIV has not ended in Victoria, however the #Repeal19A campaign delivered commitments from both sides of politics to an evidence-based approach to HIV policy that prioritises public health and human rights over criminal sanctions. We continue to press for improved policy responses, including prosecutorial guidelines to ensure that criminal and public health laws work more effectively together.

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## THPED420

### HIV CRIMINALIZATION IN CALIFORNIA: A COMPREHENSIVE ASSESSMENT OF ENFORCEMENT, EQUITY AND EFFECTIVENESS OF CRIMINAL LAWS TARGETING PEOPLE LIVING WITH HIV

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**Background:** More than two-thirds of states and territories across the United States have HIV criminal laws. Such laws exacerbate HIV stigma and disincentivize individuals from knowing their HIV status. While U.S. federal agencies have called for legal reform, ensuring these laws are consistent with modern science and public health, no U.S.-based research has previously analyzed comprehensive enforcement data representing a population-based sample. This presentation will review California data, including updated results from a previous study, highlighting new findings on disparities, correlation with new infections, recidivism, and changes over time.
**Methods:** Researchers obtained California Department of Justice CORI (Criminal Offender Record Information) data, which record contacts with the criminal justice system, from arrest through sentencing. The data were cleaned and coded to assess the extent of the laws' enforcement over time, geographically, and by race and sex. The data were investigated for evidence of disproportionate representation of specific subgroups. All data were analyzed using Stata v13.1. Inferential statistics were used to test differences between subgroups.
**Results:** 800 people had contact with the California criminal system from 1988 to June 2014 related to their HIV. 95% of all incidents impacted people suspected of solicitation, which does not require sexual contact to prosecute. Black people and Latino/as made up two-thirds (67%) of the people who had HIV-related criminal contact, but just half (51%) of California's PLWH. Women made up 43% of those who had HIV incidents, but less than 13% of California's PLWH. White men were significantly less likely than others to be charged. Nearly every charged incident resulted in conviction, and 91% of convictions were sentenced to incarceration for an average of over two years. 48% of HIV-based sentence enhancements for sex offenses were for oral copulation.
**Conclusions:** Almost all HIV prosecutions involved conduct that poses low or negligible risks of transmission. California HIV criminal laws have been disproportionately enforced against women and people of color. These analyses demonstrate the laws' lack of equity or effectiveness in reducing new infections, and the presentation will demonstrate how criminal justice data analysis can be used to inform HIV criminalization reform efforts in other legal contexts around the world.

## THPED421

### HIV CRIMINALIZATION LAWS HARM OUR PATIENTS! NURSES ADVOCATE FOR AN END TO UNJUST LAWS THAT PROMOTE STIGMA AND DISPARITIES

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**Background:** The stigma associated with HIV remains high and fear of discrimination causes some to avoid HIV testing, disclose HIV status or access health care. In 32 US states, there are laws that criminalize HIV exposure, based on outdated and erroneous HIV risk and transmission information. These criminal laws contradict public health messages and disregard current knowledge about treatment efficacy and significantly reduced transmission potential with an undetectable HIV viral load.
**Description:** The Association of Nurses in AIDS Care (ANAC) advocates for public health policy grounded in evidence, human rights and the delivery of socially just health care. In 2015 ANAC issued a policy statement calling for the reform of unjust and harmful HIV criminalization statutes. Significant research on laws, health disparities and current evidence provided the base for this policy. Included was a call for education on the negative public health consequences of HIV criminalization and its contribution to HIV related stigma and discrimination. ANAC is an affiliate of the American Nurses Association, who represents the interests of America's 3.4 million registered nurses. They formally adopted our statement for HIV criminalization reform. Information about the intersection of HIV criminalization with stigma, human rights and barriers to engagement in health care was distributed nationally through both nursing organizations' membership communications and to the national media.
**Lessons learned:** In the USA, nurses are consistently rated the most trusted profession and source of health information by the general public. Nurses have considerable influence in communities on health beliefs and nursing practice is guided by the Nursing Code of Ethics. Yet in a 2014 survey of nurses more than 25% were unaware of HIV criminalization laws at all and 60% were unaware of HIV exposure without transmission laws.
**Conclusions/Next steps:** ANAC will expand education to other nursing organizations and seek other nursing organization endorsements. Since most HIV criminalization legislation reform occurs at the state level we will engage with state nursing organizations for reform efforts. Nurses can have an influential and powerful voice as public policy advocates. Professional nursing organizations have an obligation to educate members on issues that intersect human rights and health care, such as HIV criminalization.

## THPED422

### "I INTENDED TO ACHIEVE SEXUAL PLEASURE NOT TO GIVE MY PARTNER HIV": PROBLEMS WITH THE LEGAL TESTS USED TO ASSESS INTENTION IN CRIMINAL CHARGES FOR TRANSMISSION OF HIV

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**Background:** UNAIDS states *that "any application of criminal law to HIV non-disclosure, exposure or transmission should require proof, to the applicable criminal law standard, of intent to transmit HIV."****[i]*** The difficulty with this proposition is that *'the applicable criminal law standard'* varies significantly by jurisdiction, and mental culpability for HIV transmission to a sexual partner is difficult to ascertain.
The HIV/AIDS Legal Centre filed an appeal in the High Court of Australia for a client convicted of intentional HIV transmission to a sexual partner. The broader aim of this case, beyond achieving a favourable outcome for the individual, was to clarify the following questions:
1. Can foresight of potential consequences be used to establish intention to achieve a specific result, being HIV transmission? and
2. How can a court assess whether a person has the requisite mental and physical intent to be charged with HIV transmission?
3. What is the relevance, if any, of lies told, or the length of the relationship, to assessing intent?
These questions have not been determined in a court at this level worldwide.
[i] UNAIDS, Guidance Notes 2013, *Ending overly broad criminalization of HIV non-disclosure, exposure and transmission: Critical scientific, medical and legal considerations*, at 26.
**Description:** The matter will be heard by the High Court of Australia in February 2016, and judgement hopefully delivered prior to the conference. Full submissions are at: http://www.hcourt.gov.au/cases/case_b69-2015
**Lessons learned:** Proceedings in the lower courts demonstrated that jurors and the judiciary fail to understand the reasons why people may not disclose their HIV status; including fear of abandonment, discrimination, violence, shame, embarrassment, and/or being in denial. The courts formed the view that non-disclosure in the context of an 18 month relationship amounts to intent to transmit HIV.
**Conclusions/Next steps:** The proceedings can be utilised by HIV advocates to progress the need for prosecutorial guidelines. Police, lawyers and the judiciary must recognise that issues around HIV transmission and intent are unique and therefore a standard criminal law approach cannot be taken. The outcome will provide guidance for lawyers on how to successfully defend HIV non-disclosure charges, refuting the assumption that non-disclosure equates to intentional HIV transmission.

## THPED423

### CRIMINAL RISK FOR PLHIV IN FRANCE AS A RESULT OF UNPROTECTED SEXUAL RELATIONS

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**Background:** Several trials initiated in France against people living with HIV (PLHIV) have shown that the transmission and/or exposure to the risk of sexual transmission of HIV, in certain conditions, constitute a criminal offence. PLHIV are not familiar with these conditions, and nor are the prevention and care providers.
**Methods:** The French National Aids Council (CNS) conducted an in-depth legal analysis of the 23 criminal convictions for HIV transmission and/or exposure identified in France.
**Results:** According to very constant case law, the proceedings are based on the offence of "administration of harmful substances causing physical or psychological harm to another person" (AHS) [*French Criminal Code, Art. 222-15*]. The analysis of the elements required to prove the offence shows that any unprotected sexual

relation between HIV-discordant partners shall potentially incur the HIV-positive partner's criminal liability. The intention to harm is not necessary, as the awareness of exposing other persons to the risk of transmission is sufficient to constitute the offence. The offence shall still be constituted, including when the HIV-negative partner is informed of the risk and consents. The exposure to the risk may be pursued, even in the absence of an effective transmission of the virus. The protection of sexual relations shall be understood *a priori* by the use of a condom. The admissibility of other means of protection and, in particular, the use of antiretroviral drugs in prevention remains uncertain, for it has not yet been observed in a French trial.
**Conclusions:** The analysis shows the scope of the potentially objectionable acts on the basis of AHS. Whereas the number of actual criminal prosecutions, albeit very moderate, is rising noticeably, and the circumstances of the events pursued before the courts are diversifying, it appears important to improve the information for PLHIV on their legal rights and responsibilities. To do so, the prevention and support actions for PLHIV must incorporate the criminal risk dimension.

## THPED424

### NURSES' KNOWLEDGE, ATTITUDES AND DOCUMENTATION PRACTICES IN A CONTEXT OF HIV CRIMINALIZATION: A SECONDARY SUB-GROUP ANALYSIS OF DATA FROM CALIFORNIA, FLORIDA, NEW YORK AND TEXAS NURSES

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**Background:** Under international legal norms, HIV criminalization is considered an overly broad use of criminal law. In the United States, at least 33 states have HIV-specific criminal laws. The content of HIV-related criminal laws varies across states and there is currently no guidance or standard for when those statutes should be applied. Current literature on HIV-related criminal laws highlights challenges for persons living with HIV (PLWH) and nurses who work with them in clinics, communities, and public health settings. Information about nurses' knowledge of HIV-related criminal laws and the impact of HIV criminalization on nurses' practices is limited.
**Methods:** This study is a secondary sub-group analysis, which fits within a larger national study on nurses' knowledge of HIV-related criminal laws where they practiced. Data from nurses (*n* = 386) in California, Florida, New York and Texas was used to provide exemplars of nurses' knowledge of HIV-related criminal laws and the impact of different HIV-related criminal law approaches on nursing practices.
**Results:** Only 29% of nurses (*n* = 112) knew whether or not the state in which they practiced had a specific law regulating sexual exposure of HIV without disclosing HIV status; 13% of nurses (*n* = 49) felt they possessed the expertise to educate PLWH about legal regulations and consequences; 21% of nurses (*n* = 84) understood implications of HIV-related criminal laws for their scope of practice, professional duty, and responsibility: and 76% of nurses (*n* = 295) acknowledged they should acquire expertise to appropriately counsel patients about those laws.
**Conclusions:** Lack of knowledge of HIV-related criminal laws can adversely affect the nurse-patient relationship. Nurses are at risk of losing the trust of persons living with or at risk of acquiring HIV if they do not address this knowledge gap. The dismal number of nurses that knew whether the state where they practiced had an HIV-related criminal law emphasises the urgent need for education interventions such as webinars, online modules and newsletters.

## THPED425

### WHAT'S THE LAW GOT TO DO WITH IT? CREATING AN ENABLING LEGAL AND POLICY ENVIRONMENT FOR YOUNG PEOPLE TO ACCESS HARM REDUCTION SERVICES IN ASIA-PACIFIC

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**Background:** An estimated 3.8 million people inject drugs in Asia-Pacific, the majority of whom started injecting in their late teens and early twenties, according to behavioural surveys. HIV prevalence among people who inject drugs (PWID) under age 25 is >5% in seven countries, with the majority of this age cohort in 12 countries not having accessed HIV testing in the last year. In recent years, the Committee on the Rights of the Child has asked States to ensure that their criminal laws do not impede access to specialized and youth-friendly harm-reduction services. This review analysed the application of this recommendation.
**Methods:** A systematic review of national and federal drugs ordinances, laws and policies; national AIDS and national drug strategies; public health and safety codes; protocols and clinical guidelines on OST and NSP; and other laws concerning age of majority was undertaken among 38 countries and 2 territories in Asia-Pacific. Content analysis of >100 documents focused on legal minimum age requirements to access opioid substitution therapy (OST) and needle syringe programmes (NSPs), parental consent requirements, and special discretions/exemptions, and data verified with country partners.
**Results:** Of the 40 countries and territories reviewed, only 13 countries in Asia-Pacific have laws and policies enabling independent consent for young people to access needle and syringe programmes (NSPs) and/or opiate substitution therapy (OST) programmes. Some countries/territories (Australia, Hong Kong SAR, New Zealand) apply the mature-minor principle, require specialist assessments/opinions (Australia, Indonesia) or have differential age access for OST/NSP (Myanmar, Viet Nam). A punitive legal environment exists more generally in the region, with 11 countries applying compulsory detention, and 15 countries imposing the death penalty, on drug users.
**Conclusions:** Policy and legislative reform is required to expand access to effective HIV and health services, including harm reduction programmes and voluntary, evidence-based treatment for drug dependence among young PWID. Countries should recognise the evolving capacity of adolescents to make decisions about their well-being, and establish guidance for health workers to understand their legal and professional obligations to enable access to effective HIV and health services, including harm reduction programmes and voluntary, evidence-based treatment for drug dependence and overdose management.

## THPED426

### GENDER DIFFERENCES IN POLICING BEHAVIORS: IMPLICATIONS FOR HIV PREVENTION AMONG PERSONS WHO INJECT DRUGS (PWID) IN TIJUANA, MEXICO

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**Background:** Policing practices such as syringe confiscation, harassment, and extra-legal syringe-related arrests fuel HIV risk and transmission worldwide among PWID. Preliminary evidence suggests that female police are less likely to use force or to engage in abuse and harassment. Despite calls for improving gender balance in law enforcement, there is little research on gender differences in policing practices in this male-dominated profession. Our objective was to examine potential differences in policing behaviors between male and female officers that could shape the HIV risk environment among PWID in Tijuana, Mexico, where syringe possession is legal without a prescription.
**Methods:** Baseline surveys from police officers were collected in 2015 by our bi-national team as part of a department-wide Police Education Program (PEP) in Tijuana, Mexico. Data from all active-duty municipal police officers were analyzed. Depending on distributional assumptions, the outcomes were examined using the Pearson $\chi 2$ or Fisher exact tests.
**Results:** To date, among 485 police officers on street patrol, 64 (13.2%) were female and 421 (86.2%) male, median age 35 (IQR: 28-39) and 36 (IQR: 31-42) respectively. Most (96.9%) male officers reported encountering syringes while on duty vs. 90.6% of female officers (P=0.03). Among officers encountering syringes on-duty, female officers reported confiscating syringes less often (60.9%) compared to male officers (77.5%; P=0.008). Female officers also reported less stop and search encounters of PWID that lead to syringe confiscation (29.4%) compared to male officers (50.9%; P=0.03).
**Conclusions:** These data suggest gender differences in policing practices that could promote the uptake of HIV prevention. In particular, female police officers may serve as potential peer models. Global programs that work with police to reduce HIV vulnerability among PWID should tailor interventions to address these gender differences. These data add a public health imperative to further efforts to promote the importance of gender-balance in policing across the world.

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## THPED427

### CRIMINALIZATION OF HIV NON-DISCLOSURE: NARRATIVES FROM YOUNG MEN LIVING IN VANCOUVER, CANADA

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**Background:** Today's young men, especially young MSM, are a key population that are launching their sexual lives amidst evolving legal frameworks regarding HIV and a proliferation of novel advances in HIV testing and treatment (e.g., TasP, PrEP). Yet, few studies have examined how the criminalization of HIV non-disclosure, alongside evolving intervention 'landscapes', influence perceptions of HIV-related risk.
**Methods:** We analyzed data from 100 in-depth, semi-structured, individual interviews with young men ages 18-30 in Vancouver, Canada, on the topic of HIV and the criminalization of HIV non-disclosure. The current analysis describes the health and social risks that these young men associate with an HIV diagnosis in the context of Canada's current legal framework pertaining to HIV non-disclosure.
**Results:** Our analysis revealed two dominant narratives in relation to HIV criminalization: *justification* and *interrogation.* Within the justification narrative, participants asserted that criminalization approaches could be justified because they reflect the gravity of the perceived social impacts of unknowingly acquiring HIV from a seropositive partner (e.g., status loss, discrimination, isolation). Justification narratives did not tend to be based on the perceived health implications of becoming infected as HIV was frequently described as a manageable and treatable condition, as opposed to a life-threatening disease. *Interrogation* narratives tended to problematize the idea of criminalizing HIV. First, these narratives emphasized how universal access to HIV prevention, treatment and care has brought HIV into the realm of a chronic - and a preventable - condition that no longer infers a 'death sentence'. Secondly, legal frameworks that criminalize people living with HIV were characterized as creating barriers to HIV testing uptake, as well as impeding access and reducing retention to care for those living with HIV. These concerns were particularly salient among participants who viewed themselves as being at 'elevated' risks for HIV, including MSM and men who inject drugs.
**Conclusions:** The narratives identified in our analysis identify a diversity of perspectives pertaining to the criminalization of HIV non-disclosure. They also reveal the extent to which the inclusion of young men's voices will be helpful in developing community-informed strategies for legal reform that meaningfully reflect the evolving intervention 'landscape'.

## THPED428

### GLOBAL TRENDS IN HIV CRIMINALISATION

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**Background:** HIV criminalisation describes the unjust application of the criminal law to people living with HIV based solely on their HIV status - either via HIV-specific criminal statutes, or by applying general criminal laws. HIV criminalisation is a growing global phenomenon of great concern, increasingly recognised as a key public health and human rights issue.
**Methods:** A desk review of criminal proceeding reports and legal texts curated on the HIV Justice Network website as part of the research for the *Advancing HIV Justice 2* report supplemented with data from GNP+'s Global Criminalisation Scan and Google searches. 'Recently reported' data covers March 2013-September 2015. Presented data will include laws and cases to July 2016.
**Results:** Seventy-two countries currently have HIV-specific laws, rising to 101 jurisdictions when individual US states are included.

*[Jurisdictions with HIV-specific criminal laws]*

Notably, 30 countries in Africa have such laws, including new overly-broad laws in Uganda (2014) and Nigeria (2015). Not all countries enforce HIV-specific laws and other countries apply general laws. At least 58 countries have reported HIV-related criminal cases - 32 used general laws, 23 used HIV-specific laws and 3 used both.

*[Jurisdictions where prosecutions have ever taken place]*

Most recently reported HIV criminal cases occurred in the United States (104 in 34 jurisdictions) and Canada (17 in 7 provinces) with additional cases reported in Europe (36 in 14 countries), sub-Saharan Africa (9 in 4 countries) and Australasia (7 in 2 countries).
**Conclusions:** Despite increasing advocacy and global normative guidance, more efforts are required to end inappropriate laws and prosecutions, involving innovative strategic partnerships amongst multiple stakeholders.

## THPED429

### PUNISHING HIV: DOES RACE IMPACT SENTENCING UNDER CRIMINAL HIV EXPOSURE AND DISCLOSURE LAWS IN THE UNITED STATES?

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**Background:** Social movements in the United States have recently drawn attention to the racial disparities in the American criminal justice system. Studies have shown that Black heterosexual men are disproportionately convicted under at least one U.S. state's HIV disclosure law (Michigan). These findings raise questions about how evenly American HIV-specific criminal laws are applied. However, no study has yet examined whether there are racial or gender differences in the length of criminal sentences handed out under American HIV exposure and disclosure laws.
**Methods:** This study compares the length of criminal sentences by race and gender under HIV-specific criminal laws in five U.S. states: Arkansas, Florida, Michigan, Missouri, and Tennessee. Data describing convictions under each state's HIV-specific criminal law were obtained from state authorities, including state Departments of Corrections, state court administrators, and state-run sex offender registries. Additional data points were obtained from local court clerks and newspaper reports.
**Results:** Overall, 357 convictions were identified in the five states studied between 1990 and 2015; 307 cases were sentenced to incarceration in jail or prison while 50 were sentenced to probation. The average incarceration sentence was 83.26 months, while the average probation sentence was 44.81 months. Overall, black men were assigned lengthier incarceration terms (109.79 vs 73.64 months for white men) and probation sentences (55.73 vs 35.57 months). In four out of five states, black men were given greater prison sentences, with the greatest disparity observed in Arkansas (278.86 months vs. 139.50 for white men). Overall, men were sentenced to lengthier incarceration terms (98.16 vs 36.35 months for women) and probation terms (46.51 vs 38 months for women). Few Black women were convicted in most states, with the exception of Florida; in that state, sentences between Black and white women were similar (27.32 vs 25.42 months for white women).
**Conclusions:** Overall, this study suggests that there are important racial and gender disparities in sentencing under U.S. HIV disclosure and exposure laws that mirror broader patterns in the American criminal justice system. These findings suggest advocates may wish to appeal to broader frameworks of racial injustice in their efforts to reform these laws.

## THPED430

### THE ROLE OF SCIENTIFIC EXPERTS IN COMBATTING UNJUST HIV PROSECUTIONS: A CANADIAN EXAMPLE

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**Background:** In 2012, the Supreme Court of Canada ruled that a person living with HIV can be prosecuted for not disclosing their HIV positive status before having sex that poses a "realistic possibility of transmission." Despite the well-established impact of low viral load on HIV transmission risk, the Court decided that a person could be convicted of aggravated sexual assault even if they had used a condom or had an undetectable viral load.
**Description:** In response to a Supreme Court decision at odds with scientific evidence, six distinguished Canadian HIV scientists and clinicians took ground-breaking action to advance justice by co-authoring the ''Canadian consensus statement on HIV and its transmission in the context of the criminal law.'' Based on a literature review, the Canadian statement was published in 2014 in a medical journal with the endorsement of more than 75 scientific experts from across the country.
**Lessons learned:** Because the notion of risk and the nature of the HIV infection are at the center of prosecutions, scientific experts have an important role to play to ensure that the criminal law is based on the most accurate and available scientific evidence rather than fear, ignorance and prejudice. In Canada, the consensus statement is an extremely useful tool for advocates working against unjust prosecutions. It also supports defense lawyers representing people living with HIV and scientific experts testifying in court. Some indications of a positive impact in court proceedings are emerging. Since the SCC's 2012 ruling, at least one lower court decision has concluded, based on medical evidence, that there was no "realistic possibility of transmission" in the case of person who had condomless sex with an undetectable viral load.
**Conclusions/Next steps:** As demonstrated in, for example, Denmark, Switzerland or Iowa, scientific evidence can influence positive legal change. But in many other jurisdictions, people are prosecuted despite a minimal, or even non-existent, risk of HIV transmission. Unjust HIV criminalization undermines public health and human rights. Internationally, it is vital that scientists undertake joint efforts with advocates to bring science to justice.

## THPED431

### ADVANCING HIV JUSTICE: BUILDING MOMENTUM IN GLOBAL ADVOCACY AGAINST HIV CRIMINALISATION

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**Background:** HIV criminalisation impacts public health and human rights, undermining efforts to end AIDS. The unjust application of criminal law to people living with HIV based solely on their HIV status, either via HIV-specific criminal statutes, or by applying general criminal laws, is a growing, global phenomenon.
**Description:** A desk review of criminal proceeding reports and legal texts curated on the HIV Justice Network website as part of the research for the *Advancing HIV Justice 2* report supplemented with data from GNP+'s Global Criminalisation Scan and Google searches. Recently reported data so far covers March 2013-September 2015 but will be updated to July 2016.
**Lessons learned:** Key developments in case law and law and policy reform have taken place in numerous jurisdictions, most of which came about as a direct result of advocacy from individuals and organisations working to end the inappropriate use of the criminal law to regulate and punish people living with HIV.
However, a complex picture emerges of advocacy successes and proposed laws in some of the same countries/regions of the world suggesting disparate approaches to HIV criminalisation that are sensitive to local social, cultural, epidemiological and political contexts, as well as the capacity of advocates to challenge such laws and prosecutions.

*[Jurisdictions with HIV criminal laws recently enacted, proposed or defeated and those with improved legal environments 2013-2015]*

Although the evidence base against HIV criminalisation is strong, evidence alone is often not enough for policy- and lawmakers who want to be seen to be doing something to impact the HIV epidemic and who may be more swayed by emotive or 'popular' arguments rather than implement a rational, evidence-based response.
**Conclusions/Next steps:** Despite a growing number of advocacy successes leading to improved legal environments for people living with HIV, much more work is required to strengthen advocacy capacity to ensure a more just, rational, evidence-informed criminal justice response to HIV that will benefit both public health and human rights.

## THPED432

### HIV CRIMINALISATION IN SUB-SAHARAN AFRICA: FAILURE TO UPHOLD SCIENTIFIC, MEDICAL AND HUMAN RIGHTS RECOMMENDATIONS

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**Background:** In the past 15 years, 27 sub-Saharan African countries have adopted HIV specific laws to protect the rights of PLHIV. Yet, they raise serious public health and human rights concerns, including with regard to punitive provisions that allow for overly broad criminalisation of HIV non-disclosure, exposure or transmission.
In recent years, advocacy and litigation efforts against overly broad HIV criminalisation have led to change in some countries.
The 2013 UNAIDS guidance note on ending overly broad HIV criminalisation provides scientific, medical and human rights evidence and arguments to analyse and challenge these problematic punitive provisions.
**Methods:** The study reviewed 26 HIV-specific laws in sub-Saharan Africa. HIV criminalisation provisions in these laws were analysed against six key recommendations of the UNAIDS guidance, namely:
(i) limit criminalisation to intentional HIV transmission;
(ii) no criminalisation for non-disclosure or exposure;
(iii) no criminalisation for condom use;
(iv) no criminalisation where the person has low viral load or is on effective treatment;
(v) no criminalisation when undiagnosed; and
(vi) no criminalisation in case of consent to HIV risk prior to sex (e.g. via disclosure of HIV status).
**Results:** Twenty four out of 26 HIV-specific laws criminalise HIV non-disclosure, exposure or transmission. Of these, only nine restrict criminalisation to cases of alleged transmission. Eight countries criminalise alleged HIV non-disclosure and twelve criminalise potential or perceived HIV exposure. Seven countries allow for criminal liability on the basis of negligence or recklessness, in spite of the recommendation to limit criminalisation to malicious intent. Only eight countries exclude criminal liability in cases involving condom use or other risk reduction methods. Seven countries have provisions that could be interpreted to bar criminal liability when a person has low viral load or is on effective HIV treatment. Finally, only seven countries limit criminal liability to people who have been previously diagnosed, and only eight countries recognise consent, via disclosure to the sexual partner, as a valid defence.
**Conclusions:** HIV criminalisation provisions fail to take into account best available scientific and medical recommendations and human rights principles and are likely to compromise HIV responses. This analysis supports the need for further advocacy efforts against criminalisation.

## THPED433

### PROGRESS TO INTEGRATE HUMAN RIGHTS PRINCIPLES TO THE APPLICATION OF CRIMINAL JUSTICE TO PEOPLE LIVING WITH HIV IN SCOTLAND

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**Background:** From 2011 to present, HIV Scotland undertook a range of actions to improve criminal justice policy and practice as it applies to HIV in Scotland; our aim was to ensure that people living with HIV are not unfairly treated or disadvantaged within the criminal justice system in Scotland.
**Description:** HIV Scotland had serious concerns about the impact of criminal prosecution for HIV transmission. We identified a lack of clarity on the law in Scotland and need for more consistent decision making and transparency. We lobbied for prosecution guidance and worked with the Crown Office Procurator Fiscal (COPFS) and other NGOs to develop this in 2012. We have complimented this work by supporting partners to better respond to instances of prosecution. In addition, HIV Scotland, in partnership with Police Scotland and key stakeholders, developed a Standard Operating Procedure for police officers who may be required to investigate allegations of transmission. We now sit on several police working groups and work collaboratively with them to improve the way the police respond to and support people affected by HIV and BBVs.
**Lessons learned:**
- Prosecution guidance is effective: there have been no prosecutions in Scotland since its introduction in 2012.
- Tensions can exist between public health and criminal justice policy, but human rights based approaches provide a useful tool in bringing these areas together.
- There can be poor understanding and co-ordination between justice and health services. There is a need for government leadership and also community action to push for change. Third sector agencies are well placed to bridge this divide.

**Conclusions/Next steps:**
- We will work with the COPFS to annually review the application of the guidance, and ensure it reflects the latest evidence about HIV transmission. The next review is scheduled for May 2016.
- We will maintain participation in police reference groups to identify and collaborate on other areas for improvement.
- We are in the process of developing a joint criminal HIV transmission investigation protocol, in partnership with lead agencies across justice, health and government.

## THPED434

### IMPACT OF SAME SEX PROHIBITION LAW ON SERVICE UPTAKE BY MEN WHO HAVE SEX WITH MEN (MSM) IN PORT-HARCOURT, NIGERIA

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**Background:** The same sex prohibition law in Nigeria outlaws gay clubs, organizations, their sustenance, processions and meetings. It makes public show of same sex amorous relations illegal and proclaims those who enter into same sex marriage liable to a prison sentence of 14 years and 10 years for those who form or support gay organizations and activities.
However, data have suggested that MSM are at high risk of HIV in Nigeria. Given the legal, criminalizing and stigmatizing environment in Nigeria, CRH conducted a small study to evaluate the impact of the law on Program uptake among MSM in Portharcourt
**Methods:** The goal of the Study is to serve as a baseline to generate information on impact of same sex law on service uptake among Men who have sex with Men. A focus group study was conducted with 30 MSM aged 20 to 25 in Portharcourt who reported ever having had anal intercourse with another man. They were met in small groups of 10 each. Open ended questions were used to illicit answers from them.
**Results:** A total of 30 respondents participated in the study. Majority 85% agreed they were freer before the coming into force of the law; a total of 60% of the participants reported intense apprehension with the law. 90% reported inability to uptake medical services for fear of stigma and homophobia. Approximately 63% of men reported fear of their immediate family members and now live double lives. 30% reported they have dropped out of their cohort behavior change communication sessions as they are not sure who they will meet at such meetings and in its vicinity. 20% reported set ups by friends and they ended up in security and community victimizations and stigmatization.
**Conclusions:** The same sex prohibition law in Nigeria is a great disservice to HIV programming and other health service provision for MSM in Nigeria. The law has opened greater doors for exploitation, stigmatization and victimization of MSM individuals affecting their uptake of services and poses greater threat of cases of HIV new infection among the general population. The law should be abolished in the interest of public health.

## THPED435

### RECKLESS ENDANGERMENT: SEX WORKERS' HEALTH AND HUMAN RIGHTS UNDER THE *PROTECTION OF COMMUNITIES AND EXPLOITED PERSONS ACT*

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**Background:** After Canada's Supreme Court invalidated several provisions of the *Criminal Code* dealing with prostitution because they violate sex workers' rights by undermining their health and safety, the federal government introduced the *Protection of Communities and Exploited Persons Act* (PCEPA). Despite numerous attempts by sex workers and allies to engage with politicians, the PCEPA was passed in December 2014 without meaningful consultation with the sex workers most affected by the law.
**Description:** The PCEPA purports to address "exploitation that is inherent in prostitution" by criminalizing many activities that are essential for sex work to be carried out safely. These include: communicating in public — or in any place that is in view of, or is next to, a school ground, playground or daycare — to offer or provide sexual services for consideration; purchasing sexual services; and "receiving a material benefit" from, "procuring" or advertising sexual services. Sex workers, clients and third parties who work in the sex industry are captured under many of these provisions, which can include penalties of fines, imprisonment or both.
**Lessons learned:** The PCEPA reproduces many of the harms produced by the previous laws the Supreme Court held were unconstitutional. Sex workers face increased isolation; have decreased ability to screen clients or to negotiate clear terms of services with clients; are less able to establish safe indoor work spaces; have decreased ability to access the services of third parties; are prevented from advertising their services; and are unable to benefit from health, safety, labour and human rights protections. Street-based sex workers experience increased displacement, while all sex workers — particularly migrant sex workers — face barriers to accessing police protection. The PCEPA has also led to a confused law enforcement mandate that conflates trafficking and sex work, resulting in the detention and deportation of sex workers. Consequently, sex workers face increased risk of violence, as well as greater stigma and discrimination.
**Conclusions/Next steps:** Although sex workers and allies are prepared to return to court to challenge the PCEPA, they are hoping to work cooperatively with a newly-elected government to create a new legislative framework that respects and protects sex workers' rights.

## THPED436

### HIV CRIMINALIZATION IN EAST AFRICA: A RIPE TIME TO CHALLENGE THE LAW AND POLICY

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**Background:** HIV criminalization is the unjust application of criminal law based on solely HIV status and this has most time occasioned injustice for persons living with HIV. East African countries are at crossroads, all 5 countries have enacted HIV Specific criminal laws. Recently, Presidents of the partner states signed into law the East African HIV prevention and Management Act founded on human rights principles and equity for vulnerable and key population. At the same time This happens the Kenyan Court has annulled provisions of the HIV ACT for being unconstitutional and viague with effet of causing ambiguity and miscarriage of Justice.
**Description:** Content of the national laws was analyzed in comparison with the Regional Act , HIV leaders and activists debated and reviewed the opportunities for law reform , bench marking with other jurisdiction in other regions and consultation with Government representative including the ministry of East Africa. Analysis of the political governace on all 5 countries.
**Lessons learned:** The enactment of the content of Regional law has an opportunity to cure the legislative gaps in the national laws. Zanzibar has already drafted an HIV Act with like provisions, without HIV criminal laws. Kenya's breath rough with strategic legislation increases chance of using the judicial system as an advocacy platform. Learning from Kenya, Uganda has prepared a similar constitutional petition.
The legitimacy and the legal power that lies in the regional law can be exploited by a regional HIV activist to cause reform of national laws. Tanzania HIV leaders who did not oppose the passing of the law was to open space for dailogue. New presidents in the region present new political leadership that are likely to support law reform.

**Conclusions/Next steps:** The new momentum of advocacy and the opportunities that lie in the judicial and regional legislative breakthrough in the East African countries have the capacity to cause the reform of the HIV criminilisation laws in East Africa. Regional HIV leaders need to collaborate in mobilizing community action of PHLIV and all policy makers to make this policy change a reality.

## Harm reduction, including needle and syringe programmes, opioid substitution therapy and supervised injection facilities

### THPED437

### HIV seroconversion among drug users receiving methadone maintenance treatment in China: a qualitative study

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**Background:** China's HIV/AIDS epidemic has historically been driven by injection drug use. To control the spread of HIV, China initiated a national methadone maintenance treatment (MMT) program in 2004, which is now the world's largest MMT system with 767 clinics and 184,000 clients receiving treatment in 2014. Many clients continue to engage in drug-related and sexual HIV-risk behaviors, and the estimated HIV seroconversion rate among Chinese MMT clients is 0.20-0.66/100 person-years. We sought to explore the experiences of newly-diagnosed HIV-positive MMT clients and to better understand their perceptions of MMT, HIV risk, and HIV prevention.
**Methods:** In 2012, we recruited clients of 13 MMT clinics in Chongqing and Kunming who had a baseline HIV-negative test result upon MMT entry and had been diagnosed with HIV within the past 12 months. Semi-structured qualitative interviews of 60-90 minutes were conducted to discuss HIV risk perception, past behavior history, and prevention methods. Field notes were coded manually and analyzed for common themes.
**Results:** Among the 27 participants who were interviewed, two-thirds were male, the mean age was 40 years, and the mean duration of drug use prior to MMT was 10.7 years. The mean duration between MMT initiation and HIV diagnosis was 2.1 years. Participants self-reported their mode of infection as injection drug use (N=15), sexual contact (N=7), either injection drug use or sexual contact (N=3), or unknown (N=2). Common themes were the difficulty of drug abstinence despite receiving MMT, social pressure to continue using drugs, limited access to clean needles, and low knowledge of effective HIV prevention measures. Many participants thought that they would be able to visually distinguish whether an injection or sexual partner was HIV-infected. Participants also felt that they could moderate their HIV risk by only injecting or having sex with regular long-term partners.
**Conclusions:** We found that clients who seroconverted while on MMT perceived themselves to be at low HIV risk and had limited knowledge of HIV prevention methods. In addition to MMT, comprehensive HIV prevention services for drug users should include counseling on sexual HIV-risk behaviors and improved access to clean injection equipment.

## Prevention programmes, including introduction of biomedical technologies

### THPEE438

### Clinical outcomes from a pilot study examining the PrePex device for VMMC in South Africa

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**Background:** Circumcision devices make the procedure quicker, simpler and potentially more cost-effective, and have the opportunity to make the provision of VMMC easier to scale-up. The primary aim of the safety component of the study was to monitor clinical Adverse Events (AEs) and device-related adverse incidents.
**Methods:** The sample included 803 HIV negative men, aged 18 to 49 years, from three sites in Gauteng province. Men were followed for 56 days from day of device placement (Day 0).
**Results:** A total of 15 865 people went to the clinic to access circumcision services during the study period, however only 5 500 of these were between the ages of 18 and 49 years. Almost half of all participants (44%) were between the ages of 25 and 34 years, and 40% were 18 to 24 years of age. Of the 5 500 clients, 828 (15.1%) people were both eligible and opted to have circumcision done using the PrePex device. There were 20 AEs, giving an AE rate of 2.5%, mainly due to infection, bleeding, self-removals (resulting in surgical interventions), severe pain, problems voiding, and insufficient skin removal as well as delayed wound healing. The majority of the 23 withdrawals prior to device application were due to "lack of device fitting" (device size was too small or too big), and due to medical conditions (phimosis or genital warts).
In Orange Farm, the greatest number of clients were size A; in Katlehong the greatest number of clients were size B; and in Zola the greatest number of clients were size C.
**Conclusions:** The AE rate obtained for the current study was 2.5%, 0.5% higher than surgical. This result can be considered "good" as this is the first of many pilot studies examining device-related AEs. Uptake seems to be high with 15% of the total number of males accessing VMMC services opting for PrePex. The relatively low AE rate coupled with the increased uptake of PrePex indicates that men are more likely to opt for device-related circumcision, thus increasing the number of men circumcised and ultimately decreasing the incidence and prevalence of HIV/AIDS cases overall.

### THPEE439

### Uptake of HIV services among female sex workers (FSWs) in a high HIV burden setting in Western Kenya: Tekeleza program experience

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**Background:** FSWs remain marginalized population disproportionately bearing high HIV burden and account for 14.5% of new HIV infections in Kenya. Criminalization of sex work limits access to HIV prevention, care and treatment services. HTC is an entry point to HIV prevention care and treatment services but uptake among FSWs remain low at 68% and 38% HIV Treatment uptake. Tekeleza program was established in 2010 to offer combination HIV prevention care and treatment services to FSWs in Nyanza which has 15% HIV prevalence among adults 15-69 years.
**Methods:** Services offered at seven drop in centers (DiCEs) include information on safer sex practices, HTC services are offered at enrollment; during quarterly visits and before provision of Post exposure prophylaxis (PEP) for non-occupational sexual exposure to HIV care and treatment, condom education, demonstration and provision, family planning, STI screening and Treatment and TB screening and referral, cervical cancer screening and treatment. The female sex workers were enrolled and followed up on quarterly basis.
**Results:** Data was analyzed for services offered to 5,890 FSWs enrolled in 7 DiCEs from 2012-2014. Ten percent (n=564) had known HIV positive status at enrolment. HTC uptake was 99.6% (n=5,309) up from 83% in 2012, positivity of 15.2% (n=809), prevalence of 23.3% (n=1,373), 1,373(100%) enrolled into care, 70% (n=958) eligible for Highly Active Anti-Retroviral Therapy (HAART) were initiated, 5 lost to follow up giving 99.2% retention 12 months since initiation. Ninety percent (n=5293) made return visits. Out of 5,293 tests at revisits, 0.6% (31) seroconverted, 62% (n=19) at first follow up visit. 3,482 received long acting family planning methods (69% injectable; 19% implants). Of 3,129 screened for cervical cancer using the visual inspection with acetic acid (VIA), 732 (12%) had positive results and received cryotherapy. 10,617 were screened for STIs, 9.3% (n=991) treated for STIs.
**Conclusions:** Uptake of HTC services and retention on HAART was high among FSWs, and low seroconversion rate was observed.

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## THPEE440

### AN EXPLORATORY ANALYSIS TO DEVELOP A CONCEPTUAL MODEL OF 'PATIENT-BLAME' IN THE CONTEXT OF THE ROLL-OUT OF 'UNIVERSAL TEST AND TREAT'

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**Background:** Universal Testing and Treatment (UTT) offers new hope as a global strategy to limit the HIV epidemic. Effectively implementing UTT requires well-resourced, motivated healthcare providers (HCPs) working at facilities and in communities. In our study, HCPs consistently expressed a perception that clinical resources are currently overburdened and concern that UTT might exacerbate this. Further, some HCPs also blamed patients (often indirectly) for undesired outcomes (late initiation or treatment interruptions). We present an exploratory analysis to develop a conceptual model of 'patient-blame' to optimize UTT roll-out.
**Methods:** HPTN 071 is a cluster-randomised trial in Zambia and South Africa with three arms:
(A) enhanced testing plus immediate ART initiation,
(B) enhanced testing and treatment per national guidelines, and
(C) standard of care.
We analysed structured health service observations, 157 interviews and 19 group discussions with HCPs across the 21 trial sites over 30 months. Conceptual trends are identified through narrative analysis.
**Results:** We identified three related cognitive processes important to patient-blame. For HCPs, patients' treatment outcomes are important both for individual patient care and for public health implementation targets. When HCPs feel unable to meet public health targets, they may deflect responsibility for this onto patients. Also, when patients ('lay') do not do what HCPs ('experts') think they should, then the HCPs' expert authority is challenged. HCPs may reclaim this power by labelling such patients as 'bad'. Finally, like victim-blame, 'innocent' patients having undesired health outcomes threatens belief in the world's justness. Rather than accepting this, blame is affixed to patients who 'must have done something to deserve it'. UTT is perceived to potentially exacerbate each process by (a) setting targets perceived to be even more ambitious, (b) having more patients who are perceived as relatively 'well' but who may opt out of treatment (counter to targets), and (c) requiring resolution of the 'just-world tensions' more frequently.
**Conclusions:** The combination of HCPs' concern that the health system has limited capacity to deliver quality care under UTT plus normative (even positive) cognitive processes can enable patient-blame. Training and health system strengthening should be implemented alongside UTT roll-out to mitigate HCPs' concerns and facilitate optimal implementation.

## THPEE441

### A TOTAL MARKET PRICING STRATEGY TO INCREASE CONDOM MARKET SUSTAINABILITY IN TANZANIA

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**Background:** In 2012, only 43% of the total market need for condoms was met in Tanzania. Most supply was either free or one of two highly subsidized condom brands: Salama and Dume. To increase the use as a percent of need, it was necessary to reduce subsidy and address market inefficiencies including artificially low prices, while sustaining or increasing volumes. In 2012, the subsidized condom market was 95 million condoms, and the total market net value was $1.14 mil USD.
**Description:** To increase the value of the market while increasing volumes, PSI developed a three pronged strategy:
(1) Increase price of Dume branded condom to cost recovery while sustaining or slightly diminishing volumes;
(2) maintain a low priced/high volume Salama condom; and
(3) support to the public sector to better targeting and uptake of free condoms.
Target audience segmentation and marketing strategies were aligned to pricing strategies. Dume marketing included 3 years of an initially heavy consumer investment targeting older men to build equity as a high end brand, followed by 2 years of intensified trade marketing. Dume price from importer to the trade increased by 140% from 2011 to 2012 (with a slight price decrease by 2015 of 6%). The Salama strategy included a heavy focus on trade marketing, sales commissions and a repositioning of the brand in 2014 to target younger consumers.
**Lessons learned:** The net impact resulted in an increased overall market value, driven by price increases from $1.14 mil USD to $1.634. The total market volume increased from 95 million in 2012 to 120 million in 2015.
**Conclusions/Next steps:** A clear and consistent total market strategy with a focus on price can result in increased value and volume in a market which can allow for a reduction in subsidy. A balanced approach is needed, pulling demand side and supply side marketing levers to ensure brand relevance and acceptance of increased pricing. The strategies for free and subsidized condoms must be coordinated to ensure equity. There is need to further measure the commercial sector contribution and facilitate greater opportunity for commercial brands.

## THPEE442

### ENDING THE AIDS EPIDEMIC IN WOMEN AND GIRLS IN SUB-SAHARAN AFRICA: THE POTENTIAL ROLE OF A PREVENTIVE AIDS VACCINE

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**Background:** Pervasively high HIV prevalence and incidence in women and girls in Sub-Saharan Africa (SSA) contrasts with gains seen in other populations or regions. A wide spectrum of social and cultural factors, including gender inequality and violence, can prevent women and girls from accessing existing prevention options. Women aged of 15-24 are twice as likely to be living with HIV as their male peers. Modeling has articulated the impact a preventive vaccine could have in reducing new HIV infections in low- and middle-income countries (LMICs) when added to scaled-up existing and emerging prevention, treatment, and care. A new sub-analysis of data demonstrates the particular impact an AIDS vaccine with strong uptake could have on women and girls.
**Methods:** New infections averted in women aged 15-24 were calculated for 18 SSA countries, assuming a base case vaccine (introduced in 2027, 3 doses, 70% efficacy, 5 years duration) achieving good uptake (50-70% depending on age tier) is implemented in combination with full scale-up of programs in LMICs as outlined in UNAIDS' Investment Framework Enhanced (IFE). The impact on young women in all SSA countries is calculated based on the impact in the 18 countries, adjusted with the ratio of new infections in young women in all SSA countries versus in these 18 countries.
**Results:** A vaccine of base case characteristics reduces annual new HIV infections in young women in SSA by 46% one decade after introduction, by 72% in the 25th year after introduction, and by 91% in the year 2070. A vaccine would reduce cumulative new infections in young women by 29% in the first decade, by 46% in the first 25 years, and by 58% by 2070.
**Conclusions:** AIDS vaccines would be fundamental to conclusively ending the AIDS epidemic in young women in SSA. Implementing existing and emerging prevention options targeting women and girls in the near-term while sustaining vaccine R&D efforts will be necessary to enhance prevention choices for women and girls, and to achieve and sustain the end of AIDS. These data provide strong evidence for sustained support for AIDS vaccine R&D toward globally effective vaccines for incorporation into comprehensive health programs.

## THPEE443

### THE S'KHOKHO 'BUSHCAN' INITIATIVE: KICK A BUSH AND CONDOMS FALL OUT

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**Background:** Residents in rural areas have limited access to condoms due to distance, cost and time involved in travelling to public health facilities around which most condom distribution efforts are centralized.
**Description:** In an effort to increase access to condoms in these areas, we explored the feasibility and efficacy of condom distribution by placing condocans on trees along informal footpaths used by residents. Since October 2012, steel condocans typically seen in clinic settings were erected on trees along pathways in 'bushy' areas with high levels of foot-traffic at several rural locations in the Umgungundlovu District of KwaZulu-Natal. Due to their location, the condocans were referred to as "bushcans". Condom uptake was closely monitored, and the bushcans were restocked whenever necessary.
**Lessons learned:** Following the introduction of the bushcans, male condom distribution increased by 237% from October 2012 to December 2012. Condom distribution in these areas increased on average by 187% from October 2012 to October

2015 with more than 408 000 condoms distributed over the 3 year period using these bushcans alone. Discussions with residents revealed that they were pleased with the increased access to condoms via these bushcans and they further recommended other areas for potential implementation of this initiative.
**Conclusions/Next steps:** This bushcan initiative highlighted that condoms are not as easily accessible to all South Africans as is often thought. By providing access to condoms in a discrete and convenient manner, these 'bushcans' have the potential to increase access to condoms in other rural and peri-urban areas in South Africa, where communities face similar barriers to access.

## THPEE444

### IMPLEMENTING A SUCCESSFUL PREP PROGRAM: LESSONS LEARNED FROM THE LARGEST LGBT COMMUNITY HEALTH CLINIC IN NEW YORK CITY

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**Background:** With 50,000 new infections each year in the US there is an urgent need to incorporate new strategies for prevention, especially in key populations such as MSM, transgender women and Black/African American communities. The approval of Truvada (TDF/FTC) for Pre-Exposure Prophylaxis (PrEP) by the US FDA in 2012 invigorated prevention efforts. Uptake has been slow as facilities struggle to address community awareness, staff training, access, visit costs and ensuring quality of care delivered.
**Description:** Callen-Lorde Community Health Center (CLCHC) is an LGBT-focused center in NYC. PrEP was initiated in a pilot phase in 2012 and scaled up as a discrete program in 2015. CLCHC's program focus is on connecting key populations (MSM, Transgender people and people of color) to PrEP. The initial demand for services was overwhelming and threatened to overload clinic capacity. Challenges included providers' unwillingness to prescribe, lack of provider knowledge, navigating complex insurance and medication assistance programs, clinical workflow, time constraints, protocol development, data collection, ensuring cultural competency and maintaining a sex-positive environment, free of PrEP-stigma. Several operational meetings were convened with internal and external stakeholders to design a centralized program that ensured consistent and quality care.
**Lessons learned:** A clinical workflow was established to minimize the clinicians' role and maximize the role of non-clinical staff, e.g., patient navigators & HIV counselors. Templates and electronic flags were implemented to document PrEP consultations, order specific labs and track patients using an innovative prescription algorithm. The implementation of self-collected STD specimens reduced the burden on clinical staff. The clinic designed videos (available on YouTube) to address common questions about PrEP. PrEP Specialists were hired to carry out all administrative functions, troubleshoot medication access and assist with counseling on adverse effects and monitoring adherence.
**Conclusions/Next steps:** Once aware, there is demand from the LGBT community for PrEP. Multi-disciplinary teams of clinicians, social workers, nurses and HIV counselors must collaborate in order to support patients throughout the PrEP care continuum. Agencies must allow flexibility and innovation to take place when developing PrEP protocols and programs.

## THPEE445

### IMPLEMENTATION OF THE WHO RECOMMENDATION FOR NEEDLE AND SYRINGE PROGRAMS TO DISTRIBUTE LOW DEAD SPACE SYRINGES: ACCEPTABILITY, UPTAKE AND FEASIBILITY

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**Background:** In 2012, the World Health Organization (WHO) issued recommendations for needle and syringe programs (NSP) to offer their clients low dead space (LDS) insulin syringes, a biomedical technology, to reduce HIV transmission.
**Description:** This pilot implementation study, conducted in 2015, assessed the acceptability and uptake of LDS needles among 100 NSP clients in Kulob and 100 in Khujand, Tajikistan. Eligibility criteria included injecting at least weekly and obtaining needles/syringes from the NSP at least twice in the past 30 days. The study provided each NSP 25,000 LDS needles. NSP staff distributed marketing flyers and LDS needles to all NSP clients and gave each research participant 20 LDS needles at baseline. NSP staff collected data at baseline and 2-month follow-up interviews. The primary outcomes included acceptability and uptake of the LDS needles, and the feasibility of NSP promoting and distributing LDS needles. The two month follow-up rate was 99.5%.
**Lessons learned:** The maximum capacity of LDS insulin syringes is 1-mL. In the formative phase participants reported using 2-mL or 5-mL syringes, therefore, we provided LDS needles that fit on 2-ml and 5-ml syringes. Acceptability of the LDS needles was high with 100% of participants reporting trying them, and 96% liking them. Most (67%) of participants reported using LDS needles in the past 30 days, and 25% reported using them exclusively. The high uptake resulted in both NSP running out of LDS before all follow-up interviews were completed. In a multiple logistic regression model, that adjusted for city, the number of injections in the previous 30 days (OR = 0.91; 95% CI = 0.88, 0.94) and the date of the follow-up interview (OR = 0.91; 95% CI = 0.85, 0.97) were negatively associated with using LDS needles in the previous 30 days. Among participants (n=147) who reported using a regular needle at follow-up, the primary reasons were: LDS needle not available (71%); prefer regular needles (22%); and LDS needles wrong size (6%).
**Conclusions/Next steps:** In cities where LDS insulin syringes are not acceptable to people who inject drugs, LDS needles are an acceptable alternative that can be implemented with minimal marketing.

## THPEE446

### ACCESS TO POST-EXPOSURE PROPHYLAXIS FOR CONSENSUAL SEXUAL ACTIVITY AND COMBINATION PREVENTION IN HIV CLINICS IN BRAZIL: QUALITATIVE FINDINGS FROM THE COMBINE! STUDY

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**Background:** Despite strong evidences on the efficacy of biomedical HIV prevention, comprehensive analyses within the context of healthcare services and the daily routine of social groups most exposed to risk of infection are lacking. We aimed to understand facilitators and barriers to the access to post-exposure prophylaxis for consensual sexual activity (nPEP).
**Methods:** As part of a multicenter pragmatic clinical trial on pre- and post-exposure prophylaxes and the combination HIV prevention methods, in-depth interviews were conducted with 42 nPEP users in 5 healthcare clinics in Brazil.
**Results:** The nPEP users are mainly men (heterosexual and homosexual), but women also search for the prophylaxis.
Individuals usually report seeking information on how to avoid infection after they experiment accidents in sexual intercourses with casual partners, people living with HIV (PLWH) or in the context of sex work. Internet, other health services and PLWH are the main sources of information about nPEP and where it is available.
Priority assistance for nPEP was reported as a facilitator to entry services. Reported barriers include: nurses' and doctors' misconceptions about nPEP; confusing protocols in emergency settings; receptionists' poor knowledge of preventive services offered by the clinics. Interactions with professionals were evaluated positively.
Services were mainly described as fast, clarifying and non-discriminatory. Nevertheless, a few reported judgmental attitudes from counselors and receptionists as well as embarrassment for having to report sexual exposures in reception desks or in non-private medical settings. Others complained about not been informed about alcohol restriction during PEP. Some reported that the quality of care overcame their expectations, especially considering they are offered in public, non-paid services.
**Conclusions:** Access to information about nPEP still relays on individual initiatives, being little known by users prior to accidents. Organizational barriers to be overcome to improve access to nPEP include: expanding information on the its availability; overcoming knowledge gaps among healthcare professionals; providing qualified information in all users-healthcare providers interactions; and guaranteeing private settings.
As PEP services are likely to be involved in the offer of methods such as PrEP, those improvements will contribute to promote access to and use of broader HIV prevention packages.

## EARLY INFANT AND ADULT MALE CIRCUMCISION PROGRAMMES

### THPEE447

### MODELING COSTS AND IMPACTS OF INTRODUCING EARLY INFANT MALE CIRCUMCISION FOR LONG-TERM SUSTAINABILITY OF THE VOLUNTARY MEDICAL MALE CIRCUMCISION PROGRAM

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**Background:** Voluntary medical male circumcision (VMMC) is an effective HIV prevention strategy for males. Since 2007, the President's Emergency Plan for AIDS Relief has supported VMMC programs in 14 priority countries in Africa. Today several of these countries are transitioning to program sustainability and maintaining high levels of male circumcision in the population.
Alternative strategies being considered: circumcising adolescents over the long term, integrating early infant male circumcision (EIMC) into existing programs, or some combination of the two.
**Methods:** The paper uses the Decision Makers Program Planning Tool (DMPPT) 2.0 model to assess the cost and impact of VMMC sustainability strategies in multiple countries, particularly in Zimbabwe. The model was populated with national estimates of population, mortality, and HIV prevalence and incidence using the Spectrum/Goals model and the Zimbabwe Demographic and Health Survey 2010-2011. Various scenarios were analyzed to 2051. Additional sensitivity analyses examined the effects of different timing of introducing and scaling up EIMC, and of different discount and baseline MC prevalence rates.
**Results:** Adopting a strategy to introduce EIMC immediately, or in a phased approach increases the total number of circumcisions needing to be performed, but will not substantially decrease HIV incidence. It may, however, result in cost savings, depending on the ratio of cost of EIMC vs. cost of adolescent VMMC. This timing of the introduction of EIMC, and the duration of scale-up, whether over five or ten years, had only a marginal impact on the number of infections averted, the cumulative cost of the program, and on the number of VMMCs required to avert a single HIV infection.
**Conclusions:** Introducing EIMC into existing VMMC programs provides little or no additional reduction in HIV incidence, and is being considered as part of sustainability plans because of implementation and safety considerations. Because the relative cost of EIMC compared to adolescent VMMC is still unknown, the overall cost effectiveness of introducing EIMC will depend on findings from future costing studies. But if the cost is 50% or less than the cost of adolescent VMMC, then the introduction of EIMC for sustainability of the VMMC program will be cost saving for most countries.

### THPEE448

### EARLY INFANT MALE CIRCUMCISION IN REPRODUCTIVE AND CHILD HEALTH SERVICES: USING AN INTEGRATED SERVICE DELIVERY MODEL IN TANZANIA

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**Background:** Three randomized controlled trials have demonstrated that male circumcision reduces female to male heterosexual transmission of HIV by 60%. Since 2009, Tanzania has extensively scaled up voluntary medical male circumcision (VMMC). Early infant male circumcision (EIMC) is seen as a possible long-term, sustainable strategy for an AIDS-free generation. The more infants who are circumcised, the fewer adolescents and adults will need circumcision in the future. When compared to VMMC, EIMC requires less time, has a shorter healing period and may be more cost-efficient. Tanzania introduced EIMC as a pilot in 2013. Tanzania's pilot used an integrated model of service delivery with EIMC services offered within existing Reproductive and Child Health (RCH) services.
**Description:** For the EIMC service, parents are educated about EIMC service during antenatal care (ANC), maternity and/or postpartum care as well as during well-baby visits. EIMC services are offered in the outpatient RCH clinic. Infants can be linked to other well baby services and parents are offered HIV testing and counseling. Infants that are HIV-exposed are linked to PMTCT services. Provider interviews were conducted to elicit their perspectives on the integrated EIMC service.
**Lessons learned:** Eight health facilities offer EIMC services as pilot sites in Iringa Region and a total of 57 health care providers were trained in EIMC provision with over 3,800 male infants circumcised as of December 2015. The RCH health care providers perceive EIMC as a good practice and EIMC being integrated within RCH reduces delays in EIMC service. However, during interviews conducted to elicit their perspectives on the integrated EIMC service, providers felt that their work responsibilities have changed since the introduction of EIMC services, noting that their workload had increased and their work plan or schedule had changed.
**Conclusions/Next steps:** Delivering EIMC services as part of an integrated RCH package was successful during the Tanzania EIMC pilot. RCH providers need support in time management and service efficiencies to streamline EIMC service delivery. Furthermore, a formal costing study using an integrated EIMC approach is needed to inform scale up of this service.

### THPEE449

### ACCEPTABILITY OF NEONATAL CIRCUMCISION BY PREGNANT WOMEN IN KWAZULU-NATAL, SOUTH AFRICA

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**Background:** Studies on voluntary medical male circumcision (VMMC) have provided convincing evidence on its efficacy to provide partial protection against female-to-male HIV transmission in circumcised men. Following this evidence the WHO and UNAIDS formulated recommendations for VMMC implementation settings with generalised HIV epidemics and low circumcision prevalence. The recommendations stipulate an implementation that ensures VMMC services to all infants up to 2 months old (neonatal medical male circumcision/NMMC) and at least 80% of male adolescents.
We explored the acceptability of NMMC amongst pregnant women who are candidates for granting of consents for NMMC procedures in order to inform the guidelines for NMMC implementation and its possible integration with other Maternal, Child and Women's Health (MCWH) programmes.
**Methods:** Nurses and counsellors at two public health facilities were trained to provide NMMC counselling and offer NMMC to pregnant women who presented for ante-natal care (ANC) services. The counselling included the benefits of NMMC in HIV prevention later in life, the surgical procedures, risks and the benefits of the procedure. Data on NMMC acceptance, refusals and reasons for refusals were recorded in the registers and subsequently captured onto an SPSS database. Data was analysed to establish the acceptability of the procedure and the feasibility of integration NMMC with MCWH programming. Qualitative thematic analysis was used to analyse the reasons for NMMC.
**Results:** The NMMC acceptance was high (82.9%) among the 1778 women who participated. There was no significant age difference between women accepting and those refusing NMMC (p=0.089). Most refusals were due to the women requiring consultations with partners and / or family prior to consenting (41.3%), fear of the procedure (23.8%), cultural reasons (15.9%) and no reasons given (15.3%).
**Conclusions:** Findings provide evidence of the possible high uptake of NMMC at public health institutions and the feasibility of its integration with other MCWH programmes. However the presence of socio-cultural issues mainly related to support for traditional circumcision and the need for further consultation with family members appear to influence women's decisions on the granting of consents for NMMC.

### THPEE450

### MEDICAL MALE CIRCUMCISION COVERAGE FROM 2007 TO 2014 IN RAKAI, UGANDA

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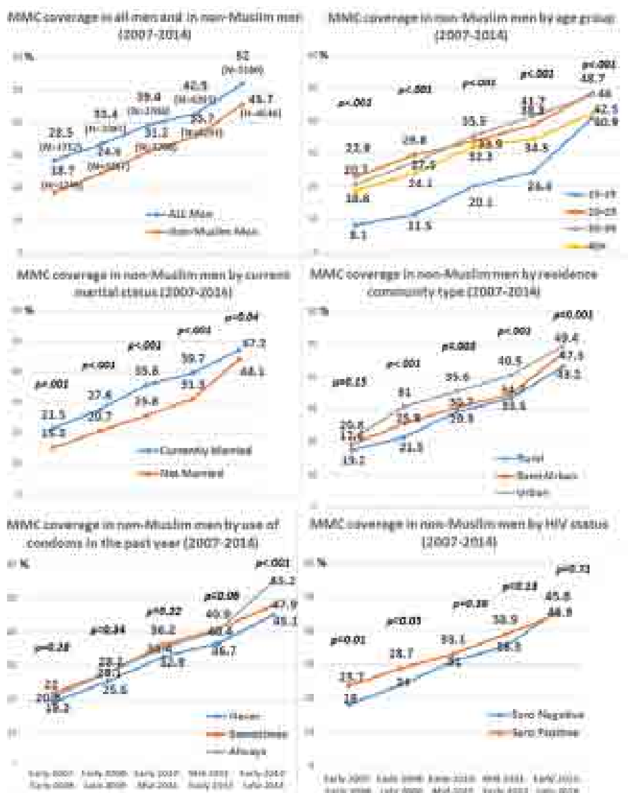
**Background:** Medical male circumcision (MMC) is an important HIV prevention strategy in Sub-Saharan Africa. In 2011, WHO/UNAIDS set the strategic goal of achieving "MC prevalence of at least 80% among 15-49 year old males" by 2016 in 14 priority countries, including Uganda. Reaching this goal requires monitoring and evaluation to assess program performance and identify subgroups with low cover-

age. Using population-based data in Rakai, Uganda, we estimated MMC coverage in men aged 15-49 years and by their demographics, risk profiles, and HIV serostatus from 2007 to 2014.

**Methods:** The Rakai Community Cohort Study conducts population surveillance of consenting residents aged 15-49 in rural Rakai every 12-18 months. MMC services were provided through randomized trials during 2004-06. Since 2007, free services were scaled up under PEPFAR funding. We used data from 30 communities consistently surveyed from 2007-2014. Each survey collected sociodemographic, behavioral, and health care seeking information, including self-reported circumcision status. Blood samples were collected for HIV testing. We estimated MMC coverage in all men and by subgroups. Chi-square tests were used to compare coverage by characteristics in each survey.

**Results:** Figure 1 shows MMC coverage in men and by non-Muslim men's age, marital status, residence type, sexual behaviors, self-perceived risk of HIV exposure, and HIV status. From 2007-2014, coverage in all men increased from 28.5% to 52.0%. Coverage was initially lower in 15-19-years olds but increased in 2014. Coverage was consistently higher in married men and in urban communities, and lowest in men with no sex partners in the prior year. Coverage did not significantly differ by condom use, self-perceived risk of HIV exposure, or by HIV serostatus.

**Conclusions:** Increasing MMC coverage in all subgroups suggested that MMC became normative, but coverage fell short of WHO/UNAIDS target, indicating the need for demand generation to reach the 80% coverage goal.




*[Figure 1. MMC coverage in all men and by Non-Muslim men's characteristics]*

## THPEE451

### WOULD EARLY INFANT MALE CIRCUMCISION BE MORE COST-EFFECTIVE THAN ADULT MEDICAL MALE CIRCUMCISION FOR HIV PREVENTION IN SUB-SAHARAN AFRICA? RESULTS FROM WESTERN KENYA

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**Background:** Sub-Saharan African (SSA) countries, including Kenya, are considering early infant male circumcision (EIMC) for HIV prevention to complement and perhaps replace adult male circumcision (AMMC) programmes. Evaluation of the costs and effectiveness of EIMC in comparison to AMMC are required for budgeting and resource allocation decisions. Such analyses should incorporate the effects of complementary interventions, especially treatment as prevention. Comprehensive evaluations of this type are lacking.

**Methods:** Using a narrow health systems perspective and actual male circumcision programme data, we conducted a cost-impact evaluation comparing AMMC to an AMMC plus EIMC (AMMC*plus*) programme in western Kenya. Incremental cost and effectiveness ratios (ICERs) were calculated. Inputs included: personnel time and remuneration, consumables, non-consumables, management/supervision, mobilization, training, and monitoring/evaluation. Impact estimates were adjusted for under-15 mortality and vertical transmission of HIV. Extreme case scenario analyses were conducted adjusting for discount rates, lifetime HIV treatment costs, priority population targets, and efficacy and scope of complementary HIV prevention programmes. 2014 is the reference year. We used a modified version of the Decision Makers Program Planning Tool for analyses.

**Results:** Under the reference case, one AMMC costs $40.11 (range $36.08, $46.14). One EIMC costs $58.23 (range $29.37, $114.15). Between 2008 and 2030, AMMC is expected to avert 81,346 (40,409, 116,835) incident infections and 33,933 (25,550, 50,258) AIDS deaths with 8 (6, 10) AMMCs per HIV infection averted (HIA) at a cost of $435 ($323, $676) per HIA and net savings of $4,315 ($3,952, $13,900) per HIA. AMMC dominates AMMC*plus* when fewer than 80% of infants are circumcised. Above 80%, AMMC*plus* results in an ICER of $384 (315, 813) per HIA. Our results are sensitive to the scale-up of complementary HIV programmes and are robust to discount rate.

**Conclusions:** Using WHO thresholds, MMC, at any age is highly cost-effective in western Kenya. AMMC dominates AMMC plus EIMC unless EIMC coverage is greater than 80%. Governments considering introducing EIMC services should consider complementary programmes and the long horizon between EIMC introduction and HIV impact. It is unlikely EIMC programmes could achieve 80% prevalence and therefore be cost-effective relative to AMMC programmes in Kenya.

## THPEE452

### THE IMPACT OF CLINICAL ASSOCIATES ON EXPANDING HIGH-QUALITY, COST-EFFECTIVE VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) SERVICES IN SOUTH AFRICA

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**Background:** In 2008, South Africa's National Department of Health (NDOH) established a new mid-level cadre called Clinical Associates (ClinAs) to fill critical human resource gaps at rural district hospitals, enable task sharing, and increase efficiency while maintaining a high standard of care. With support from the American International Health Alliance (AIHA), more than 600 ClinAs have completed a three-year bachelor's level training course and are currently deployed in rural, under-resourced sites throughout South Africa. ClinAs are trained to provide a range of HIV prevention, care, and treatment services, including VMMC, which reduces the risk of female-to-male HIV transmission by up to 60%.

**Description:** The Centre for HIV and AIDS Prevention Studies (CHAPS) started recruiting ClinAs to perform VMMC services in 2013. CHAPS currently employs 15 ClinAs, who provide an average of 1,500 VMMCs per month at 16 sites in four provinces.

**Lessons learned:** A program evaluation conducted in 2015 assessed the applicability of ClinAs' VMMC training and found that quality of care provided by ClinAs is comparable to that of doctors. Additional research revealed that when ClinAs work with doctors as part of a multi-disciplinary clinical team, health facilities enjoy cost savings of up to 60%. ClinAs also enable task-sharing, allowing doctors to rotate and provide supervision at multiple sites while ClinAs provide VMMC, counselling, and follow-up care.

**Conclusions/Next steps:** ClinA training and deployment has the potential to significantly reduce costs, increase efficiency through task sharing, and rapidly expand access to VMMC without compromising quality of care. Other countries should invest in and utilize similar mid-level cadres to support their efforts to address HIV prevention and the 90-90-90 goals.

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## THPEE453

### INCREASING UPTAKE OF CIRCUMCISION SERVICES AMONG 15-29 OLD SWAZI MALES THROUGH PRIVATE PRACTITIONERS

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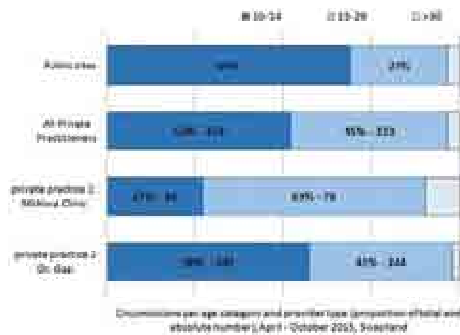
**Background:** HIV prevention has reached a new era, marked by biomedical advancements in HIV prevention such as voluntary medical male circumcision (VMMC) among others. Faced with the world's highest HIV prevalence (31% among 18-49 year olds), the Government of Swaziland, with support from the United States Agency for International Development (USAID) and technical assistance from the Centre for HIV/AIDS Prevention Studies (CHAPS), aims to increase uptake of VMMC, especially among males aged 15-29 years, to have an immediate impact on HIV incidence. Over the past 5 years, the proportion of men circumcised in this age group has declined from 78% (2010) to 26% (2015).
**Description:** in 2015, CHAPS engaged 3 private practitioners in April 2015 on a cost per circumcision basis, after a positive experience with private doctors in South Africa. Private practices can be attractive for men, who often don't visit public facilities (long queues, poor service, focus on maternal and child health, no privacy, lack of trust in quality of the service). CHAPS provides an MC kit, training and quality assurance. The private practice does demand creation, provides the service and assures follow-up.
**Lessons learned:** Private practitioners successfully reached 15-29 year olds (45% of all private clients), a significantly higher proportion than the other partners (27%), at a cost per circumcision of US$ 65 (SZL 900). Practitioners recruited among existing clients, in high schools and in workplace settings around their practice. Men are taking up VMMC in a men friendly setting.



*[Circumcisions per age category and provider type]*

**Conclusions/Next steps:** Engaging private practitioners is a cost-effective strategy to reach 15-29 year olds. CHAPS is expanding the private practitioners' network, and is exploring to incorporate best practices in public VMMC sites where feasible: providing a men friendly setting and focusing recruitment efforts in high schools and workplace settings.

## THPEE454

### EARLY INFANT MALE CIRCUMCISION USING THE ACCUCIRC DEVICE: EXPERIENCES FROM NATIONAL SCALE UP IN BOTSWANA

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**Background:** Botswana has the second highest HIV prevalence (18.5%) globally and has been earmarked by WHO and UNAIDS among high priority countries for scaling up voluntary medical male circumcision (VMMC). WHO and UNAIDS recommend early infant male circumcision (EIMC) due to its cost-effectiveness, safety, and reduced risks compared to adult and adolescent circumcision. Countries are considering various devices for EIMC. Although rare, serious potential complications have been associated with some devices. Botswana program is the first to implement EIMC in routine reproductive health services using the AccuCirc device in a successful fully integrated approach, positioning it as a model program.
**Description:** During pilot services in two referral hospitals, with some technical support from PEPFAR, a small number of midwives and doctors in maternity wards were trained to offer EIMC using the AccuCirc device. Upon reaching proficiency, these providers at the pilot facilities were trained on clinical training skills and capacitated to be EIMC master trainers. The pilot facilities became training hubs for cascading training. Demand creation was conducted in antenatal clinics, outpatient education sessions and at traditional (Kgotla) meetings. To date, 277 providers (majority midwives) have been trained. Overall, twenty five EIMC service delivery points have been established, covering most districts. Nurse midwives have conducted 95% of 3,334 procedures in 24 months through December 2015 in this fully integrated model, managed and financed by government.
**Lessons learned:** Task shifting to nurses has helped overcome the staff shortage associated with a doctor depended model. Integration has enhanced government ownership. EIMC training using the master trainers has increased program reach. Due to proper scheduling of staff and procedures, providers report no burden from including EIMC in their regular work. The pre-packaged device kits ease the supply chain management. Challenges include loss to follow up and obtaining consents from partners and guardians.
**Conclusions/Next steps:** Roll out of EIMC to supplement and sustain coverage of VMMC using the AccuCirc device in a fully integrated model was is feasible in this fairly resource constrained setting. Systematic assessment of safety and cost of AccuCirc device based services in this model is recommended.

## THPEE455

### A RANDOMIZED TRIAL OF EARLY INFANT MALE CIRCUMCISION PERFORMED BY CLINICAL OFFICERS AND REGISTERED NURSE MIDWIVES USING THE MOGEN CLAMP IN RAKAI, UGANDA

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**Background:** Medical male circumcision (MMC) for HIV prevention is a priority in 14 East and Southern African countries, and the long-term sustainability of MMC programs could best be achieved by offering early infant male circumcision (EIMC.) However, the acceptability and safety of EIMC provided by non-physicians is unknown.
**Methods:** We conducted a trial of EIMC provided by newly trained clinical officers (CO) and registered nurse midwives (RNMWs) newly trained in using the Mogen clamp and topical anesthesia in 4 health centers in rural Rakai, Uganda. Mothers were invited to participate in the trial and 501 healthy neonates aged 1-28 days with normal birth weight and gestational age were randomized to CO (n=256) and RNMWs (n=245), and were followed at 24 hours, 7 and 28 days.
**Results:** Of the 701 mothers invited to participate in the trial, 525 consented to circumcision (74.9%) and 24 were found ineligible on screening (4.4%). The procedure took an average of 10.5 minutes. Follow up was over 90% at all scheduled visits. The rates of moderate/severe adverse events were 2.4% with CO and 1.6% with RNMW surgeries (p=0.9). All wounds were healed by 4 weeks post-circumcision.
Maternal satisfaction with the procedure was 99.6% for infants circumcised by COs and 100% among infants circumcised by RNMWs.
**Conclusions:** Early infant male circumcision was acceptable in this rural Ugandan population, and can be safely performed by registered nurse midwives who have direct contact with mothers during pregnancy and delivery. EIMC services should be made available to parents who are interested in the service.

## THPEE456

### COMPETENCE-BASED TRAINING OF NON-PHYSICIAN HEALTH WORKERS IN THE PROVISION OF EARLY INFANT MALE CIRCUMCISION (EIMC) USING THE MOGEN CLAMP IN RAKAI DISTRICT, UGANDA

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**Background:** Early Infant Male Circumcision (EIMC) is a key component of combination HIV prevention in high HIV burden countries. However, provision of EIMC is limited due to lack of qualified providers and concerns about potential complications. Adequate competence-based training of non-physician personnel using a structured curriculum can avoid complications and enhance scale-up of EIMC in regions with low physician coverage.
**Methods:** Didactic and practicum training in the provision of EIMC using the Mogen clamp uder topical anesthesia was conducted for 10 Clinical officers (COs) and 10 Registered Nurse Midwives (RNMWs) in preparation for a trial on safety and acceptability of EIMC in Rakai, Uganda. Neonates whose mothers provided written consent were assigned in tandem to the 20 trainees. Each trainee performed at least 10 circumcision procedures. Ongoing assessment of competency was based trainer feedback provided immediately after surgery.
**Results:** A total of 202 babies were circumcised by trainees but only100 (5 per trainee) were used for the assessment of trainee's competence i.e. Procedures 1, 3, 5, 7, and 9.
In a pretest of competency, 20% of COs and 10% of NMWs scored above the pass mark (set at 80%). By 7th EIMC procedure , all trainees had achieved pass mark competency. The variability in performance scores significantly declined with increasing number of procedures performed.The median time per was similar between COs (13 minutes) and NMW s (12 minutes). Safety of EIMC was comparable between COs and NMWs. Four moderate insufficient skin removals occured; 2 by CO s and 2 by NMWs.
**Conclusions:** Training of non-physicians improved knowledge and competency in EIMC and the gain in competency was similar among COs and NMWs using the same training program.

# SUCCESSES, CHALLENGES, AND RESULTS FROM IMPLEMENTING HIV TESTING, PREVENTION, CARE AND TREATMENT PROGRAMMES

## THPEE457

### IMPACT OF DECENTRALISATION ON ART SERVICES AT COMMUNITY LEVEL IN RURAL NORTHERN UGANDA: RESULTS FROM THE LABLITE POPULATION SURVEYS

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**Background:** The Lablite project carried out unlinked cross-sectional population-based surveys in rural Northern Uganda before and after decentralisation of ART services. ART for Option B+ was provided at a local primary care facility (Lira Kato HC) from April/2013 and general ART from September/2013.Prior to decentralisation, people had to travel 56-76km round-trip for ART.
**Methods:** Households in the 2 parishes closest to Lira Kato were visited between March-April/2013 and again between January-March/2015. Up to 3 adults were interviewed per household.
**Results:** 2124 adults in 1351 households were interviewed in 2013; 2123 adults in 1229 households in 2015. In 2015, 1454 (69%) individuals knew Lira Kato provided ART services. HIV-testing in the last year had increased from 1077 (51%) in 2013 to 1298 (61%) in 2015 ($p<0.001$); prevalence of self-reported HIV in individuals ever-tested was similar (136/1730 (8%) in 2013 and 133/1907 (7%) in 2015).
ART coverage increased significantly from 74/136 (54%) in 2013 to 108/133 (81%) in 2015 ($p=0.01$). Post-decentralisation, 47/108 (44%) of those on ART were in care at Lira Kato; most of the remainder (55/61) were in care at the mission hospital (56km round-trip). 33/47 (70%) individuals initiating ART after September/2013, initiated at Lira Kato (including 10 Option B+ women).
Only 10/71 patients who started ART elsewhere had moved to Lira Kato for follow-up. Reasons given by 59/61 individuals for not accessing ART at Lira Kato included concerns about drug-stock-outs (30 (51%)), starting ART before ART availability at Lira Kato (13 (22%)), lack of trust in clinicians at Lira Kato (5 (8%)) and stigma (4 (7%)); all 61 knew Lira Kato provided ART. Although 3/47 current ART patients at Lira Kato reported not being able to collect ART in the past year due to drug stock-out (2) or health worker not available (1), only 1/47 had missed a clinic visit due to distance/cost. Across secondary-level facilities, corresponding numbers were 1/61 and 9/61.
**Conclusions:** ART coverage increased after decentralisation combined with Option B+ roll-out. Patients who started ART prior to decentralisation were reluctant to transfer to their local facility; the majority feared drug stock-outs. Patients attending secondary-level facilities were more likely to miss collecting ART due to distance/cost.

## THPEE458

### EARLY RESULTS AND LESSONS FROM THE SCALE UP OF VIRAL LOAD TESTING IN 13 DISTRICTS OF SOUTH-WESTERN UGANDA

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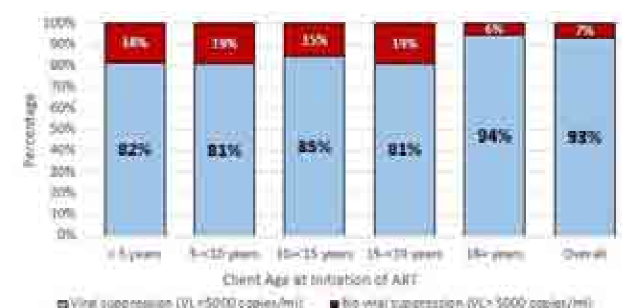
**Background:** The 2013 WHO consolidated guidelines on antiretroviral treatment (ART) recommend viral load (VL) testing as the preferred monitoring tool for diagnosing and confirming treatment failure. The Uganda Ministry of Health (MOH) set up a viral load testing laboratory at the Central Public Health Laboratory (CPHL), processing VL samples from all health facilities in 2014.
The scale up of VL testing in low-resourced, rural settings raises challenges for planning, specimen transmission and incorporating quality viral load testing into existing service delivery.
**Methods:** EGPAF supported the MOH to roll-out VL testing to 85 high-volume ART sites in South-Western Uganda in 2015. In collaboration with CPHL, multidisciplinary teams of health workers were trained in VL testing and site-specific action plans developed. Sites received start-up supplies for dried blood spot sample collection and standard operating procedures for integrating with the existing sample transportation network.
**Results:** After training 374 health care workers (clinicians, laboratory technicians, nurses/midwives), VL testing rapidly scaled up. Between July and October 2015, 13,500 clients on ART longer than 6 months received VL testing. Adults >19 years achieved 94% suppression. Those <19 years had much lower rates of suppression: 81% for those 15-19 years and 5-10 years.



*[Viral suppression rates]*

**Conclusions:** VL testing in low resource rural settings is feasible with strong collaboration and planning.

Overall, children <19 years enrolled on ART have lower viral suppression rates compared to adults, with the lowest rates among children between 5-10 years and adolescents from 15-19 years.
Urgent interventions are needed to determine whether low VL suppression among those < 19 years is due to poor adherence or to treatment failure.
EGPAF will sustain these gains through continuous analysis and use of data, integrating QI approaches and building MOH capacity to address identified gaps.

## THPEE459

### USE OF MOTORCYCLE HEALTH COURIER MODEL IMPROVED ACCESS TO LABORATORY SERVICES AMONG HIV-INFECTED PERSONS IN RURAL EASTERN UGANDA, A CASE OF TORORO LABORATORY HUB

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**Background:** Inaccessibility of laboratory testing services in Tororo and Manafwa districts owing to challenges in transportation of samples and results to and from the testing facilities led to very few patients accessing laboratory testing services. In 2013 through partnership with Tororo District leadership, TASO and CDC introduced the motorcycle health courier model with the aim of improving timely access to laboratory testing services for PLWHIV in the supported districts of Tororo and Manafwa.
**Description:** TASO hired two trained Motorcycle Health courier personnel in July 2013 to improve efficiency through timely collection and transportation of samples including delivery of results. Each courier supported one district with a coverage of 22 health facilities in Tororo and 16, in Manafwa. Their schedules involved visiting at least 5 to 7 facilities a day to collect samples, deliver previous results and distribute some vital testing supplies. Samples collected would be delivered to the hub Laboratory before 3pm for analysis.
**Lessons learned:** The average distance covered by the couriers in one day between the facilities was 120km. 38 public health facilities within 2 districts of Tororo and Manafwa were able to access laboratory testing services and timely delivery of results. Data analyzed before and after the recruitment of health couriers indicated a10 fold rise in CD4 testing from 2409 tests in 2013 to 21627 tests in December 2014. Liver Function Tests and Renal Function Tests increased from 0 to 39507 within the same period, and Complete Blood Count testing improved from 19 to 5345. The test turnaround time was one week down from the previous 1-2 months. There was continuity of testing services due to improved stocking and redistribution of testing supplies by the couriers. Challenges reported by the health couriers included unfavorable weather and bad roads.
**Conclusions/Next steps:** Use of motorcycle health courier model significantly improved access to laboratory testing services in public health facilities in Rural Eastern Uganda. Programs scaling up laboratory testing services in resource-limited settings should consider use of motorcycle health couriers to improve access and improve quality of lives of patients since its sustainable.

## THPEE460

### CHARACTERISTICS OF PEDIATRIC PATIENTS ENROLLED IN HIV CLINICS OVER TIME IN KISUMU, KENYA

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**Background:** New HIV infections among children in Kenya declined from 44,000 in 2000 to 12,940 in 2013. AIDS-related deaths claimed 10,390 children in 2013 and 103,000 children remained in need of ART in 2015. Despite progress made, more efforts are needed to meet the UNAIDS 90:90:90 goal for children. This study aimed to describe the characteristics and outcomes of HIV exposed infants tested and the children enrolled in HIV care and treatment from 2007-2013.
**Methods:** We assessed trends in age at enrollment, time to ART initiation and 12-month outcomes in a cohort of children≤14 years of age enrolled in HIV care and aggregated trends in infant infections in two facilities supported by Family AIDS Care & Education Services (FACES) in Kisumu, Kenya. Descriptive analysis included proportions for categorical variables and median (inter-quartile range (IQR)) for continuous variables. Wilcoxon rank-sum, chi-square and log-rank tests were used to test for trends over time.
**Results:** HIV-exposed infants testing HIV positive peaked at 18% in 2009 and decreased from 2010 - 2013(8%, 11%, 1%, 2% respectively) (p< 0.001). Concurrently, the number of children enrolled yearly decreased over time from 295 in 2007 to 92 in 2013.Median enrolment age was 3.9(IQR 1.3,7.9) years (Table1). Three-quarters of those eligible for ART were initiated. The median time from eligibility to ART initiation decreased over time, from 33 days in2007to 12 days in 2013 (p< 0.001). We found no significant trends over time in the proportion of pediatric patients active in care (p=0.93), lost to follow-up (LTFU) (p=0.80), dead (p=0.73) or transferred out (p=0.111) by 12 months after enrollment. The proportion of children remaining alive and active in care was lowest in 2010 (63%) and highest in 2013 (83%).
**Conclusions:** The number of HIV-infected children enrolled into care declined over time, as did infant infections in recent years. Further examination is warranted to determine if declining enrollment may be due to fewer intrapartum and neonatal infections. Time to ART initiation has also declined among newly diagnosed children living with HIV.

## THPEE461

### A DOSE-RESPONSE RELATIONSHIP BETWEEN EXPOSURE TO AN HIV PREVENTION INTERVENTION AND PREVENTIVE BEHAVIORS IN MOZAMBIQUE: FINDINGS FROM THE CAPABLE PARTNERS PROGRAM (CAP)

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**Background:** Mozambique has seen improvements in condom use and in the uptake of voluntary HIV counseling and testing (VCT), yet the overall uptake of preventive behaviors (such as reduction of sexual partners) is limited. Continued investments have been made in HIV prevention programs, including community-based behavior change communications (BCC) efforts carried out by FHI360's Capable Partners Program (CAP). However, evidence from Mozambique is limited regarding the minimum dosage of intervention programming necessary to encourage behavior change.
**Methods:** In 2014, we conducted a multi-phased household cluster survey in 12 districts in 4 provinces of Mozambique where CAP was implemented. We interviewed 923 individuals aged 15-64 (399 men, 524 women), 624 of whom were exposed to CAP BCC, and 299 who were not exposed to any HIV intervention. Participation was divided into three levels according to respondent involvement in eight CAP activities in the past 6-12 months: low (1-3 instances of participation), medium (4-6 instances) and high (more than 7 instances). Activities included one-on-one talks with a peer educator, participation in discussion groups, and watching theater performances or films about HIV/AIDS. The participation variable was regressed on five outcomes: intention to seek VCT in the next 6 months, ever sought counseling and testing for HIV/AIDS (individual VCT), ever gone for an HIV test with any of their sex partners (couples VCT), condom use at last sex, and current multiple concurrent partners.
**Results:** Our results suggest a significant dose-response relationship between CAP participation and three outcomes: intention to test for HIV at low (AOR=2.67; 95%CI:1.49-4.78), medium (AOR=4.29; 95%CI:2.14-8.58), and high (AOR=5.71; 95%CI:3.32-9.81) participation, individual VCT at low (AOR=2.66; 95%CI:1.52-4.67), medium (AOR=3.60; 95%CI:2.14-8.58) and high (AOR=5.71; 95%CI:3.32-9.81) participation and couples VCT at low (AOR=3.73; 95%CI:1.52-4.67), medium (AOR=4.31; 95%CI:1.79-10.38) and high (AOR=9.41; 95%CI:4.48-19.79) participation.
For condom use, only a medium level of participation was positively associated with reporting condom use at last sex (AOR: 2.81; 95%CI:1.49-4.78), while no association was found for current multiple concurrent partners.
**Conclusions:** Initial findings suggest higher levels of participation in CAP activities are significantly associated with increased intention to seek VCT, and reporting individual and couples VCT. Investing in greater dosages of intervention programming may be worthwhile for behavior change.

## THPEE462

### IMPLEMENTATION OF THE WORLD HEALTH ORGANIZATION 2013 ANTIRETROVIRAL THERAPY GUIDELINES IMPROVES IN A PRIMARY HEALTHCARE SETTING IN UGANDA

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**Background:** In 2013, the World Health Organization (WHO) released new guidelines recommending ART initiation for all patients with CD4< 500 cells/mm³. However, there is limited evidence on the extent of adoption of those recommendations in primary healthcare settings. We assessed the proportion of patients initiated on ART at CD4> 350 cells/mm³ and the predictors of ART initiation before and after implementation of the 2013 guidelines in an HIV clinic supported by the AIDS Healthcare Foundation (AHF) in Uganda.

**Methods:** We conducted a cross sectional study among patients attending St. Balikuddembe HIV clinic in Kampala. We compared proportion of patients initiated on ART with CD4>350 cells/mm3 between June 2012 to May 2013 (2012-2013) -still using WHO 2010 guidelines- and June 2013 to May 2014 (2013-2014) -using the new WHO 2013 guidelines-. Multivariate logistic regression was used to determine other factors associated with ART initiation.

**Results:** We studied 2,003 patients with a median age of 33 years (IQR 28-40) of which 58.3% were female. Median CD4 baseline was 295 (IQR 169-404) cells/mm³, 10.7% were in WHO stage III or IV. During the period 2013-2014, 60.3% of the patients initiated on ART had a baseline CD4> 350 cells/mm³ compared with 47.8% in 2012-2013. Time to ART initiation was 21 days (IQR 3-63) in 2012-2013 compared with 1 day (IQR 0-8) in 2013-2014. Factors associated with ART initiation at CD4>350 cells were period of ART initiation (2013-2014 vs 2012-2013: Odds ratio (OR) 1.4; 95% confidence interval (CI) 1.2 - 1.7; p=< 0.001), WHO stage (stage 4 vs stage 1: OR 0.4; 95% CI 0.2 - 0.9; p=0.029), sex (male vs female: OR 0.8; 95% CI 0.6 - 0.9; p=0.017) and age.

**Conclusions:** We observed a progressive increase of patients with higher CD4 initiated on ART following implementation of the WHO 2013 guidelines in an urban HIV clinic in Uganda. We also found that female sex and WHO stage 1 were independently associated with ART initiation at CD4> 350 cells/mm³. Time from enrolment to ART initiation significantly reduced after fully implementing 2013 guidelines probably due to better health status of clients initiated at higher CD4.

## THPEE463

### WORKING TOWARD THE FIRST '90': IDENTIFYING HIV-INFECTED CHILDREN THROUGH INPATIENT PITC

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**Background:** The pediatric 90-90-90 initiative is driving program efforts to close the treatment gap between children and adults. The first "90" challenges us to identify 90% of children living with HIV, and most programs turn to aggressive and targeted provider initiated testing and counseling (PITC) efforts to achieve this. In Tanzania, pediatric wards are a priority area for PITC and EGPAF partnered with local government health management teams to integrate targeted, accountable, and sustainable pediatric PITC efforts at high volume facilities in four regions (Arusha, Kilimanjaro, Lindi, Tabora).

**Description:** Strategies to routinely test children for HIV were agreed upon with local government officials and included: orientation/training of pediatric ward staff in counseling and HIV testing, adding PITC to the daily clinical meeting agenda, and assigning testing targets to staff members or shifts. Patient-level PITC data are recorded in standard registers and submitted to district and regional authorities every quarter. With support from EGPAF, data were reviewed quarterly and feedback on performance was provided to sites.

**Lessons learned:** From January 2014 to September 2015, 122,657 children were admitted at 123 participating health facilities. The coverage for PITC at the pediatric wards was 47% in hospitals compared to 38% in primary facilities (p< .001). A total of 958 (1.8%) children were identified as newly HIV-infected, 83% of these were attending the 41 hospitals where the HIV-positive yield was also higher (1.9%) compared to the yield at primary level facilities (1.3%, p< .001). While the coverage of PITC increased from 40% in the first quarter to 55% in the last quarter, the yield of HIV-positive children identified declined from 2.8% to 1.6%.

**Conclusions/Next steps:** Integrating PITC within pediatric wards is a good strategy to identify HIV-infected children. Introducing PITC as a planned routine service, including routine monitoring through existing structures contributes to sustained efforts and needs to be promoted, in particular, at high volume hospitals. With declining positivity rates due to increased coverage it becomes important to analyze the yield from PITC within pediatric wards and balance it with earlier case finding strategies to maximize yield.

## THPEE464

### IMPLEMENTATION OF ROUTINE VIRAL LOAD MONITORING IN A LARGE URBAN CLINIC IN UGANDA

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**Background:** Routine viral load (VL) monitoring has recently been introduced in Uganda. In order to achieve the third 90-90-90 (90% of patients on ART with undetectable VL) target set by UNAIDS, it is paramount that patients failing ART are promptly switched to another treatment. We evaluated actions taken for patients with VL>1,000 copies/ml accessing care at the Infectious Diseases Institute, a large urban HIV Centre in Kampala, Uganda.

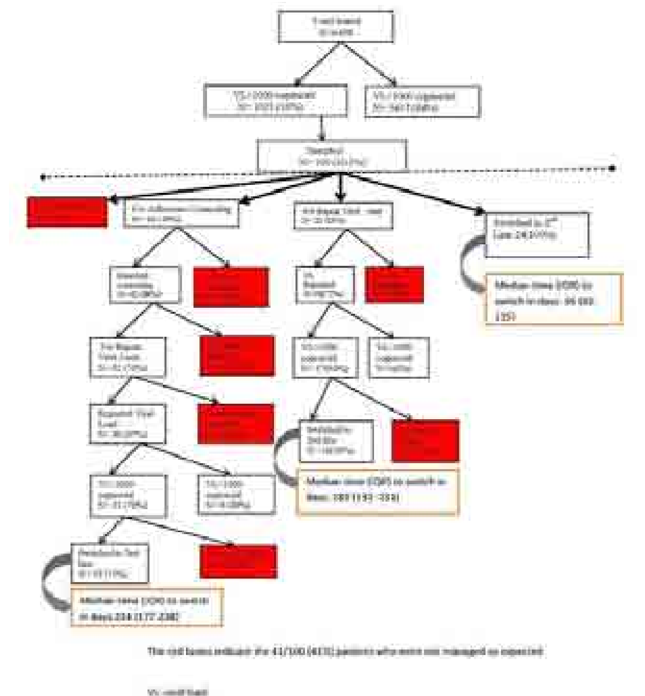
**Methods:** As per internal guidelines, VL results >1,000 copies/ml are flagged by a quality assurance officer and sent to the requesting clinician. The clinician fills a "decision form" choosing:

1) refer for adherence counselling
2) repeat VL after 3 months
3) switch to second line.

We performed data extraction on a random sample of 100 patients with VL test>1,000 copies/ml between January-August 2015. For each patient, we described the action taken by the clinicians.

**Results:** 6,936 patients had their VL done between January and August 2015, of which 1,021 (16%) had >1,000 copies/ml .Of the 100(10.1%) clinical files sampled 61% were female, median age was 39 years, 81% were on 1st-line ART, 19% on 2nd-line, median CD4 count was 249 cells/µL, median $\log_{10}$ VL 4.42 (IQR: 3.98- 4.92). Figure 1 summarizes the action taken for the patients. Doctor' decisions were; refer for counseling 49%, repeat VL for 25%, and switch to second line for 24% patients. 41% were not managed according to the guidelines. Of these, 29 (70.7%) are active in care 7 were tracked (5 (12.2%) lost to program, 2 (4.9%) dead; for 5 patients were not tracked.

**Conclusions:**



*[Figure 1 showing clinical decisions and actions taken]*

Despite the implementation of internal health system to manage patients failing ART, we found substantial leakages in the monitoring "cascade". Additional measures and stronger clinical supervision are needed to make every test count, and to ensure appropriate management of patients failing ART.

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## THPEE465

### MULTI-MONTH SCRIPTING FOR ART: A FRAMEWORK TO OPTIMIZE RAPID ADAPTATION AND SCALE UP IN UGANDA

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**Background:** WHO recommends less frequent medication pickups (3-6 months) for people stable on antiretroviral therapy (ART). Multi-month scripting (MMS) for ART provides an opportunity for willing, stable patients and the health systems that serve them to maintain positive health outcomes and potentially reduce costs. We provide a framework, which identifies challenges and opportunities to optimize rapid and successful scale-up of MMS in Uganda.

**Description:** To combat a national HIV prevalence of 7.3% and support nearly 1.5 million people eligible for ART, the Ugandan Ministry of Health incorporates 3-4 monthly drug refills for patients stable on ART in its National HIV and AIDS Strategic Plan 2015/2016 - 2019/2020 (NSP). Results from MMS pilot programs internationally are promising. For instance, stable patients in a Médecins Sans Frontières (MSF) program in Malawi attend clinic once every six months and once every three months to collect their ART. Retention in care at 12 month follow-up was 97%. Similarly, pilots in Uganda show promising results for decentralizing ART. Our analysis of recent literature, case studies, and guidelines (including WHO treatment guidelines, the Ugandan National Antiretroviral Treatment guidelines, and the Uganda NSP) provides a framework to optimize rapid adaptation and scale-up of MMS for ART in Uganda.

**Lessons learned:** We found five common factors key to successful MMS implementation:
1) permissive policy,
2) empowered providers,
3) a patient-centered focus,
4) a robust commodity platform, and
5) an appropriate monitoring and evaluation (M&E) plan.
(Table 1)

| Factors Key to Success | Essential components | Opportunities | Challenges |
|---|---|---|---|
| Permissive policy | 1) Allow the dispensation of 3-4 months of ART; 2) Enable community health workers to dispense ART | 1) Uganda's current norm is 2 months of ART but existing policy supports extension of MMS; 2) MMS program is potentially cost-saving | 1) Policy changes required for further task-shifting |
| Empowered providers | 1) Train community health workers to monitor adherence; 2) Train nurses to supervise community health workers; 3)Strengthen provider toolbox with mHealth | 1) Existing policy emphasizes „nurse-driven" care; 2) MMS can relieve overcrowded clinics; 3)mHealth shown to improve adherence in Uganda | 1) Under-developed community systems; 2) Developing and supporting new training programs; 3) Developing and supporting new community health workers |
| Patient-centered focus | 1) Identification of stable patients eligible for MMS program; 2) Community-based ART dispensation; 3) Community-based monitoring of adherence and treatment failure | 1) Patient desire for convenience; 2) Prior success of community-based programs in Uganda | 1) Determining the clinical and immunological requirements for eligibility; 2) Identification of communities for rapid roll-out of MMS programs; 3) Streamlined care for patients who fail treatment |
| Robust commodity platform | 1) Forecast models to insure stable ART availability as sites convert to MMS; 2) Viral load and laboratory availability | 1) 80% coverage with viral load targeted for 2017 in Uganda | 1) Needed improvement in supply chain management systems; 2) Fear of stock-outs at sites converting to MMS |
| Appropriate M&E plan | 1) Frequent and robust documentation of all MMS participants; 2) Training all health workers in monitoring purpose and methods | 1) Successful MSF Malawi protocol can be used as prototype | 1) Transferring data from community sites to evaluators; 2) Determining reasons for patient drop-out |

*[Table 1: A framework to optimize rapid adaptation and scale-up]*

**Conclusions/Next steps:** While there may be some barriers to the implementation and sustainability of MMS for ART in Uganda, the potential benefits to the stable HIV-positive patient and to the Ugandan healthcare system should outweigh these challenges. The proposed framework will assist in identifying and mitigating some of these challenges.

## THPEE466

### TOLERABILITY OF SECOND-LINE ANTIRETROVIRAL THERAPY (ART) AMONG PATIENTS IN A RURAL HIV CLINIC: TASO UGANDA

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**Background:** The expansion of access to Antiretroviral therapy (ART) in sub-Saharan Africa has led to an increase in number of patients requiring second-line ART. We conducted an analysis of ART patients at the AIDS Support Organization (TASO) clinic in Jinja, Uganda who had been switched to second-line therapy to assess tolerance and immunologic response after six months of second-line ART.

**Methods:** We enrolled participants who have been receiving a Non-Nucleoside Reverse Transcriptase Inhibitor (NNRTI)-based first-line ART regimen for at least four years at TASO-Jinja. TASO patients are monitored every one to three months with CD4 cell count testing every six months. Routine viral load (VL) monitoring is not available. We measured HIV VL at study enrollment. Patients with VL≥1000 copies/mL were counseled on adherence and asked to return in three months for a second VL test. We switched participants to second-line therapy, containing lopinavir/ritonovir if the VL remained ≥1000 copies/mL. We surveyed patients for 16 medical symptoms related to ART toxicity and measured CD4 cell counts and weight comparing data collected prior to switching and those collected six months afterwards.

**Results:** Among the 1091 patients screened at enrollment, a total of 113 (10.3%) had VLs≥1000 copies/mL of whom 97(86%) were subsequently switched to second-line ART. Of those switched 74% were female, the median age was 40 years (Q1-Q3: 35-44) and had been receiving ART for a median of 6.6 years (5.2-7.5 years).

We did not observe any increases in reported symptoms six months after switching compared to before switching. Specifically there was no change in reports of diarrhea (2.3% vs. 1.2% p=0.56). We noted marginally significant decreases in reports of headaches (9.3% vs. 2.3%, p=0.06) and pruritus (9.3% vs. 2.3%, p=0.06). We also observed a non-significant increase in CD4 counts from 218 to 223cells/mm3 (p=0.37). Participants who switched drugs also had significant gain in weight with median 56 (Q1-Q3: 52-62) to 57 (Q1-Q3: 53 - 63) kg (p=0.04).

**Conclusions:** Second line treatment appears to be very well tolerated in this setting. Among patients switched to lopinavir/ritonavir, the weight increased and a trend towards increases in CD4 cell counts after six months of therapy observed.

## THPEE467

### HIV PREVENTION, TREATMENT AND CARE PROGRAMMES FOR STUDENTS AND STAFF AT TECHNICAL VOCATIONAL AND EDUCATIONAL (TVET) COLLEGES IN SOUTH AFRICA

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**Background:** The goal of this study was to assess HIV prevention, treatment and care programmes and services available students and staff in the TVET sector in South Africa.

**Methods:** We conducted a national cross-sectional survey to assess HIV prevention, treatment and care programmes and services available to students and staff with a sample of 4,500 students and 900 staff in all 50 TVET colleges. The study utilized a multi-stage cluster sampling design to select a sample of campuses and classes within campuses. All students at the sampled class and all staff at the sampled campus were eligible to participate.

**Results:** Seven in 10 students and staff obtained their services from government health facilities, 11% of students and 35% of staff from medical doctors, and while 8% students and 32% of staff from private health facilities.

Approximately 68% of staff members used TV, 59% radio and 48% newspapers to access information on HIV, while the figures for students were 20% for TV, 20% for radio and 17% for newspapers.

Online and social media were used much less frequently than traditional mass media to obtain information on HIV.

Overall, TVET colleges did not rank highly as a source of information on HIV for their students and staff. TVET colleges in some provinces were more likely to be mentioned as a source of information. They were Limpopo (32%), Mpumalanga (27%), Western Cape (23%) and Eastern Cape (22%). Only 16% of respondents in the Free State indicated that their colleges provided information on HIV.

**Conclusions:** Students and staff both relied overwhelmingly on government health facilities AIDS-related health services. Staff members used the mass media quite extensively for HIV and AIDS information; only a minority of students did the same. Again, students showed an unusually low interest in the mass media as a source of health information and social media have not taken off strongly as sources of HIV information at TVET colleges.

## THPEE468

### STRATEGIES TO REDUCE THE HIV TREATMENT GAP IN BRAZIL

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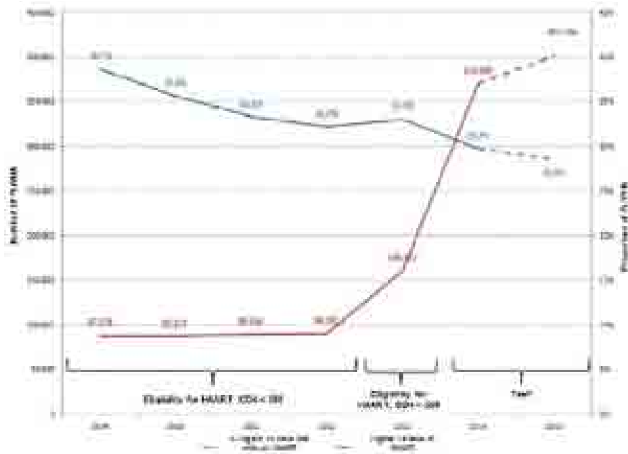
**Background:** In 2013, Brazil published a normative protocol implementing the "Treatment for All", being the first developing country to recommend antiretroviral therapy (ART) for all people living with HIV/AIDS (PLWHA), regardless of CD4 and viral load. In 2014, out of the 781,000 PLWHA in Brazil, 83% were diagnosed and 62% started HAART. In order to monitor the gap monthly and conducting active surveillance of people in gap, a clinical monitoring system, "SIMC", was developed by the Brazilian Ministry of Health.
**Description:** "Treatment for All" has increased ART coverage , along with a narrowing of the treatment gap. Data from SIMC showed that 30% of the patients being monitored had at least one CD4 showing less than 500 cells/mm3 and had not started treatment in 2013. In 2014, around 60,000 people started HAART. In Brazil, between 2009 and 2014, the number of PLWHA being treated increased 53.2%.



*[Number of PLWHA aged 18 and over eligible for HAART and Treatment Gap, by year of discharge. Brazil, 2009 to 2015]*

**Lessons learned:** "Treatment for All", in the context of the Brazilian Unified Health System, has allowed Brazilian states and municipalities to implement the guidelines promptly. In addition, the fact that asymptomatic PLWHA may be followed up by the Primary Care units improved the access to treatment and the linkage to health services. In the end, it helps to reduce morbidity and mortality due to AIDS and to improve quality of life.
**Conclusions/Next steps:** The reduction in the gap and the expansion of treatment may have shown progress in the proportion of PLWHA who started treatment, which rose from 44% in 2012 to 62% in 2014. This is an important result, considering the increase in the number of people eligible for treatment, the management of HIV/AIDS in primary health care and SIMC implantation along with a reduction in the gap from 33% in 2013 to 29% in 2015.

## THPEE469

### USE OF ART DATA AND STRENGTHENING COORDINATION OF THE TRANSITION TO NEW FIRST-LINE ANTIRETROVIRAL TREATMENT REGIMENS: LESSONS LEARNED IN ANGOLA

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**Background:** Following the 2013 WHO consolidated guidelines on antiretroviral therapy (ART), the Angola National AIDS Control Institute changed ART standard treatment guidelines (STGs) from AZT-based to TDF-based regimens as the preferred first-line regimen for adults initiating ART. One year after dissemination of the new STGs, health facilities reported continued high use of AZT, despite sufficient availability of recommended TDF-based products.
**Description:** In June 2015, a national multi-disciplinary Quantification Technical Working Group (QTWG) was established to promote collaboration between prescribers and logistics teams in forecasting and supply planning of HIV and AIDS commodities.
Subsequently, a retrospective analysis of patient and logistics data from January to July 2015 confirmed that 75% (n = 8,955) of adult patients were still being initiated with AZT-based regimens, and TDF-based products were at high risk of expiring. The majority of prescribers reported lack of awareness of the availability of recommended products, and pharmacy teams were inadequately involved in the dissemination of the new STGs and could not include the products in their requisitions.
**Lessons learned:** Engagement of prescribers and dispensing teams in quantifying and monitoring stock levels of HIV and AIDS products is essential in transitioning to new regimens. Three months after establishment of the QTWG, patients are increasingly being initiated with TDF-based regimens, and the reported average monthly distribution (AMD) of products corroborates this trend. The AMD of the recommended TDF/FTC/EFV increased from 840 treatments per month to 9,577 per month (11.4-fold increase), while the AMD for AZT/3TC and AZT/3TC+EFV (co-formulated) decreased tremendously in the same period (6.5- and 3.8-fold decrease, respectively).
**Conclusions/Next steps:** First, regular review of ART data in compliance with recommended guidelines is important in establishing a gap in practices that significantly influences the performance of the supply chain. Second, establishing a continuous two-way communication between supply chain managers, prescribers, and dispensers contributes to ensure the availability of recommended ARV formulations, allowing STG compliance and better patient care. Using existing coordination mechanisms such as facility Drug and Therapeutics Committees can provide substantive improvement, thereby reducing the risk of stock-outs of wrongly overutilized products while avoiding wastages of under-prescribed products.

## THPEE470

### FOLLOW-UP AND PROGRAMMATIC OUTCOMES OF HIV-EXPOSED INFANTS REGISTERED IN THE LARGEST HIV CENTRE, LILONGWE, MALAWI: 2012 - 2014

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**Background:** The Martin Preuss Centre (MPC), Lilongwe, Malawi, provides integrated care to People Living with HIV and HIV-exposed infants and children. The aim of the study was to assess follow-up and programmatic outcomes of HIV-exposed infants at MPC from 2012-2014.
**Methods:** Retrospective cohort study using routinely collected HIV-exposed infant data of registered from 2012-2014.Data for HIV-exposed infants were collected using national standardised patient charts and then entered in customised Microsoft access database. Descriptive analysis was done using STATA 13.0 (Stata Corp.,

College Station, Texas). Data were analysed using frequencies and percentages.

**Results:** A total of 1035 HIV-exposed infants registered from 2012-2014. Of the total, 844(81%) infants were registered after 6 weeks of age (median age = 32 weeks, IQR: 10-59 weeks). Guardians were usually mothers, mostly on antiretroviral therapy. Missing data in baseline characteristics ranged from 2%-36%. By 24 months 96% of the infants available to be tested got HIV-tested; 8% of the HIV-tested infants were HIV-positive and of these 43% started antiretroviral therapy. Overall, 501(48%) HIV-exposed infants were declared lost-to-follow-up in the database. Of these, 346(69%) were line-listed for tracing; of these, 271(78%) had lost-to-follow-up status confirmed through patient charts; of these, 138(51%) were traced; and of these, 86(62%) were truly not in care, the remainder being wrongly classified. Commonest reasons for true lost-to-follow-up were mother/guardian unavailability to bring infants to MPC, forgetting clinic appointments and transport expenses. There were 31 children brought back to care, leaving 55(40%) of those traced still lost-to-follow-up.

**Conclusions:** Active tracing of HIV-exposed infants contributed to improving retention in care of HIV-exposed infants. However, there is need to improve programmatic data documentation and better follow up and link HIV-positive children to antiretroviral therapy.

## THPEE471

### REACHING THE FIRST 90% IN A GENERALIZED EPIDEMIC: WHAT ELSE WILL IT TAKE?

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**Background:** Access to HIV testing and counselling (HTC) is the first step to accessing HIV/AIDS - services. Despite significant progress in increasing access to HTC, only 50% of PLHIV globally have ever tested for HIV. In Zambia this proportion is higher but still less than 70%. Success with the UNAIDS 90:90:90 strategy is predicated on reaching HIV+ individuals with HTC. In generalized epidemics such as ours in Zambia, targeted HTC efforts are needed. We tested two community-based HTC approaches to increase the yield of HIV positive individuals: door-to-door and using the HIV positive index client approaches.

**Description:** In June 2015, we selected seven districts to test the two approaches. In each district, we selected two health facilities and their surrounding communities based on high HIV prevalence and population. We developed standard operating procedures and documented the community engagement process which included exploration, and mobilization with stakeholders and oriented the counsellors. For the door-to-door approach, households were visited by HTC counsellors and HTC done after verbal consent. In the index client-based approach, clients were identified at the health facility, informed of this opportunity to extend HTC services to their families. Those consenting facilitated access to their homes

**Lessons learned:** 6031 households were visited in the door-to-door approach; 29037 individuals were reached and 99.9% tested. Of these, 614 (2.1%) tested HIV positive and 610 were referred to clinics for HIV services. 292 (48%) of those referred reached and 274 (94%) were deemed eligible and were initiated on combination antiretroviral therapy (cART). In the index client approach, of 17,185 clients tested, 908 (5.2%) were found to be HIV positive and referred to ART services. Of these 908 clients, 65% reached the facility; 516 (88%) were found to be eligible for ART and of these, 69% of were initiated on cART.

**Conclusions/Next steps:** Acceptability for HIV testing was very high in both HTC strategies. However, more PLHIV were identified through the index client approach (5.2%) than through the door-to door approach (2.1%) - two-fold higher. Targeting HIV positive index clients may be more strategic and cost effective in a generalized epidemic, especially if focused in high HIV prevalence areas.

## THPEE472

### ARE UNDOCUMENTED OUTCOMES JEOPARDIZING 90-90-90 GOALS? ASSESSMENT OF HIV TESTING AND LINKAGES TO CARE AND TREATMENT IN MANICALAND PROVINCE, ZIMBABWE

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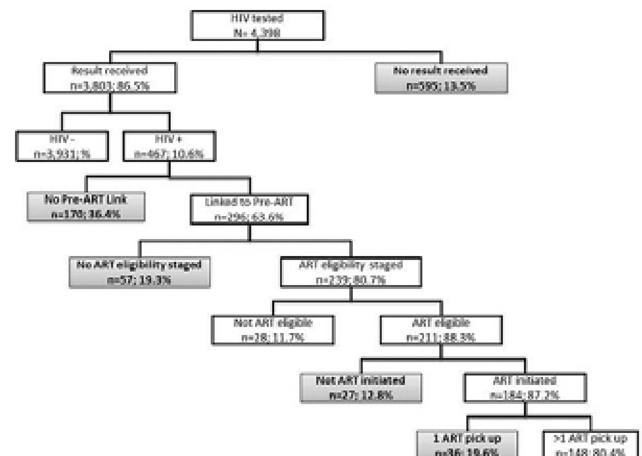
**Background:** Accurate health information systems are central to tracking progress towards attainment of 90-90-90 goal and elimination of HIV in Zimbabwe by 2030. With an estimated adult HIV prevalence of 16.7%, routinely reported HIV program data is documented in paper-based registers at the majority of health sites in Zimbabwe. The objective of our targeted assessment was to establish current rates of HIV test yields and documented linkage of HIV positive (HIV+) individuals to care and treatment.

**Methods:** A simplified probability proportional to size technique was used to select 11 health facilities in Makoni and Mutare Districts of Manicaland Province. In this retrospective cohort analysis, all individuals testing HIV+ between January and March 2015 were traced through facility registers to document subsequent access to HIV care and treatment services. De-identified data was entered into MSExcel and analyzed descriptively using StataV12.

**Results:** Among the 4,398 with documented HIV testing, result receipt outcomes were missing for 13.5% (n=575). HIV+ results were documented for 10.6% of those tested. Cumulative 'losses' due to undocumented outcomes resulted in over half of all individuals identified as HIV+ (n=290; 62%) subsequently disappearing from the HIV care and treatment cascade.




*[Cascade of missing data along HIV testing, care and treatment (N=4398)]*

Greatest documentation losses occurred at linkage of PLHIV from testing to pre-ART care (36.4%; n=170) and ART eligibility assessment (19.3%; n=57). Process evaluation findings revealed need for standard operating procedures to guide documentation of patient outcomes following referral and patient transfers.

**Conclusions:** Our assessment revealed a large proportion of indeterminate outcomes among individuals accessing HIV testing, care and treatment services. Such undocumented outcomes will pose extreme challenges to accurate determination of 90-90-90 goals. In the short term, enhanced standard operating procedures are required to systematically document patient referrals and outcomes. Support is required to pursue MOHCC-led implementation of feasible and effective electronic patient monitoring systems in the HIV care and treatment program.

## THPEE473

### HIV TESTING IN THE WORKPLACE AS A COLLECTIVE EFFORT: THE IMPETUS OF LOTTERY INCENTIVES

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**Background:** Lotteries are used to address the relatively low uptake of HIV testing in South African companies but very little is known of the psychosocial processes involved. The influence of lotteries has to be understood specifically in efforts to understand, predict and support employees' HIV testing behaviour at the workplace.

**Methods:** A post-test only quasi-experimental, explanatory mixed method approach was adopted in which quantitative data for the experimental studies were first collected at four companies in the Nelson Mandela Bay Municipality, followed by qualitative studies conducted in the same companies. Data were collected in two experimental conditions.

In Setting 1 [control group (n=88), experimental group (n=110)], entry into the lottery was dependent on HIV testing,

in Setting 2 [control group (n=147), experimental group (n=169)] entry was not dependent on HIV testing. In-depth interviews were conducted [Setting 1 (n = 17); Setting 2 (n=16)] two weeks after the testing event.

The theory of planned behaviour was used as guiding theory. Principal component analysis, as well as t- and chi-square tests, and logistic regression were conducted to analyse the data. Thematic analysis was used to analyse the qualitative data.

**Results:** The constructs of the theory of planned behaviour explained 40% of the variance in HCT behaviour intention ($R^2$ = .40). The strongest predictor of behaviour intention was the subjective norm ($B$ = .435 and $p$ < .001). Data suggest that

workers' intention to test for HIV was not based solely on a chance to win a lottery prize. The qualitative data revealed that the introduction of the lotteries renewed employees' personal interest in HCT. The excitement facilitated social interactions and seemed to mitigate the burden of HIV stigma.
**Conclusions:** The announcement of lotteries made shop-floor workers develop a stronger intention to participate in workplace HIV testing through anticipation of stronger social support and encouragement from partners, friends, and colleagues. Participation in HCT did not seem to hinge only on the likelihood of winning a prize. The results showed the importance of providing an opportunity to openly discuss HIV testing and permitting HIV testing to become socially sanctioned and seen as part of a collective effort.

## THPEE474

### Strengthening referral linkages to treatment for key populations who test positive to HIV in Port-Harcourt City, Rivers State, Nigeria: innovative strategies and lessons

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**Background:** Early diagnosis and linkage to treatment for persons who test positive to HIV is critical for viral suppression in such individuals. Programme data collected between 2013- 2015 on the Strengthening HIV Prevention Services (SHiPS) project shows that Key Populations (KPs) who test positive to HIV do not have effective access to early treatment and linkage to continuum of care in the project location
**Description:** The SHiPS project aimed at *improving the health of people in Nigeria by reducing the prevalence of HIV among MARPs* initially had challenges with linkage to treatment. Access to treatment services by project beneficiaries was challenging and as such positive KPs referred were lost to follow up. To address this gap, referral methodologies adopted included:
· Counselor testers or Guardian Angel Escort services.
· Motivation and Reward of HIV Counselor testers.
· Phone tracking either Health Care Worker or counselor tester initiated.
· Partnering with treatment partners
· Community Transport Services (CTS) either prearranged or public services.
· Health Care Worker integration through 'Drop in center'.
**Lessons learned:** Between May and December 2015, a mix of these strategies were adopted (tested) to improve referrals. The percentage of KPs successfully linked to treatment improved from 0% in previous months to 58% on the average. Lowest rate achieved was 17% in the first month (May), which peaked at 81% in third month (July), and plateaued at 62% and above in the last months. The following lessons were learnt**:**
· Improving KPs access to early treatment requires a mix of referral approaches.
· Non financial motivation and reward of 'high achievers' counselor testers promote community drive to achieving results.
· Escort services provided by counselor testers / 'guardian angel' improve confidence of referred KPs in hard to reach communities.
**Conclusions/Next steps:** · There is a need to mainstream referral strategies into country's prevention plan and HIV Counseling and Testing protocol.
· Capacity building as a means of non financial motivation and reward of counselor testers should be Institutionalized.
· There's need to explore public private partnerships to improve CTS for positive KPs.

## THPEE475

### Pangaea Global AIDS and the Clinton Health Access Initiative (CHAI) best practices case study series: lessons learned

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**Background:** Pangaea Global AIDS, in partnership with the Clinton Health Access Initiative documented and costed a series of case studies that demonstrates effective approaches to HIV service delivery in Sub-Saharan Africa. The goal for this project is to document successful approaches that increase demand for and sustained use of HIV services which can provide a resource for country level program implementers, advocates, and donors to better determine how to scale up programs effectively and gain maximum benefit from resource investments.
**Description:** The Best Practices Case Study series includes:
(1) Zvandiri CATS Model: Supporting HIV+ Adolescents, Zimbabwe
(2) Government of Mauritius, Harm Reduction Program for People Who Inject Drugs(PWIDS)
(3) AMPATH's Perpetual HIV Counseling & Testing(PHCT) Program, Kenya
(4) Liverpool Voluntary Counseling & Testing (LVCT) Health: Provision of Health Services for Men Who Have Sex with Men(MSM) and Sex Workers, Kenya
(5) Government of Uganda, HUB Model: Increasing Access to Lab Services.
**Lessons learned:** Key findings from case studies:
(1) Demand Creation: All programs promoted the engagement of clients through home visits, "Youth Corners" in health facilities, targeted community outreach to vulnerable populations, and using harm reduction strategies as a gateway to access other key health services.
(2) Task Shifting: The Zvandiri program promotes peers as the central contact for adolescents; The HUB Model of specimen transport enables lower-level facilities to refer specimens to regional referral hospitals and laboratories; AMPATH's PHCT counselors are delivering key services such as HIV testing and screenings for non-communicable diseases(NCDs).
(3) Integration of Services: AMPATH's integration of services provides opportunities to 'normalize' HIV care and treatment.
(4) Improved Technology: The use of hand held devices by AMPATH & Zvandiri enables real time client monitoring, quality control, and field support.
(5) Collaboration: In all case studies, partnerships are key to success. Governments, NGOs, and community organizations working collaboratively with defined roles and responsibilities improved outcomes across the treatment cascade.
**Conclusions/Next steps:** The methodology used to create the case studies and cost estimates can serve as a template for replication at country level. This can facilitate discussion and a better understand what factors and enabling environments contribute to the development of effective programs.

## THPEE476

### Impilo Iqala Ekhaya (Health Starts at Home): linkage to care and treatment initiation following home-based screening in rural South Africa

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**Background:** In order to reach 90-90-90 targets and decrease morbidity and mortality from HIV, the South African health system must scale up identification of HIV-positive individuals and early linkage to antiretroviral therapy (ART). However, there is no consensus about the most effective delivery model at this crucial step in the cascade of care, particularly in rural areas plagued by staff shortages. There is an urgent need for operational data to produce scalable models that successfully engage South Africa's marginalized rural citizens.
**Description:** From February to December of 2015, 11 lay community health workers (CHWs) performed 2898 screenings in traditional Zulu homes, integrating tuberculosis symptom screening, noncommunicable disease screening, and HIV counseling and testing (HCT). Among participants, 2388 (82.4%) were women, median age was 42 years (IQR 27-60), 188 (6.5%) were already taking ART, and 1470 (50.7%) agreed to HCT. Among those undergoing HCT, 27.5% reported never having tested before. CHWs identified 75 participants in need of linkage to HIV care, including 46 who were newly diagnosed and 29 with previously known HIV-positive status not yet on ART. CHWs then provided counseling, phone calls, repeat visits, and in some cases accompaniment to local clinics.
Among those newly diagnosed, median age was 33 years (IQR 26-42). Thirty-two (70%) were linked to care with a median time to linkage of 3 weeks. Of those linked to care, median CD4 count was 301 (IQR 252-508) and 23 (72%) subsequently initiated ART. Among those with previously known status, 17 (58%) were linked to care and 11 (65%) initiated ART. In total, 49 participants were linked to care and 34 initiated ART.
**Lessons learned:** Home-based HCT and linkage is most successful when CHWs visit repeatedly, developing relationships of trust with their neighbors. More than 80% of those tested and found to be HIV-infected were women; alternative community-based strategies are needed to test and link men.
**Conclusions/Next steps:** Trained CHWs effectively identified community members living with HIV and linked them to care. Home-based screening in rural KwaZulu-Natal uncovers high-risk groups who do not routinely test for HIV, particularly young women, and provides opportunities for critically timed ART.

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## THPEE477

### FACTORS ASSOCIATED WITH WEIGHT GAIN AMONG ADULT PATIENTS INITIATING ANTIRETROVIRAL THERAPY IN PORT HARCOURT, NIGERIA: A RETROSPECTIVE COHORT STUDY

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**Background:** Weight loss is a significant problem among HIV-positive patients. Although initiation of ART is often associated with weight gain and increased protein synthesis, lean tissue is not restored in some patients. Furthermore, weight gain among patients initiating antiretroviral therapy (ART) has been associated with survival. However, factors associated with weight gain among patients initiating ART have not been adequately described. This study aimed to identify predictors of weight gain over two consecutive six-month intervals among HIV-positive patients initiating ART in a health facility in Port Harcourt, Nigeria.
**Methods:** We reviewed clinical records of a cohort of HIV-positive patients who were 15 years or older initiated on ART at a hospital in Port Harcourt, Nigeria between January 1, 2010 and December 31, 2014. Age, gender, occupation, employment, education, marital status, tuberculosis status, CD4 count, haemoglobin at baseline (prior to initiation on ART), initial ART regimen, drug adherence and weight at baseline, six and twelve months were measured. Generalized estimating equation (GEE) modelling with a logit link was used to determine predictors of weight gain over the two consecutive six-month intervals.
**Results:** Of the 596 HIV-positive patients included in this study, 403 (67.6%) were females and the mean age was 29.0 ± 9.5years. During the follow-up period, 38.4% and 28.8% of the patients had weight gain of 1kg or more following ART initiation in the first and second intervals respectively. Predictors of weight gain include male gender [adjusted Odds Ratio, aOR = 1.29, 95% CI: 1.12-1.48], being married [aOR =0.86, 95% CI=0.76-0.96], use of contraceptives [aOR =1.12, 95% CI=1.01-1.23], WHO stage 3 [aOR = 1.51, 95%CI= 1.12-2.02], patients considered as tuberculosis (TB) suspects [aOR = 1.87, 95%CI= 1.26-2.02].
**Conclusions:** The proportion of HIV-positive patients who had weight gain of 1kg or more within twelve months of initiating ART was low in this cohort. Various baseline factors contribute to weight gain in this population, including gender, marital status and use of contraceptives. Knowledge of these factors can assist in ensuring that HIV-positive patients achieve optimal weight gain following the initiation of ART.

## THPEE478

### "IF MY HUSBAND LEAVES ME I WILL GO HOME AND SUFFER, SO BETTER CLING TO HIM AND HIDE THIS THING": GENDER ISSUES AND WOMEN'S PARTICIPATION IN MALAWI'S OPTION B+ PROGRAM

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**Background:** In Malawi, approximately 20% of women who start lifelong ART under the Option B+ prevention of mother-to-child transmission (PMTCT) program discontinue participation. The role of gender in women's PMTCT participation is not well documented.
**Methods:** This study used qualitative methods to identify gender issues contributing to women's participation or discontinuation of PMTCT. We collected data in 4 districts in central and southern Malawi and purposefully selected 1 urban and 1 rural health facility per district. We conducted 8 focus group discussions with adult men and in-depth interviews with 32 women enrolled in PMTCT, 32 women who had dropped out of the program, 16 health workers, and 8 stakeholders from organizations that support PMTCT services. Transcripts were coded for themes using content analysis, then entered into data matrices to facilitate comparisons.
**Results:** Lack of partner communication, fear of HIV status disclosure, fear of HIV-related stigma, and insufficient male involvement in PMTCT were the most common themes and were interlinked. Women stated that they bear the burden of disclosing to their husbands because they are tested during antenatal care and their husbands rarely go to the clinic with them, despite clinic programs encouraging male participation. Many women said they fear HIV disclosure because they are economically dependent on their husbands and worry about divorce. Women who did not disclose to their husbands or other relatives found it difficult to continue in the PMTCT program. Some women said that the frequency of clinic visits and the use of a special room or day of the week for PMTCT effectively disclosed their status publicly, contributing to stigma. Men described their role in PMTCT as limited to financial support and encouraging women to take ART. Stakeholders and health workers stated that women are more likely to adhere to ART when their husbands are involved. Nearly all participants stressed the need for community awareness and male sensitization related to PMTCT.
**Conclusions:** To improve women's long-term participation in PMTCT, programs should support women's HIV disclosure by encouraging couples' counseling and testing, developing acceptable strategies to broaden male involvement, and facilitating stigma reduction activities in communities.

## THPEE479

### ELIMINATION OF MOTHER TO CHILD TRANSMISSION OF HIV: GAPS IDENTIFIED IN URBAN PRIMARY HEALTH CARE FACILITIES IN JOHANNESBURG, SOUTH AFRICA

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**Background:** The World Health Organization's four prongs to eliminate Mother-To-child transmission (eMTCT) of HIV and improve maternal health include:
1) Primary prevention of HIV infection in women;
2) Prevention of unplanned pregnancies in HIV-positive women;
3) Prevention of vertical HIV infection through ART prophylaxis;
4) Treatment of HIV-positive women and their families.
While programmes have prioritised prongs 3 and 4 with success, implementation gaps remain. This study evaluated the uptake and potential gaps in services related to the eMTCT and maternal health programme in Johannesburg, South Africa.
**Methods:** We conducted a cross-sectional study between October 2015 and January 2016, at 2 primary health clinics in inner-city Johannesburg. Eligible postnatal women (>18 years old) attending immunization visits with their infant (< 18 months old) were approached for consent and interviewed on their uptake of comprehensive eMTCT services. All consenting mothers and infants of sero-positive mothers were tested for HIV at study enrolment.
**Results:** Among 349 postpartum mothers, 215 (62%) were HIV-positive at study enrolment, with 9/139 (6.5%) reportedly HIV-negative in pregnancy subsequently testing positive at study enrolment. Two thirds of women (234/349) attended their first ANC visit in the 2nd and 3rd trimester and 75% (261/349) attended the recommended 4 ANC visits. A high number of women reported unplanned pregnancy, 66% and 67% of HIV-negative and -positive women, respectively. While 34% of HIV-negative women reported that their partner had multiple sexual partners, only 20% used condoms during their pregnancy. The median age of infants at enrolment was 3.3 (IQR: 1.5-9) months and the HIV transmission rate was 0.9%. Postpartum, 294 (84%) women accessed family planning, with 52% (152/294) choosing injectable contraception.
**Conclusions:** This study demonstrated many successes and a few missed opportunities in the implementation of all 4 WHO eMTCT strategies. Gaps identified related to unplanned pregnancy and prevention of new HIV-infections. Increased efforts to reinforce condom use are necessary. High pregnancy or postpartum HIV transmission rates in women increase the risks of HIV transmission to infants and regular retesting post-partum is essential. Therefore, amid successes, prongs 1 and 2 of the WHO eMTCT strategy require increased focus in programmatic settings.

## THPEE480

### CHALLENGES AND OPPORTUNITIES FOR IMPROVING EARLY INITIATION OF ART: A THEMATIC ANALYSIS OF EXPERIENCES AMONG INDIVIDUALS RECENTLY DIAGNOSED WITH HIV

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**Background:** Clinical guidelines in the province of British Columbia (BC), Canada, advise individuals diagnosed with HIV to initiate antiretroviral therapy (ART) immediately to improve long-term health outcomes and decrease the likelihood of transmission. This thematic analysis explores individuals' experiences and attitudes

towards ART initiation within a setting where ART and related care are provided at no direct cost to patients.

**Methods:** "Engage" is a prospective cohort study of new ART initiators, nested within the provincial Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS. Between March and August 2015, 20 Engage participants were purposely recruited: 10 whom initiated treatment "late" (defined as a CD4 cell count of ≤ 500 cells/µL) and 10 whom initiated "early". The framework of the interview guide was designed to elucidate participants' experiences relating to HIV testing, diagnosis, care, and treatment. A research-trained person living with HIV conducted in-depth interviews. All interviews were recorded and transcribed. Using NVivo 10.2 Software, three researchers thematically analyzed these data.

**Results:** The participants were 15% female and the median age was 41 years (1st-3rd quartile [Q1-Q3]: 30-47). Participants who reported seeking treatment immediately indicated that they were well informed about ART and wanted to achieve an undetectable plasma viral load (pVL) to minimize transmission. Other themes included minimal concern around medications impacting daily life, and normalization of ART as standard medical practice for HIV. Participants who reported avoiding treatment or care indicated that ART was considered to be a last resort once symptoms provided no alternative, which was due to either stigma (in the form of denial or fear of others becoming aware of their status), or lack of understanding around the individual benefits of ART. Other themes for delaying treatment included doctors presenting ART as optional based on CD4 cell count and pVL levels, and feeling overwhelmed or fearful about HIV and complexity of HIV care.

**Conclusions:** Education levels around ART efficacy emerged as a common theme for persons seeking and avoiding treatment. These results suggest that scaling-up educational initiatives around ART efficacy should be prioritized in order to increase early ART initiation.

## THPEE481

### WHAT INFLUENCES PATIENTS' PRESENTATION STAGE FOR HIV SERVICES IN RURAL SOUTH-WESTERN UGANDA? A QUALITATIVE INVESTIGATION OF PATIENTS' VIEWS IN THE CONTEXT OF CURRENT POLICY RECOMMENDATIONS

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**Background:** Despite recent changes in HIV policies broadening HIV care (e.g. Option B+; revising CD4 threshold for ART initiation to ≤500 cells/µl; pre-ART Cotrimoxazole provision) some patients continue to present 'late' for initiation into the care system which compromises subsequent health outcomes. Less understood are patients' perspectives on such policy changes and the impact they may have on the stages at which people present for services once they know their HIV status. We therefore conducted a study to understand the influence of HIV care policy changes on the healthcare-seeking experiences of people living with HIV (PLWH) in rural South-western Uganda.

**Methods:** Thirty- three in-depth interviews were conducted with PLWH sampled from a health and demographic surveillance ART clinic between September-December 2015. To focus specifically on issues of presentation to services, we randomly sampled 18'timely' presenters (CD4 ≤500 cells/**µl**) and purposively sampled 15'late' and 'crisis' participants (CD4 < 500). Interviews were audio recoded, transcribed, translated and analysed thematically.

**Results:** Generally, participants exhibited no awareness about the policy changes. Reasons for presenting late included: feeling asymptomatic, work-related commitments and mobility. For women, previous HIV negative tests followed by a positive test during pregnancy and inadequate partner support combined with household and childcare chores create obstacles to timely access of services. Other reasons for late presentation, for both sexes, included long queues and clinic waiting time, health workers' rudeness, transport costs and fear of being seen.

Timely presentation for HIV care services for women was supported by exposure to HIV counselling during pregnancy, having children and a desire to stay alive to facilitate children's future plans. Loss of dear ones due to HIV motivated men and women to seek care. Campaigns about ART effectiveness and being open about one's own HIV status also influenced care-seeking decisions.

**Conclusions:** Despite areas of policy improvement which enable access to HIV services there remain individual, societal and facility-level obstacles to timely presentation for HIV services in our study area. Some of these can be ameliorated through programme-specific reviews and investment in the local HIV services quality to better meet the needs of PLWH.

## THPEE482

### CHALLENGES OF INCREASING ART COVERAGE IN UKRAINE

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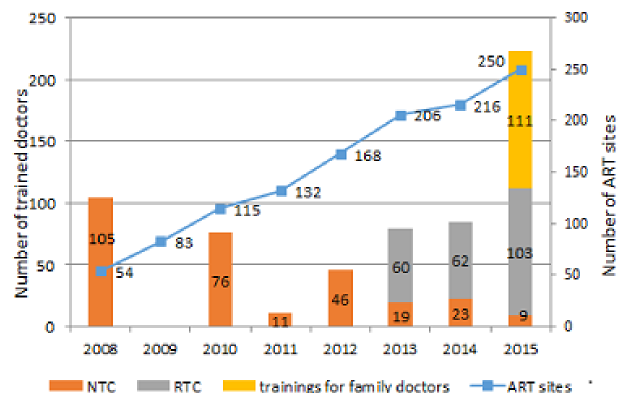
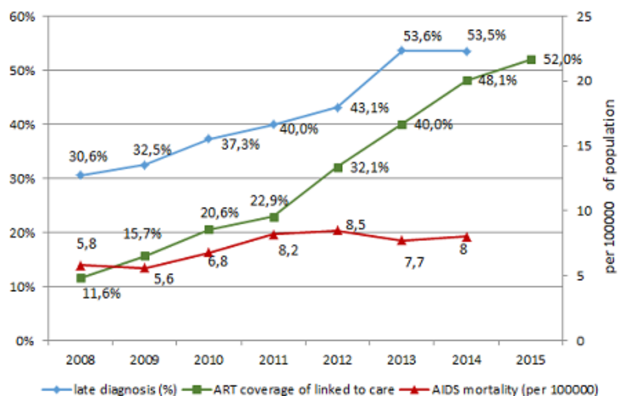
**Background:** Ukraine is one of the 30 countries implementing UNAIDS "Fast track" strategy to reach "90-90-90" goals. As of 01.10.2015 p., there were 127 377 officially registered HIV-infected citizens of Ukraine. Annual HIV incidence reaches near 20 thousands cases. 66106 persons receive ART. In 3 upcoming years this figure is targeted to hit 118000 persons.

**Description:** To ensure universal access to ART across the country, decentralization processes are in place. Number of ART sites has increased from 54 to 250 since 2008. To facilitate decentralization, National Training Center (NTC) under support of the Global Fund started training of infection disease doctors (IDD) on management of HIV patients. Regional Training Centers (RTC) joined the process in 2012. Family doctors started being trained on HIV/AIDS aspects since 2015.




*[Data on trained specialists and nuber of ART sites]*

Starting from 2008, number of people receiving ART increased from 7657 to 66106 persons, almost 9 times, with ART-coverage from 11,6% to 52% among those under medical supervision. In the mean time, number of patients with HIV diagnosed on late stages (III-IV clinical stages) is on the rise, reaching 53%, as well as AIDS mortality rate.




*[Late diagnose, mortality and coverage of ART]*

**Lessons learned:** Implementation of "90-90-90" strategy, to ensure timely HIV identification, access and adherence to ART, is impossible just with participation of IDD at specialized facilities and health care units. It is of crucial importance to engage primary care physicians and allied professions.

**Conclusions/Next steps:** National strategy on reducing morbidity and mortality from AIDS will ensure:

- Increase of ART coverage;
- Further integration of services;
- Phased and broad involvement of primary health care;
- Institutionalization of educational programs;
- Effective monitoring, evaluation

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## THPEE483

### LINKING HIV TESTING CLIENTS TO TREATMENT AND MEDICAL MALE CIRCUMCISION SERVICES: RESULTS FROM NEW START HTS SERVICES IN FOUR DISTRICTS IN SOUTH AFRICA

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**Background:** The South African National Strategic Plan (2012-2016) recommeded that screening for HIV must take place in multiple settings including communities, workplace, schools and tertiary institutions. The Society for Family Health franchise network New Start, provides mobile and homebased HIV testing services (HTS) to these populations and facilitates their referral and linkage into care, treatment and medical male circumcision (MMC). Clients that require referral services are provided with a referral letter. 48 hours post-referral the coordinator makes follow-up calls to clients, which includes confirming with the clinic to verify effective linkage.
**Methods:** We analyzed 163 445 New Start HTS client referral records from October 2014 to September 2015 from four districts. Statistical analysis for quantitative data was conducted using SPSS version 23 and thematic content analysis was used for open ended qualitative data retrived from the same client records.
**Results:** Overall, 3% (5104/163 445) of all HTS clients were diagnosed HIV positive with 63% (3221) of these being female. Of the positives, 36% (1856) accepted referrals for antiretroviral therapy (ART)/care services, and 80%(1495) of the acceptors completed referrals. Of the HIV positive female clients, 34% accepted referrals as compared to 41% of their male counterparts. 59% of the HIV positive females completed ART referrals compared to 64% of males ( p=0.001).
Of the 4,975 men referred for MMC, 100% accepted referrals and of these 60% completed MMC referrals. Referral completion for MMC was higher among HTS clients reached with mobile services than among clients reached through homebased and static services; 64%, 54%, and 50% respectively (p= 0.035). The main reasons given for not completing referrals were: other competing priorities, being at work, being in school and structural barriers such as lack of transport and psycho-social barriers.
**Conclusions:** Overall these findings show that acceptance of referral to ART among HIV positive HTS clients is low, though referral completion rates are high. Findings also show that referral completion for MMC was low, while referral acceptance was universal Programs should strengthen referrals for MMC services inter alia address identified barriers to referral acceptance and completion.

## THPEE484

### ROLLING OUT OPTION B+ IN MALAWI: CIVIL SOCIETY'S CONTRIBUTION

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**Background:** Option B+ was developed in Malawi in 2010 and adopted in 2011 in response to the impracticality of implementing World Health Organization (WHO) guidelines on prevention of mother-to-child-transmission of HIV (PMTCT) in the country - about 70% of pregnant women were attending antenatal services without reliable CD4+ testing.
Umunthu Foundation works hand in hand with the government to deliver sustainable public health interventions to prevent vertical transmission of HIV through Option B+ in a peri-urban area of Blantyre, where prevalence among pregnant women is higher than the national average.
**Description:** Realizing the important role of civil society to complement the government of Malawi in its efforts to roll out Option B+, Umunthu has focused on strengthening HIV prevention through Option B+ in all its project sites in Bangwe and Limbe, which are included in the 520 health facilities accredited to provide this service.
Project activities include: HIV testing and pre- and post-test counseling for all pregnant women attending antenatal services, providing antiretroviral therapy (ART), collecting blood samples from exposed infants for HIV diagnosis, working with Queen Elizabeth Central Hospital to process results, disclosing results and supporting mothers.
**Lessons learned:** Option B+ has led to an increase in HIV positive pregnant women receiving ART in Bangwe and Limbe and a decrease in the number of babies being diagnosed with HIV. Out of **18,602** pregnant women tested for HIV since 2012, **2,909** pregnant women tested HIV positive and were referred for treatment. Out of **2,909** exposed babies born to HIV positive mothers, only **145** babies tested positive.
**Conclusions/Next steps:** Civil society's contribution in closing the gaps to implement Option B+ has been critical. Umunthu's service delivery, including provision of permanent staff and sustainable HIV test kit supplies, have contributed significantly to the successful roll out of Option B+ in Bangwe and Limbe. The Ministry of Health and Population has awarded the project Certificates of Excellence in HIV testing and ART by for the last 4 years. More work needs to be done to promote adherence and retention for acceptance and community support for ART as treatment for life.

## THPEE485

### OPTIMIZING THE RESPONSE OF PREVENTION AND TREATMENT: ESTIMATION OF THE COSTS OF PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV (PMTCT) IN NIGERIA

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**Background:** HIV burden in Nigeria is heavily borne by women and the national program has responded by, among other actions, expanding Prevention of Mother-to-child Transmission of HIV (PMTCT) services. This intervention requires an integrated 'cascade' of services which can reduce the risk of vertical transmission, and is fraught with challenges that need to be addressed such as: poor domestic funding, donor dependency, and inadequate political willpower at state and local levels, among others. The objective of this work is to estimate average costs of services along the PMTCT cascade of services and to analyze the determinants of efficiency of PMTCT in Nigeria.
**Methods:** A cross-sectional observational study was conducted in Nigeria. A nationally representative sample of 194 facilities was selected, with data collection between December 2014 and May 2015. Applying micro-costing methods, relevant inputs (personnel, supplies, utilities, equipment and property) and output data were collected retrospectively for 2013. Staff costs were computed with self-reported time allocation methods. Quality was captured by administering medical provider-vignettes and patient-exit-interviews.
**Results: :** Average cost per PMTCT client tested was US$ 72; US$ 3,022 per client tested and positive; US$ 3,563 per client on ART; and US$ 4,558 per infant on prophylaxis. 62% of PMTCT costs per client tested were accounted for by staff costs; followed by HIV antiretroviral drugs (12%); HIV test kits (9%); utilities (9%); capital (6%); and training (2%). Costs varied across levels of care, with less cost per client tested in third level of care. Higher numbers of clients were correlated with lower average costs per client tested. The negative relationship between costs and scale explained around 50% of the variability of unit costs.
**Conclusions:** Our findings showed enormous variability in costs and opportunities to increase efficiency across facilities. Due to the high proportion of the overall cost that staff comprises, optimizing human resources allocation is fundamental to increasing efficiency. Expanding the volume of PMTCT services will improve levels of efficiency in the HIV prevention response, as long as acceptable levels of quality are maintained throughout different levels of production.

## THPEE486

### THE INVISIBLE KILLER: A PILOT PROJECT ON CRYPTOCOCCAL MENINGITIS SCREENING, DIAGNOSIS AND MANAGEMENT IN HIGH VOLUME HOSPITALS IN ETHIOPIA

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**Background:** Cryptococcal infection is a leading cause of death among people living with HIV/AIDS (PLWHIV). The mortality from cryptococcal meningitis (CM) in Ethiopia remains high mainly due to late diagnosis. To improve early diagnosis and HIV/AIDS treatment outcomes, the WHO conditionally recommended routine serum or plasma Cryptococcal Antigen (CrAg) screening in ART-naïve adults with a CD4 count < 100 cells/µl in populations with CrAg prevalence >3%. CHAI, in collaboration with MoH & ICAP implemented a pilot cryptococcal screening project using rapid test kits (RTKs) aimed at generating data on CrAg prevalence among patients with CD4 counts < 100 cells/µl and determining the feasibility of using RTKs.
**Description:** The pilot targeted 23 high volume hospitals from June 2015 to June 2016. CHAI in collaboration with MoH and ICAP developed a CM screening algorithm, job aides, testing SOPs, and patient tracking tools. CHAI also procured and distributed CrAg Lateral Flow Assay tests. Sensitization meetings, training, and mentorship were conducted. The pilot further ensured that the RTK proficiency testing yielded accurate results through external quality assurance (EQA) in 14 hospitals. Costing for health commodities was also conducted.
**Lessons learned:** Between June to November 2015 (mid-term analysis), 410 ART naïve adult clients with CD4 count of <100 cells/µl have been tested, of which 34(8.3%) were CrAg positive (Table 1). In addition, a significant proportion (23%) of clients

were enrolled at CD4 counts <100 cells/µl. The EQA indicated 100% concordance for both strong positive and strong negative samples and 92.9% (n=13) concordance for weak positive samples. The cost of managing CM is ten times as high (~$380) as screening and prophylaxis.
**Conclusions/Next steps:** The prevalence of CrAg among ART naïve clients with CD4 count < 100 cells/µl calls for introduction of CrAg screening in HIV chronic care. Despite the increase in the ART eligibility criteria from CD4 350 to 500 cells/µl, data from this pilot indicates that significant number of clients are still presenting late and are therefore susceptible to developing life threatening opportunistic infections, including CM. Screening for CrAg using RTKs is feasible and is also cost saving in resource-limited settings.

## THPEE487

### INVESTIGATING THE STATUS AND BARRIERS TO SCALE UP OF PAEDIATRIC PROVIDER-INITIATED TESTING AND COUNSELLING IN MALAWI

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**Background:** Malawi's paediatric HIV coverage at 49% lags significantly behind adult coverage at 67%, and an estimated 50,000 children living with HIV who are in need of antiretroviral therapy (ART) remain untreated. Identifying all HIV+ children and linking them to treatment is critical to achieving the UNAIDS 90-90-90 targets. Malawi has had a provider-initiated testing and counselling (PITC) policy since 2009; however, a large number of children remain undiagnosed. An assessment was conducted to review the performance and uptake of paediatric PITC, understand the quality of services provided, and identify barriers and potential solutions to increase uptake.
**Methods:** A mixed methods assessment was conducted in 2015 at 38 facilities in six districts prioritized by high estimated paediatric treatment gaps. Quantitative data was collected through reviews of HIV testing and counselling (HTC) and admission registers from 2014 in outpatient, inpatient and nutrition wards. Qualitative data was compiled through surveys with HIV Service Providers (clinicians, HTC counsellors, EID and ART focal persons) about their experience with paediatric PITC and infant testing.
**Results:** Across all facilities, a median of 1.1% of children receiving outpatient or inpatient health services were tested via PITC, and a median of 6% of children tested positive. In facilities with inpatient wards, a median of 7% of admitted children were tested via PITC, with 10.4% testing positive. Paediatric testing efforts have been mainly focused on the exposed infant population through the PMTCT programme: among all children 12 months to 14 years tested via PITC, 55% were 12-24 months (4.0% yield) and 23% were 5-14 years (13.1% yield). The majority (66%) of clinicians believed they were not as effective at providing paediatric PITC as they could be, the top two reasons stated being lack of training (54%) and high workload (29%).
**Conclusions:** The assessment demonstrated that paediatric PITC uptake in Malawi is extremely low and needs to be strengthened to scale-up paediatric ART coverage and improve health outcomes. The assessment results informed the development of the Malawi 2016 HIV Testing Services guidelines, ensuring an adequate focus on paediatric case finding strategies, and will be used to inform the operationalization of HIV testing strategies.

## THPEE488

### TARGETED SPONTANEOUS REPORTING: SCOPING OPPORTUNITIES TO CONDUCT ROUTINE PHARMACOVIGILANCE FOR ANTIRETROVIRAL TREATMENT ON AN INTERNATIONAL SCALE

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**Background:** Increasing numbers of HIV-infected people receive antiretroviral treatment (ART), driving a need to enhance global drug safety monitoring. Targeted Spontaneous Reporting (TSR) is a cost-effective pharmacovigilance method that has great potential to enhance reporting of ART-related adverse events. However, as a new pharmacovigilance approach, the feasibility of TSR, notably in low- and middle-income countries (LMICs), is unknown. Using data from the International epidemiologic Databases to Evaluate AIDS (IeDEA) Consortium, we sought to 1) develop a list of facility characteristics that constitute key assets in the conduct of TSR, and 2) describe the existing capacity of IeDEA-participating facilities to conduct TSR.

| Category | Variables | Rationale | Overall Capacity of Included Facilities, Total n=137 |
|---|---|---|---|
| Outcome Ascertainment and Follow-up | • Follow-up of individuals receiving medications, including key populations such as pregnant women and children; • Presence of an outreach program; • Ascertainment of deaths; • Patient fees | Patients lost to follow-up are a source of selection and ascertainment bias in evaluation of adverse events (AEs). The ability to know and document outcomes among key populations like pregnant women and children is especially important. Service fees can inhibit patient retention in care and routine ordering of laboratory tests and other services that can identify AEs. | Follow up key populations: • Pregnant women: 43.1% • Children (HIV exposed and/ or infected): 56.2% Presence of an outreach program: 53.3% Active outreach (including phone calls and home visits): 80.3% Patients do not have to pay for laboratory tests: 73% |
| Laboratory Monitoring | • Availability and turnaround time of lab tests (e.g., HIV RNA, HIV DNA, CD4 count, Hemoglobin, Total lymphocytes, ALT/ AST, Creatinine, and Lactate) | Laboratory information including baseline and follow-up testing is necessary for detection, identification, and confirmation of AEs. | On site availability of: • HIV RNA PCR: 32% • CD4 Count: 52.6% • Hemoglobin: 72.3% • Total lymphocyte count: 52.6% • ALT/AST: 51.1% • Cholesterol: 41.6% • Creatinine: 51.8% • Lactate: 33.6% Turnaround time range: <1 -100 days |
| Documentation: Sources and Management of Data | • Unique patient identifiers, • Presence of an electronic database, • Medical history, • History of opportunistic infections (history and follow-up), • Cancer history, • Linkage to pharmacy database, • AEs and their outcomes, • Classification system for AEs and use of standard definitions, • Availability of internet | These data are needed to identify AEs, support TSR activities, and link clinical and pharmacy visits to understand patterns of drug use and their association with AEs. Critical information includes a unique identifiable patient, their medical history and clinical status at follow-up to document any changes, standardized text on data capture instruments. Longitudinal patient data including medication, clinical and AE data are needed to appropriately classify AEs and report the outcomes. | Patients given a unique ID for tracking purposes: 83.2% Use of an electronic database (on site or use of data center): 83.2% Monitoring of opportunistic infections (at each visit until resolved): 62% Linkage to pharmacy data;: 34.3% Adverse events recorded: 73.7% |
| Human Resources | • Availability of physicians, pharmacists, pharmacy assistants and data recorders (to record AEs) | Core clinic staff are required to identify, capture and report AEs | Full time pharmacist: Median: 1 per weekday (Range: 0-32) Pharmacy assistants: Median: 1 per weekday (Range: 0-32) Physician to assess events: Median 2 per weekday (Range: 0-30) Data capturer: Median 1 per weekday (Range: 0-32) |

*[Rationale for characteristics explored and capacity of included IeDEA facilities]*

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**Methods:** Our facility characteristics list was generated through a literature review and consultation with expert stakeholders and was used to describe the capacity for conducting TSR. IeDEA facility data were drawn from a 2009/2010 site assessment that included reported characteristics of adult and pediatric HIV care programs including outreach, staffing, laboratory capacity, adverse event monitoring and pharmacovigilance, and non-HIV care. Descriptive statistics and frequency calculations of characteristics were explored by region and overall category.
**Results:** We included 137 facilities from: East Africa (43), Asia-Pacific (28) West Africa (21), Southern Africa (19), Central Africa (12), Latin America (7), and North America (7). Key facility characteristics were grouped into those related to Outcome Ascertainment and Follow-up; Laboratory Monitoring; Documentation: Sources and Management of Data; and Human Resources. Based on the reported presence of key facility characteristics, most facilities had adequate structures in place to support TSR, including clinics in LMICs.
**Conclusions:** There is a large existing capacity to conduct TSR. With a few enhancements, especially related to data collection specific to adverse events, TSR could become a standard component of facility activities.

## THPEE489

### WHAT HAPPENS WHEN PREP IS IMPLEMENTED? EXPERIENCES OF A HIGH VOLUME COMMUNITY-BASED LGBT ORGANIZATION IN NEW YORK CITY

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**Background:** Following the FDA approval of Truvada for Pre-Exposure Prophylaxis (PrEP) in July 2012, Callen-Lorde Community Health Center (CLCHC) implemented what would be one of the first and largest PrEP programs in the United States.
**Description:** In 2015, CLCHC delivered 1,050 PrEP prescriptions to patients interested in HIV prevention. An average of 87 patients were prescribed PrEP each month. 77% of patients self-referred for PrEP,14% transitioned to PrEP after completing post-exposure prophylaxis, 4% continued PrEP after participation in a demonstration project, and 5% reported being in an open and/or serodiscordant relationship as a reason. PrEP clients were 18-77 years, with 43% between 28 and 37 years; 32% < 27. The racial distribution was diverse: 58% White/Caucasian, 12% Black and 22% Hispanic/Latino ethnicity. PrEP was accessed via private insurance (57%), public insurance (26%) and by uninsured patients (17%) utilizing medication assistance programs.
**Lessons learned:** Upon implementation of the program there was high demand for PrEP. Medical staff required dedicated training to manage complex and constantly changing insurance requirements. Uninsured patients had to be linked to medication assistance programs or low/no cost health insurance plans. Insured patients encountered challenges due to high copayments, insurance denials or mandatory mail order delivery programs. Some programs delivered medication to our clinic, which necessitated ongoing tracking and distribution by our staff. The impact on clinic flow was minimized by sharing the tasks of the PrEP visit with a team of providers, testers, nursing and PrEP specialists. New protocols were developed, including one that facilitated patient self-swabs for STD screening. Patient navigation was a key aspect of our program, as was interdepartmental cooperation.
**Conclusions/Next steps:** As scale-up of PrEP continues, clinics considering implementing PrEP programs need to be prepared for high demand and proactively put systems into place to facilitate patient access, including strategies to deal with complex insurance issues, tracking of patients and quality assurance.

## THPEE490

### 'MIND THE GAP': PROGRESS TOWARDS IMMEDIATE ART INITIATION FOR ALL UK PERSONS LIVING WITH DIAGNOSED HIV, 2005 - 2014

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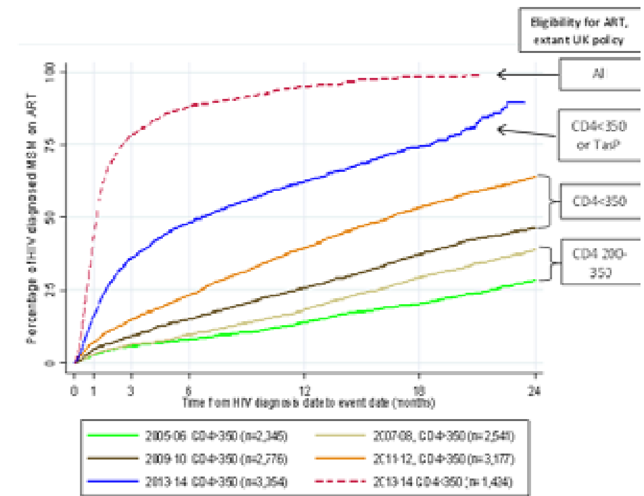
**Background:** The benefit of treatment as prevention (TasP) will be greatest with immediate ART initiation upon HIV diagnosis. Successive UK guidelines have promoted earlier ART initiation. We compare the cumulative probability of initiating ART by years in a cohort of new early HIV diagnoses (CD4 ≥350) to show the progress produced by changing policies. The opportunity remaining is demonstrated by comparison with what is currently achieved for new late HIV diagnoses (CD4 < 350), where universal ART is recommended.
**Methods:** Multiple ascertainment systems including annual follow-up ensures comprehensive data are available for UK HIV cases. Average linkage to care is 90% and virological suppression is 95% of those on treatment. All 49,683 new HIV diagnoses from 2005-2014 linked to care were analysed.
We conducted a Kaplan-Meier analysis of time from HIV diagnosis date to either ART start date or death, or last care attendance date if not on ART by CD4-cell count at diagnosis (< or ≥350) and bi-annual year of diagnosis.
**Results:** The cumulative probability of initiating ART by 12 months following HIV diagnosis among people with CD4≥350 increased over time from 21% in 2005/6 to 62% in 2013/14 (Figure 1). This trend was sustained over 24 months, though the greatest difference between probabilities initiating happened before 6 months. The increase was greater than among those initiating with < 350 (76% in 2005/6 and 95% in 2013/14). In 2013/14, an additional 33% had started ART by 12 months under universal treatment among CD4< 350 compared to TasP among CD4≥350.




*[Kaplan-Meier estimates of time to ART start for bi-annual HIV diagnosis groups, CD4 count and extant ART start policy - UK HIV diagnoses 2005-2014]*

**Conclusions:** UK ART policy changes have led to a substantial shortening of the average time to start ART, with most of this improvement happening in the initial 6 months after diagnosis. There remains considerable opportunity to shorten the time further, possibly through offering universal ART regardless of CD4 count.

## THPEE491

### PREPARING FOR HIV TESTING AND COUNSELING SCALE UP: HIGH-YIELD RAPID ASSESSMENT FOR PLACEMENT OF A PILOT CADRE OF DEDICATED HTC COUNSELORS IN MALAWI

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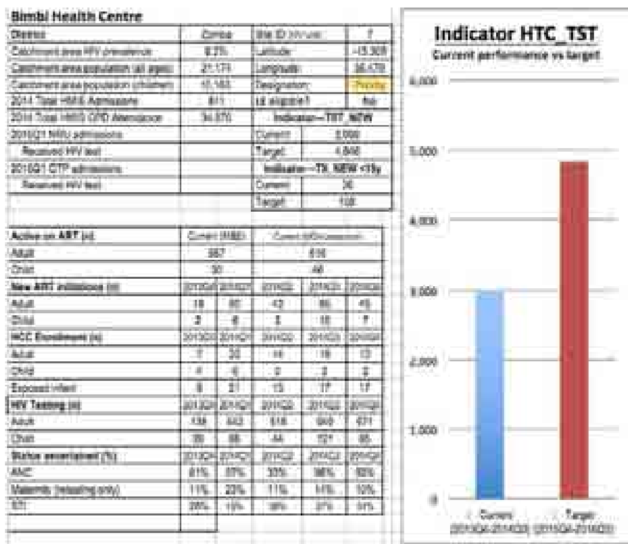
**Background:** Despite rapid progress, only 31% of children living with HIV are on antiretroviral therapy (ART). Since HIV testing is a key entry point, the Malawi Ministry of Health (MOH) recommended establishment of a dedicated cadre called HIV Diagnostic Assistants (HDA), responsible for facility-based HIV testing. Our program was asked to pilot the HDA cadre at 124 new sites in the southeast zone of Malawi to increase testing and treatment. The degree of expansion and lack of familiarity with the region demanded a rapid but thorough evaluation before implementation.
**Description:** We conducted a rapid site assessment of 124 health facilities in six districts to evaluate baseline rates of HIV testing and treatment and barriers to scale-up. Teams including a clinician, M&E, program staff and MOH representative visited two facilities a day on average. Teams assessed human resource, infrastructure, and commodity needs. Sites were evaluated through semi-structured interviews with facility managers and a collection of predetermined observations. Summary measures were tabulated and entered into a database that generated an automated facility-level dashboard for each site. The exercise took six weeks.




[Figure 1. Example of baseline site dashboard produced by assessment]

**Lessons learned:** Use of comprehensive but concise tools geared towards rapid assessment allowed efficient collection of key data. Prompting same-day tabulation of key measures allowed rapid and clear feedback. Definitions of common terms must be standardized to allow reproducible measurement of staffing needs; for example using "dedicated HTC counselor" to describe staff whose core responsibility is HIV testing, instead of "HTC counselor" which describes anyone trained to conduct testing regardless of contribution to testing coverage.
**Conclusions/Next steps:** Assessment results are guiding placement of recruited dedicated pilot HDAs according to ministry TORs. As recruitment proceeds, training on PITC for all facility staff will be expanded. The use of automated facility-level dashboards will continue using a combination of data sources to monitor progress and allow real-time feedback to staff.

## THPEE492

### PROJECTING HIV HERD IMMUNITY THROUGH HIGH ART COVERAGE AND VIRAL LOAD SUPPRESSION IN KWAZULU NATAL, SOUTH AFRICA

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**Background:** KwaZulu Natal "in the past twenty three (23) years has recoreded the highest HIV
prevalence among the 15 - 49 year olds which has remained stable at 37.4% in 2011 and 2012" SANDoH. To succeed in meeting the global target of zero new HIV infections systems had to be put in place. The province has the highest numbers of clients remaining in ART care in the country having recorded 1 039 511 patients at 31 December 2015 (DHIS).
**Description:** A retrospective quantitative provincial HAST program data review was conducted in January 2016 to establish ART coverage in the province and identify areas with high proportions of new clients testing positive. An instantaneous hazard will be used with the Weibull function to determine the hazard of time since eligibility for treatment. From 2008 scale up strategies had been recommended to improve ART coverage, followed by the nurse initiated ART in 2010 and the high transmission interventions in 2011. ART services had evolved from hospital based services to primary health care and now the province is piloting community based models using mobile services.
**Lessons learned:** The province recorded 262 023 new HIV positive tests of which 160 237 were non pregnant females and 101 773 were males. this cohort had 2 697 HIV positive tests for children aged 19 to 59 months, 3 641 in the age group 5 - 14 years 239 017 for 15 - 49 years and 10 078 for people older than 50 years. Only 222 233 patients were started on ART during the same period. This indicate that the rate of new infections is still higher than the rate of putting patients on treatment.
**Conclusions/Next steps:** It is projected that if new HIV infections are to be averted 90% of PLHIV would have to be put on treatment and be virally suppressed. 87.8% viral load suppression at 12 months in December 2015 for patients who were done viral load tests which is 40% of the targeted cohort was recorded. Districts have implementation plans (DIP) to improve percentages of viral loads done to be able to achieve ART impact on HIV prevention.

## THPEE493

### PRIORITY FAST TRACKING HIV RESPONSE IN WEST AND CENTRAL AFRICA TO HALT HUMAN AND MEDICAL CONSEQUENCES OF LOW ARV COVERAGE

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**Background:** While access to HIV treatment expanded worldwide, Médecins Sans Frontières (MSF) witnesses first-hand serious delays in scale-up in West and Central Africa (WCA), where only one in four people living with HIV (PLHIV) have access to treatment and only 15% of children, much below average coverage in Southern Africa. The region accounts for 18% of all PLHIV, 45% of children born with HIV, 21% of new infections and one third of AIDS related deaths. Without urgent acceleration for the region, worldwide plans to reach the 90-90-90 targets by 2020 are in jeopardy.
**Description:** We investigated key obstacles for expanded antiretroviral treatment (ART) initiation and retention in care in WCA, focusing on contexts where MSF provides HIV services, including three in-depth case studies (DRC, CAR, Guinea). Systematic review of key indicators for ART coverage, enabling factors and strategies including alternative models of care was done.
**Lessons learned:** Recurrent crises compound problems, but backlog relates mainly to pre-existing health system problems. Integrating HIV care within weak health systems without ensuring equitable access undermines effective, timely and quality HIV-services. Early initiation and retention in care is hampered by frequent stock-outs, financial barriers and lack of staff motivation. Relatively lower HIV prevalence decreases priority for government and international actors. Global Fund is main or only funding source. Reluctance to task shifting, lay counsellors, longer periods of drug refills, community approaches etc. prevail. Pressure from patient associations is weak, with insufficient support to groups advocating for PLHIV's needs and rights, combating stigma and monitoring access barriers.
**Conclusions/Next steps:** Countries with biggest treatment gaps and most urgent unmet needs have proportionally less benefited from effective scale-up strategies. Governments and international actors need to step up fast track responses to close treatment gaps by adapting existing approaches. Urgent mobilization of all health actors is needed to mitigate barriers to ART initiation and adherence, including ensure HIV testing and treatment free of charge for all PLHIV, decentralised &simplified ART provision, task-shifting, guaranteeing uninterrupted supply of HIV-commodities. Prone to crises or instability, relevant and regularly updated contingency plans need to be developed and implemented to ensure continued treatment and enrolment.

## THPEE494

### POC CD4 IMPROVES EFFECTIVE REFERRALS FROM COMMUNITY TO CLINICAL SETTINGS IN LESOTHO

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**Background:** Lesotho has a generalized HIV epidemic with an adult prevalence of 23%. Despite this high HIV burden, majority, 84% of women and 63% among men ever tested for HIV, and of those who test positive, only 52% of females and 48% of males have been linked to care. A number of studies have examined the impact of facilitated referrals on linkage to care, but few have looked at the impact of POC CD4 testing using country specific program data.
**Description:** We conducted a retrospective analysis of 42,605 records of clients 2 years and older, seen between October 2014 and September 2015, through our mobile HTC, home-based and static sites. For each client, data collected included client's demographics, HIV results and referrals, testing history and uptake of non-communicable diseases. In late 2013, PSI/Lesotho integrated 15 PIMA machines into counselling sessions to improve effective referrals. Machines were used during mobile, home-based and static sites. From a total of 30 counsellors working from these channels, only 15(50%) had access to PIMA while the rest had to refer to nearby clinics or their colleagues. In this case, effective referral is defined as newly diagnosed HIV-positive client from the CDC-funded New-Start project who successfully completed referral to HIV-care by means of referral slip or PRE-ART enrollment within 3 months of diagnosis.

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**Lessons learned:**

| Channel | Total positive | CD4 uptake | Referral acceptance | Effective referral |
|---|---|---|---|---|
| Static site | 521 (8.9%) | 260 (49.9%) | 510 (97.9%) | 305 (59.8%) |
| Mobile HTC | 2150 (8.9%) | 1294 (60.2%) | 2092 (97.3%) | 1318 (63%) |
| Home-based HTC | 733 (5.9%) | 386 (52.7%) | 686 (96.6%) | 437 (63.7%) |
| Total | 3404 (8%) | 1940 (57%) | 3288 (96.6%) | 2060 (62.7%) |

*[Table1: HIV-positive yield, CD4 and referral uptake: Oct2014-Dec2015]*

Almost 74.2% with CD4 testing completed referral cycle compared to only 46% amongst those without CD4 testing (p< 0.001). About 78.2% of those with less than 500 CD4 count completed referrals compared to 66.8% among those with higher CD4 count, 500 and above (p< 0.001).
**Conclusions/Next steps:** A higher proportion of those receiving POC CD4 count were successfully linked to HIV care. Overall, these findings support deployment of more PIMA machines particularly at mobile and stand-alone HIV testing services where there are more HIV positives.

## THPEE495

### HUMANA PEOPLE TO PEOPLE (HPP) DEMONSTRATED ENHANCED, TIME-BOUND TESTING COVERAGE, LINKAGE TO CARE AND TREATMENT THROUGH HOME-BASED HTC THAT REACHED LARGE NUMBERS OF TARGETED POPULATION IN ZAMBIA AND SOUTH AFRICA

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**Background:** 90-90-90 treatment targets have evolved to drive massive upscaling of HIV testing & ART coverage by 2020. The primary requirement to achieve those targets is to bring larger volume of population under HTC services, knowing their status within shorter span of time, refer and link to ART. HPP has through its members a strong global presence in the field of HIV, and has demonstrated enhanced and time-bound testing coverage through home-based HTC in Zambia and South Africa.
**Description:** HPP has implemented TCE (Total Control of Epidemic) for the last 15 years and demonstrated the effectiveness of house-to-house, one-on-one intensified screening, risk assessment, mobilizing for and scaling up HTC. TCE in Zambia and South Africa have carried out home-based HTC services to bring larger amount of the local population under testing coverage. In Zambia 96,000 people were tested through home-based HTC services within a catchment population of 350,000 in Lusaka (28% of total population) between Apr - Sept'15 (average monthly coverage 16,000 or 5% of catchment population) with detection of around 10% sero-positivity. Of the 9,710 people who tested HIV positive in the catchment areas in Lusaka 6,424 completed linkage within 6 months or 66%. HPP tested 72,375 people with home based HTC in three sub-districts of South Africa between Mar'15 - Sept'15 with sero-positivity (6% East London, 7% Nelson Mandela Bay and 10% in Govan Mbeki).
**Lessons learned:** Home-based HTC is operationally feasible within the time-bound approach of the TCE strategy where the uptake of testing services with immediate referral to care and treatment of people tested HIV positive can be rapidly augmented within the families in absence of stigma and prejudices.
**Conclusions/Next steps:** HPP advocates for home-based HTC followed by high level of linkage to care and treatment to make it an integral strategy to achieve 90-90-90 treatment targets focusing chiefly on key population in HIV high burden countries.

## THPEE496

### MOBILE CLINICS FOR SCALE UP OF HIV CARE AND TREATMENT IN RURAL MOZAMBIQUE

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**Background:** Mozambique has one of the world's highest rates of HIV, with a prevalence of 11.5%. Human resource and infrastructure shortages limit access to care for Mozambique's rural poor. The National HIV/AIDS Response, launched in 2013, promotes massive scale-up of antiretroviral therapy (ART) over three years. Consequently, EGPAF initiated the mobile health clinic (MHC) program in Gaza province. This evaluation seeks to look at the contribution and effectiveness of MHC in reaching programmatic goals.
**Description:** In 2013, three EGPAF-supported MHCs began operating in three southern districts where people living with HIV and AIDS were estimated to number 93,050. Each MHC, comprised of one clinician, one nurse, two counselors, and one driver visits eight peripheral health centers (PHCs) every two weeks. MHCs provide comprehensive HIV services, most notably prevention of mother-to-child transmission and care and treatment, including access to drugs and point-of-care CD4-count machines, which were not previously available at PHCs. These teams also provide technical assistance and mentoring to PHC staff. The fractions of MHC-provided services in the three covered districts were compared for the years 2013 and 2014.
**Lessons learned:** Each period shows wider geographic coverage and significant contribution of MHCs in reaching new populations. MHCs also reach areas where treatment access was previously limited; and the bimonthly visits have created a strong supply chain for drugs. The multidisciplinary MHC training at PHCs has resulted in improved quality of services as well as the capability to function independently in the future. For example, in 2014 the uptake of cotrimoxazole prophylaxis (90% vs 80%, respectively) and CD4 cell counts within 1 month of new client enrollment (72% vs 62%, respectively) was higher among MHC clients than fixed site clients. Also, loss to follow-up was lower among MHC clients.

| Indicators | 2013 MHC Percent Contribution (MHC clients/ MHC+Fixed site clients) | 2014 MHC Percent Contribution (MHC clients/ MHC+Fixed site clients) | p-value for MHC contribution change from 2013 to 2104 |
|---|---|---|---|
| HIV-positive adults and children receiving at least one clinical service | 9.9% (3,311/33602) | 18.9% (7644/40405) | <.0001 |
| New HIV clinical care patients enrolled | 20.9% (3096/14838) | 34.5% (5098/14768) | <.0001 |
| Adults and children newly enrolled on ART | 14.9% (1202/8088) | 32.5% (3351/10322) | <.0001 |
| Adults and children currently receiving ART | 7.8% (1370/17491) | 19.7% (5065/25731) | <.0001 |

*[MHC Contribution to Total Clients Served in 3 Southern Districts of Gaza, 2013-2014]*

**Conclusions/Next steps:** MHCs efficiently allow for rapid HIV C&T expansion to remote populations and improved on-site capacity of PHCs, even with significant geographic and economic barriers. Next steps include continued evaluation and identification of sites ready to transition to fixed service sites.

## THPEE497

### RAISING DOMESTIC RESOURCES THROUGH THE PRIVATE SECTOR FOR HIV CARE AND TREATMENT WITH HEALTH INSURANCE IN KENYA

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**Background:** In order to achieve the 90-90-90 goals, rapid scale-up of HIV care and treatment is imperative in sub-Saharan Africa, a challenge in a global climate of stagnant donor resources for HIV. Kenya's private health sector (PHS) plays a significant role in the delivery of the nation's health services. Fifty-one percent of all health facilities are in the PHS, 40 percent of total health financing is from private sources, and the PHS provides ART for 24 percent of HIV positive clients accessing treatment. However, only 17 percent of Kenyans have health insurance, and private funding for HIV declined from 28 percent in 2009 to 7 percent in 2013.
**Description:** Mobilizing private financing for health via insurance mechanisms can increase sustainable access to HIV care and treatment via PHS sources, simultaneously increasing domestic financing for HIV. Under the USAID-funded SHOPS project, Abt Associates implemented a four year multipronged approach to increase sustainable uptake of HIV services via insurance coverage. First, SHOPS focused on strengthening insurers to sustainably deliver improved insurance products incorporating HIV services. Second, health facilities and private providers were engaged to strengthen their ability to accept insurance in serving PLHIV, while also addressing the cost and quality of services. Third, SHOPS utilized data from multiple sources, both financial and epidemiological, to understand the profile of PLHIV who could afford insurance and conducted a survey to better define the knowledge of insurance among low-income clients. Finally, SHOPS increased the distribution of insurance among PLHIV by promoting the sale of two insurance products and supporting an insurance knowledge campaign.
**Lessons learned:** SHOPS succeeded in increasing insurance coverage for over 20,000 lives, demonstrated an increase in understanding of insurance products among target beneficiaries by over 7 percent, and resulted in reduced costs in claims processing for PHS providers by approximately 17 percent.

**Conclusions/Next steps:** Engagement with the PHS to address issues across stakeholders is critical to increase domestic funding for HIV and ensure PLHIV can access care and treatment. SHOPS's experience identifies opportunities for continued engagement, the demand for insurance products that meet the needs of PLHIV, and the strengthening of insurance companies as partners to achieve 90-90-90.

## THPEE498

### UNIVERSAL HIV RAPID-SCREENING OF PREGNANT PATIENTS ADMITTED FOR DELIVERY: A COST-EFFECTIVENESS ANALYSIS

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**Background:** Maternal to child transmission (MTCT) of HIV is largely preventable through screening and antiretroviral treatment, including maternal and neonatal prophylaxis, and Cesarean delivery (CD) for high or unknown viral load. Given the high prevalence (1.9%) and incidence (0.087%/year) of HIV among reproductive-age women in Washington D.C., our medical center recently implemented universal HIV rapid-screening of patients admitted for delivery in an effort to diagnose patients who were not previously screened or who seroconverted during pregnancy, to decrease MTCT.
**Methods:** We hypothesized that universal HIV screening would be cost effective in a high HIV prevalence and incidence area, such as D.C. We conducted a cost-effectiveness analysis to compare cost and quality-adjusted of life-years (QALYs) of our universal screening strategy with the two current alternative standards of care (1.Rapid screening for patients without screening in the third trimester; 2.Rapid screen for patients without any prenatal screening). Costs included materials and services of HIV rapid testing, associated treatments and delivery modes, and lifetime medical costs of treating perinatally-acquired HIV. We applied a 3% discount rate for the measure of QALYs. We obtained reference parameters, including cost information, incidence and prevalence data, from the D.C. Department of Health, published expert opinions, and medical literature. We developed a decision model taking into consideration HIV prevalence and cumulative incidence, HIV screening during prenatal care, sensitivity and specificity of HIV testing, CD rate, and risk of vertical transmission in different scenarios. Sensitivity analyses estimated the impact of variances in QALYs, estimated lifetime medical costs, HIV prevalence and cumulative incidence.
**Results:** The incremental cost-effectiveness ratio for universal screening was $15,801/QALY, compared with standard 1. Standard 2 was inferior to standard 1 in both effectiveness and cost, and was therefore excluded from further analysis. The results remained robust to sensitivity analysis. In areas with annual cumulative incidence rate of < 0.04% (i.e. < half the rate in Washington, D.C.) the incremental cost-effectiveness ratio for the expanded program would exceed $53,802/QALY, and exceed commonly applied cost-effectiveness thresholds.
**Conclusions:** Universal rapid HIV screening to decrease MTCT in patients admitted for delivery appears cost effective in Washington D.C. and populations with high HIV incidence.

## THPEE499

### MORTALITY AMONG CHILDREN AND ADOLESCENTS BEFORE INITIATION OF ART IN CENTRAL KENYA

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**Background:** The HIV epidemic has had a negative impact on child and adolescent survival and mortality. Prior to recent changes in guidelines for initiation of ART, children and adolescents ART initiation was based on several immunological and clinical criteria. We reviewed data of patients who died prior to initiation of ART in Central Kenya.
**Methods:** A cross-sectional analysis of mortality data of pre-ART children and adolescents aged 0-19 years from 39 facilities between 2012 and 2015 in Central Kenya. Data was collected from patient medical records and validated with electronic medical records. Descriptive statistics were used to analyze the data.
**Results:** Data from 105 pre-ART patient aged 0-19 years was analyzed. Of these, 15% were between 0-23 months, 20% between 24-59 months, 20% between 5-9 years, 28% between 10-14 years and 17% between 15-19 years. Half of these were female (50%). Most of the patients (80%) were at WHO stage I at enrolment and 60% at death. Median CD4 count was 555 cells/mm3 at enrolment and 593.5 at death. Majority (82%) developed opportunistic infections prior to death with tuberculosis being most common at 23%, wasting (20%) and pneumonia (12%), candidiasis (5%) and cryptoccocosis (2%). Of the under 5 years, z-scores were available for only 20% of the patients, with 75% of these reported as moderate or severe wasting. The mean time-to-death from initiation of care was 24.7 months, with 7.7 months among infants less than 23 months, 13.1 months among children aged 24-59 months, 18.2 months among children aged 5-9 years, 39.1 months for 10-14 years olds and 37.2 months for those between 15-19 years.
**Conclusions:** Early mortality is commonest among those aged below five years and TB and wasting the commonest co-morbidities. These findings support intensive case finding for TB and current WHO recommendations to initiate ART in all children aged below 5 years regardless of CD4 count.

## THPEE500

### MORTALITY AMONG CHILDREN AND ADOLESCENTS ON ART IN CENTRAL KENYA

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**Background:** The scale up of antiretroviral therapy among children and adolescents has resulted in decline in HIV related mortality in Sub-Saharan Africa. However, late presentation, late initiation of antiretroviral therapy (ART), malnutrition and co-morbidities affect survival even among those already on ART. We describe clinical characteristics and time interval to death of children and adolescents who died while on ART at HIV clinics in Central Kenya.
**Methods:** A cross-sectional analysis of mortality data of children and adolescents aged 0-19 years from 39 facilities in Central Kenya, who initiated ART between 2012 and 2015. Data was collected from patient medical records and validated with electronic medical records of patients who died at the health facilities. Descriptive statistics was used to analyze abstracted data.
**Results:** Data from 55 children and adolescents who died while on ART was analyzed. Of these, 22% were aged 0-23 months, 24% were 24-59 months, 22% were between 5-9 years, 18% between 10-14 years and 15% between 15-19 years. Of these 49% were female. Most of the patients were in WHO stage I and II at diagnosis and death (54% v 53% respectively). Median baseline CD4 count at initiation was 300 cells/mm$^3$ compared to 361.5 cells/mm$^3$ at death. Majority of the patients (91%) had opportunistic infections before death with the most common being tuberculosis (TB) at 35%. HIV wasting, pneumonia, cryptococcosis, and candidiasis occurred in 24%, 13%, 5%, and 4% of the patients respectively. Documented z-scores amongst 23% of the under 5s indicated moderate to severe wasting in 92% of the patients. Mean time-to-death was 29.7 months but varied by age group with 9.3 months among 0-23 months, 19.5 months between 24-59 months, 41.8 months for 5-9 year group, 30.1 months for 10-14 year group and 23.6 months for 15-19 year group.
**Conclusions:** Tuberculosis infection and wasting were most common predictors of mortality among children and adolescents who died while on ART. Time to death was least among infants, children under 5 years and late adolescents aged 15-19 years. We recommend targeted follow-up tailored to age categories and intensified screening and management of tuberculosis and wasting of children and adolescents.

## THPEE501

### ANTIRETROVIRAL DRUG TOXICITY IN HIV-INFECTED PATIENTS STARTING THERAPY: A RETROSPECTIVE ANALYSIS OF TIME TO TOXICITY AND REGIMEN TYPE

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**Background:** Prolonged ART is necessary to sustain morbidity and mortality benefits. Toxicity may develop use. We determined survival time from ART initiation to toxicity development.
**Methods:** A retrospective analysis of patients on follow-up for five years since ART initiation at 25 Ministry of Health facilities was done. The primary predictor variable was initial ART regimen while age, sex, and CD4 count at ART initiation were confounders. Data were abstracted from an electronic database,Kaplan Meier used to estimate survival time and Cox regression analysis for multivariate analysis. Censoring variables for the study were death within follow up time, LTFU, TO, Stop of ART for reasons other than toxicity and follow-up for 5 years without toxicity.
**Results:** Of the 26,699 patients, 11.3% were children below 15 years, 34.4% were male and mean age was 34.2 years. Median follow up time was 11.7(IQR 2.4 - 29.2)

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months and 9.5% developed toxicity. The mean CD4 at ART initiation was 186.6 cells/mm³. The starting ART regimens were stavudine-based given to 36.4%, tenofovir- based to 31.4%, zidovudine-based to 20.3%, abacavir-based to 5.7% and non-standard regimens to 6.2% of the patients. The overall unadjusted mean survival time from ART initiation to toxicity development was 51.0 months (95% CI: 50.8, 51.4). Time to development of toxicity among patients on stavudine was 48.9 (95% CI: 48.5, 49.4), non-standard regimens 51.3 (95% CI: 49.7, 52.9), tenofovir, 54.4 (95% CI: 53.4, 55.3), abacavir, 55.3 (95% CI: 54.0, 56.5) and zidovudine, 55.4 months (95% CI 54.8, 56.0). Adjusting for age, sex and CD4 at ART initiation, patients on non-standard regimens and stavudine were more likely to have a shorter time to toxicity development compared to patients on tenofovir with a hazard ratio (HR) of 1.6 (95% CI 1.3, 2.1) and 2.1 (95% CI 1.8, 2.5) respectively. The relative hazards for development of toxicity for patients on abacavir compared to patients on tenoforvir was marginally significant, HR 1.4 (95% CI 1.0, 2.0). There was no statistical difference in time to development of toxicity for patients on zidovudine compared to patients on tenofovir.

**Conclusions:** Toxicity following prolonged ART developed earlier in patients on non-standard and stavudine based regimens.

# INTERVENTIONS TO ADDRESS GAPS AND OPPORTUNITIES IN ALL STEPS ALONG THE HIV PREVENTION AND CARE CONTINUA

## THPEE502

### A CLUSTER-RANDOMIZED TRIAL TO PROMOTE COMBINATION HIV PREVENTION USING MHEALTH-SUPPORTED CHWS IN A HIGH-PREVALENCE FISHING COMMUNITY: DESIGN AND BASELINE CHARACTERISTICS OF THE MLAKE TRIAL IN RAKAI, UGANDA

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**Background:** Novel, intensive, yet economical approaches, are needed to increase combination HIV prevention uptake in high-prevalence, localized epidemics. We designed and initiated a household-based, mHealth (mobile phones for health) supported community health worker (CHW) intervention and are evaluating its impact in a cluster-randomized trial (mLAKE: mHealth Lakefolk Actively Keeping Engaged) in a high HIV prevalence Lake Victoria fishing community in Rakai, Uganda.

**Methods:** The study setting has an adolescent/adult HIV seroprevalence of 36%. The community was divided into 40 clusters. 10 CHWs were trained to use motivational interviewing-informed methods to increase uptake and adherence to HIV prevention and treatment services. A mHealth smartphone application was designed for CHW use to expedite and structure their counseling approach. The intervention was nested within the Rakai Community Cohort Study (RCCS) which conducts detailed interviews with all consenting residents and collects samples for HIV and viral load testing at ~18 month intervals. Using RCCS data, baseline study arm characteristics were compared and study power calculated.

**Results:** In September 2015, 40 clusters containing 2088 RCCS participants were randomized 1:1 to intervention and control arms (intervention arm n=996; control arm n=1092). Baseline characteristics were balanced between arms, including primary study outcomes (see Table).

| Characteristics [1] | Intervention Arm | Control Arm | MDD Ratio [5] |
|---|---|---|---|
| Age, mean (IQR) | 30.8 (7.7) | 30.0 (7.9) | - |
| Cluster size [2] | 49.8 (12.4) | 54.6 (10.2) | - |
| HIV Prevalence [3] | 37.5 (10.1) | 35.4 (9.9) | - |
| Male [3] | 48.9 (10.2) | 53.5 (9.3) | - |
| HCT Coverage [3] | 99.1 (1.5) | 99.0 (1.3) | - |
| HIV Care Coverage [3,4] | 75.2 (12.2) | 74.3 (10.3) | 1.15 |
| ART Coverage [3,4] | 66.0 (15.5) | 67.0 (10.7) | 1.20 |
| Male Circumcision Coverage [3,4] | 56.9 (11.7) | 62.0 (13.4) | 1.23 |
| Population Prevalence of Detectable Viremia [3,4] | 10.9 (4.9) | 11.3 (4.2) | 0.553 |

*[Study arm baseline characteristics]*

[1] Except for age which is arm-level, all results are at the cluster-level;
[2] mean (SD);
[3] mean % (SD);
[4] primary study outcomes;
[5] Minimum Detectable Difference Ratio

Over the initial 4 months of the study, CHWs counseled a total of 892 participants (mean 89.2 clients per CHW, range 48-185) guided by the mHealth application.

**Conclusions:** It is feasible to implement a cluster-randomized trial of a novel mHealth CHW intervention in a high-prevalence fishing community. Baseline characteristics are comparable between study arms. The study should have adequate power to detect moderate differences in important HIV-related outcomes to be assessed in 2017-2018.

## THPEE503

### USING QUALITATIVE METHODS TO EXPLAIN THE UPTAKE OF AN INTERVENTION TO ACCELERATE ANTIRETROVIRAL THERAPY (ART) INITIATION IN UGANDA

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**Background:** The Streamlined ART study (STARTs) demonstrated that a theory-based intervention targeting health care worker behavior and using point-of-care CD4 testing machines (PIMA) to streamline processes increased initiation of ART on same day as eligibility from 18.3% to 70.8% in 20 government-run clinics in Uganda. We used qualitative methods to explain intervention uptake.

**Methods:** We carried out in-depth interviews with 24 health care providers, 81 patients and 9 study staff to understand perceptions, attitudes and contexts of changes in practice. Data analyses were informed by the Theoretical Domains Framework for health care worker behavior change that proposes four determinants: environmental context, social influences, professional identity, and behavioral regulation.

**Results:** Uptake of more rapid ART initiation occurred in an environmental context facilitative of provider behavior change. A network, from the Ugandan NGO to facility health workers and into the cadre of HIV-infected individuals serving as peer educators, enabled rapid dissemination of new practices at facilities through existing social ties for communication, implementation, and accountability. Peers provided pre-test counseling and information at facilities, and were role models and advocates for ART initiation. Providers felt a sense of pride with attainment of new knowledge and skills from training, and were gratified by providing higher quality care. The use of PIMA relieved providers from frustrations of lost or delayed lab results, and led to higher patient satisfaction (due to reduced costs because of ability to initiate ART immediately, with fewer return clinic visits). However, some lab personnel perceived that the PIMA resulted in their increased workload and reduced income from travel reimbursements by obviating need for lab staff to transport samples.

**Conclusions:** As intended, STARTs reduced barriers to provision of high quality care. Uptake of STARTs also was mediated by unanticipated factors: persuasive peer educators provided 'vicarious efficacy' for patients as models for successful ART uptake, prior to patients' contacts with authoritative providers: along with a desire to avoid return visits, these influences may have facilitated patients' readiness to initiate ART quickly, often on same day eligibility was determined. These findings offer positive insights for the uptake of test and treat approaches for HIV.

## THPEE504

### “TOUGH TALKS”: DEVELOPING A VIRTUAL REALITY APPLICATION TO SUPPORT HIV SATUS DISCLOSURE AMONG YOUNG MSM

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**Background:** After diagnosis, persons living with HIV, including young men who have sex with men (YMSM) continue to engage in sexual risk behaviors. HIV-status disclosure can decrease risk, however currently there are no scalable interventions for youth. Virtual reality (VR) technologies can be leveraged as innovative approaches to communication skill building and sexual risk reduction.
**Description:** Tough Talks is a VR application designed for HIV+ YMSM to practice disclosing their status to intimate partners in a safe, confidential environment. Created in collaboration between two research universities and a software company, Tough Talks is delivered via a laptop and tablet. YMSM first select a disclosure setting and realistic avatar to disclose their status to. Avatars and scenes were designed by and with MSM to ensure appropriateness and resonance. Avatars respond from a database of over 100 phrases, developed and refined through 4 focus groups with HIV+ and HIV- YMSM and 45 usability sessions with 15 HIV+ YMSM. Users currently disclose via chat; future iterations will include ability to speak to the avatar. At this development stage, an automatic algorithm suggests responses to user utterances, which are then verified or changed by a human operator in real time. Presently, the algorithm provides 40-60% appropriate responses; performance improves with increased usability data.
**Lessons learned:** VR is a powerful, scalable technological tool for addressing complex behaviors like HIV status disclosure. To optimize uptake and utilization, the program must be visually and linguistically tailored for end-users. Scenarios and realistic avatars allowed participants to feel immersed and invested, resulting in strong emotional responses. Participants wanted options to type or speak to the avatar; noting that typing felt like a first-step toward speaking their status out loud.
**Conclusions/Next steps:** VR can be used to simulate in-person conversations in an immersive, nonjudgmental environment. Tough Talks presents a novel opportunity to practice disclosure strategies prior to engaging in these difficult and stressful situations. As the application is refined, ultimately the human operator will not be needed, facilitating broad scale-up. Future iterations will feature expanded disclosure scenarios and avatar selections including partners, friends, and family members.

## THPEE505

### COMMUNITY-BASED PHARMACISTS’ CONFIDENCE LEVEL IN COMMUNICATING WITH PHYSICIANS ABOUT HIV-POSITIVE PATIENTS ANTIRETROVIAL THERAPY TREATMENT

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**Background:** Effective HIV patient care is largely dependent on communications between healthcare professionals across the HIV continuum of care. Pharmacists as medical experts are a valuable resource to physicians treating persons living with HIV (PLWH) with multiple chronic conditions. We are not aware of any studies examining pharmacists’ confidence communicating with physicians treating PLWH. Our study examines how community-based pharmacists’ confidence communicating with physicians impacts their ability to provide adherence promotion activities (APA) to PLWH.
**Methods:** We surveyed community-based pharmacists providing HIV patient care. We asked pharmacists to rate 27 APA activities (assessment, monitoring) and 4 questions about their confidence-level communicating with physicians (knew appropriate questions, discussing therapy challenges) on 3-point Likert Scale. We used factor analysis to generate an APA index ($\alpha$=0.92) and phy-pharmcomindex ($\alpha$ = 0.90). Univariate generalized linear modelling (GLM) and multivariate GLM were done to identify significant pharmacist (e.g., age, education) and pharmacy (e.g., type, size) factors associated with APA.
**Results:** 40% of the 188 pharmacists from 37 U.S. states surveyed worked in top HIV MSAs. Most were female (63%), Caucasian (67%) and HIV certified (73%). 33% worked in specialty-only pharmacies. A majority (85%) worked closely with physicians. 8% were not very confident about appropriate questions and 13% discussing ART regimen challenges. In univariate GLM, HIV+ clientele, prescription volume, public insurance, HIV certification, HIV organization membership, and phy-pharmcomindex had higher odds of APA; age and fulltime status had lower odds. In multivariate GLM, HIV certification, HIV organization membership and phy-pharmcomindex had higher odds [$OR_{certification}$: 1.432 ($p< .05$); $OR_{membership}$: 1.596 ($p< .05$); $OR_{phy\text{-}pharmcomindex}$: 1.552 ($p< .01$)], while fulltime status had lower odds [$OR_{fulltime}$: 0.700 ($p< .05$)] of APA.
**Conclusions:** Many pharmacists are confident asking the right questions and discussing ART therapy with physicians. Pharmacists who are confident communicating with physicians are 50% more likely to provide APA, after controlling for HIV certification and membership. As the last providers patients see before medications, pharmacists knowledgeable of appropriate questions and confident communicating therapy-related concerns with physicians can ensure PLWH are adherent to ART and avoid medication-related adverse effects. Our findings have significant implications for community-based pharmacists’ continuing efforts to promote adherence among PLWH.

## THPEE506

### CREATING AN ONLINE HIV PREVENTION AND TREATMENT CASCADE USING THE ADAM'S LOVE ELECTRONIC HEALTH RECORD SYSTEM

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**Background:** Electronic health record (EHR) systems reduce the fragmentation of care, providing clients instant access to healthcare data and encouraging participation in their own health. Costs, fear of and actual data breaches, and securing client confidentiality remain key challenges. We developed Asia’s first EHR for men who have sex with men (MSM) and transgender (TG) people.
**Description:** myhealth.adamslove.org, a web-browser based EHR system launched by The Thai Red Cross AIDS Research Centre (TRCARC) in December 2015 as part of the Online Test and Treat Study, an implementation science research project to facilitate an online HIV prevention and treatment cascade. The EHR includes consent and registration processes, risk-assessments, appointment scheduling, visit reminders, live video guidance for HIV testing, access to post-test counseling summaries, HIV and STI test results, treatment referrals for HIV and STIs, treatment monitoring information including CD4 counts, viral loads and antiretroviral treatment. To ensure data security, the system is built on an IBM web server application and includes one-time password (OTP) system for two-factor authentication.
**Lessons learned:** Within one month of launch, 22 MSM and one TG were recruited online for HIV testing using the EHR. 65.4% were < 25 years, 46.2% were first time testers, 63.4% hid their sexual identity to family, friends or coworkers, 62.5% had used drugs in the past six months and 53.8% sometimes or never used condoms. All were HIV negative. All reported being very satisfied with their overall EHR experience, including the online consent and registration process, security and privacy aspects and appointment scheduling feature. Almost half (42.3%) revisited the EHR to check their post-test counseling summaries and lab results. However, there were initial technical difficulties with the OTP system due password delivery interruptions. These were addressed by troubleshooting directly with local mobile network operators and whitelisting internet protocol (IP) numbers. Other technical issues included inconsistent microphone or webcam function, and disruptions in live video chat due to slow Internet connections.
**Conclusions/Next steps:** EHR is an innovative intervention to engage young MSM and TG youth in online test and treat strategies. Longer-term data is being collected to demonstrate evidence across the use of EHR to improve health outcomes.

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## THPEE507

### THE IMPACT OF PATIENT-PROVIDER ATTACHMENT ON HIV-1 RNA PLASMA VIRAL LOAD SUPPRESSION AMONG PEOPLE LIVING WITH HIV/AIDS IN BRITISH COLUMBIA

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**Background:** Previous studies have shown that continuity with healthcare providers can positively impact patient- and health system-related outcomes, including better adherence to medications and reduced healthcare costs. However, the literature is limited to common chronic conditions such as diabetes and congestive heart failure; the hypothesis has not been tested among people living with HIV/AIDS (PLHIV). The objective of this study is to examine whether patient-physician attachment can play a role in improving HIV treatment outcomes among PLHIV, in the interest of informing effective interventions and health system changes to meet the UNAIDS 90-90-90 target.
**Methods:** Using comprehensive linked population-level data, we included PLHIV in British Columbia following their first dispensation of highly active antiretroviral therapy (HAART). Generalized linear mixed effects regression models were constructed to determine the relationship between patient-provider attachment, defined as the percentage of HIV-related services provided by the physician who provides the most services in the calendar year and categorized into quartiles, and HIV-1 RNA plasma viral load (VL) suppression.
**Results:** Between 1996 and 2013, 6,228 individuals were included in the study; 980 (15.7%) were female and the median age was 42 years (Q1-Q3: 36-49 years). At baseline, the median patient-provider attachment was 83% (Q1-Q3: 60-100%) and 2,536 (40.7%) of individuals achieved VL suppression. In a multivariable model adjusted for various demographic, behavioural and clinical confounders, there was a positive association between patient-provider attachment and VL suppression when compared to 11-59% attachment: 60-82% attachment (adjusted odds ratio [AOR] = 1.52; 95% confidence interval: 1.34 - 1.72); 83-99% attachment (AOR = 1.29; 95%CI: 1.11 - 1.49); and 100% attachment (AOR = 1.48; 95%CI: 1.32 - 1.67).
**Conclusions:** In this study, we found that patients who had a higher level of attachment to their provider for HIV-related services were more likely to achieve VL suppression. However, the findings indicate that beyond having an attachment of 60%, there were no significant benefits in patients' HIV treatment outcomes. Our findings demonstrate that strong relationships between patients and their providers are needed to maximize VL suppression, which in turn will reduce HIV-related morbidity and mortality, and secondarily HIV transmission in this setting.

## THPEE508

### IMPROVING EARLY ENROLLMENT IN HIV CARE AMONG PERSONS DIAGNOSED IN COMMUNITY SETTINGS IN THE KINGDOM OF SWAZILAND: PRELIMINARY FINDINGS FROM COMMLINK, AN INTEGRATED HTC, MOBILE-HIV-CARE, AND LINKAGE-CASE-MANAGEMENT DEMONSTRATION PROJECT

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**Background:** Two studies published in 2015 on 1,186 persons diagnosed with HIV in community settings in Swaziland estimate that only 14% and 26% enrolled in HIV care within 3- and 6-months of diagnosis, respectively. To improve early enrollment in HIV care, CommLink is a novel demonstration project that integrates community-based HIV testing and counseling (CBHTC) with mobile HIV care and linkage case management (LCM).
**Description:** Implemented in the Hhohho region of Swaziland, consenting HIV-positive, out-of-care clients identified through CBHTC receive in a mobile unit PIMA CD4 testing, baseline clinical assessment, sexually-transmitted-infection treatment if indicated, and a seven-day supply of cotrimoxazole. Medical charts and test results are transferred to referral HIV-care facilities. ART-adherent expert-client counselors provide LCM for up to 90 days. Services include first-visit escort and expedited care at referral facilities; regular telephone contact for psychosocial support; and face-to-face counseling on HIV care, disclosure, and partner/family-member HTC. Data on closed cases (clients completed or timed-out of LCM) were recorded on data-collection tools and analyzed using Excel.
**Lessons learned:** From June through December 2015, of 175 eligible clients, 167 (95.4%) consented to participate and 98 (58.7%) cases were closed. Of closed cases, most received clinical and LCM services, were escorted to or met at facilities, enrolled in HIV care, and were initiated on ART if eligible. Similar outcomes were achieved among men and women, and younger and older clients (table). Of 65 partners/family members tested, 15.4% were HIV-positive.

| Closed Cases | Total (n) | Comm Link CD4 Tested (%) | Comm Link WHO Staged (%) | ART Eligible (CD4 ≤ 350 and/or WHO stage III/IV)(n) | Cotrim-oxazole Provided by CommLink (%) | Comm Link Escorted or Met at Care Facility(%) | Enrolled in Care ≤ 90 days (%) | ART Initiated ≤ 90 days among eligible (%) |
|---|---|---|---|---|---|---|---|---|
| All | 98 | 83.7 | 82.7 | 35 | 85.7 | 88.8 | 90.8 | 94.3 |
| Sex: Male | 54 | 83.3 | 79.6 | 23 | 85.2 | 92.6 | 92.6 | 91.3 |
| Female | 44 | 84.1 | 86.4 | 12 | 86.4 | 84.1 | 88.6 | 100.0 |
| Age: <15 | 9 | 88.9 | 88.9 | 0 | 88.9 | 77.8 | 77.8 | - |
| 15-24 | 16 | 87.5 | 75.0 | 3 | 87.5 | 93.8 | 87.5 | 100.0 |
| 25-34 | 44 | 79.6 | 79.6 | 19 | 86.4 | 90.9 | 90.9 | 94.7 |
| >34 | 29 | 86.2 | 89.7 | 13 | 82.8 | 86.2 | 96.6 | 92.3 |

*[Preliminary Findings from CommLink]*

**Conclusions/Next steps:** Compared with standard referral services from recent studies in Swaziland, CommLink improves early enrollment in care among clients diagnosed in community settings and is a promising method to help similar programs achieve high rates of early enrollment in care. Next steps include scale-up to other regions of Swaziland and providing same-day ART initiation from mobile units (expected March 2016). Evaluation of the program's effect on retention in HIV care is also planned.

## THPEE509

### "BEING A FRIEND": A COMPREHENSIVE APPROACH TO ENGAGE MSM INTO HIV SERVICES

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**Background:** Recently community-based organizations (CBO) outreach service targeting MSM in Vietnam has proved to be highly effective for improving MSM accessibility and acceptance of HIV/AIDS and sexual health services. However, in Hanoi such activities seem to be less effective than in HCM City. Stigma and discrimination constitute major barriers to essential HIV/AIDS and sexual health services among MSM in Hanoi, especially the young ones. With the supports from the Center for Community Health Research and Development - an implementing partner of the USAID Community Link for HIV Prevention project, the Lighthouse Club - a youth-led CBO of MSM in Hanoi - initiated "being a friend", an unconventional approach to address these barriers.
**Description:** The club is the first youth-led CBO focus on young MSM dare to change and develop a Facebook fanpage called Gtown and one of the first to reach MSM via social networks. Instead of traditional harm reduction and referrals services, the new initiative offered a comprehensive service package that cover broader but intimate aspects of MSM clients' needs such as STIs, psychological support, and vocational orientation. Social networks were used to increase out-reach magnitude. Also frequent dialogue with HIV service providers has been established to make health workers "friends" to MSM clients, thus improving their attitude and quality of services.
**Lessons learned:** After 12 months of operation, the club referred 309 MSM to HIV testing services in Hanoi, of which 15 or 5% detected HIV positive which is 2% higher than reported, and 80% of the detected cases received treatment. Moreover, 10 HIV public clinics have practiced MSM-friendly services and several hidden clients decided to disclose and join in club events promoting MSM health.
Comprehensive solutions that combine thorough understanding, meeting specific needs of clients and effective networking with service providers is what makes our services stand out.
**Conclusions/Next steps:** Risks of HIV infections among young MSM in Hanoi are higher than officially reported. This problem can be more effectively addressed if the MSM community takes proactive and innovative approach to assist the public and health facilities to develop more friendly and appropriate services for themselves.

## THPEE510

### THE SEXUAL AND REPRODUCTIVE HEALTH NEEDS OF ADOLESCENTS LIVING WITH HIV AND AIDS: TASO-RUKUNGIRI EXPERIENCE

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**Background:** Many program design focus on pediatric or adult care without adequately addressing the needs of a growing segment of adolescents. Recent study finding shows that prenatally infected adolescents are sexually active, have poor preventive practices and strong desire to have children, yet fear of disclosing not only their sexual behavior and desires, but also pregnancies when they occur. TASO Rukungiri devised a strategy and established adolescent friendly services
**Methods:** In 2013 TASO-Rukungiri established adolescent friendly services with a focus on adolescent reproductive health. Three health workers and 3 counselors were trained on delivery of adolescent services, who then trained 30 adolescent peer educators across two age groups (10-14 and 15-24 years). The adolescent who had been trained supported the other adolescents in the need of adolescent reproductive health, adherence, positive living, and sharing experience as HIV positive and general sensitization about HIV issues.
**Results:** From September 2014 to March 2015, 60 male and 80 female were enrolled in the friendly adolescent clinic and trained. In this period there has been an increase in disclosure from 71 % to 91%, access to PMTCT for those choose to become pregnant from 4 to 20%, family planning from 10-40 % and cancer screening from 2- 45%. They further report a free environment to discuss their reproductive issues with their counselors and health service providers.
**Conclusions:** The training of peers, medical and counsellor in addressing the needs of adolescents is the way to go in addressing the sexual needs of the adolescents Friendly adolescent clinic is the way to go in order to address the reproductive health needs of the adolescents living with HIV and AIDS.

## THPEE511

### CONCEPTIONS OF AGENCY AND CONSTRAINT FOR HIV POSITIVE PATIENTS AND SERVICE PROVIDERS TO SUPPORT LONG-TERM ENGAGEMENT WITH ART CARE

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**Background:** In the wake of the optimism around antiretroviral therapy (ART) as prevention, addressing the barriers to long-term ART adherence is critical. This is particularly important given the tendency to individualize or use a blame discourse to ascertain why HIV positive patients "fail" to adequately adhere to ART, and not sufficiently exploring contextual reasons for poor adherence that may require varying solutions.
**Methods:** Using a syndemics framework, this study took place at 3 clinics and 1 hospital in Khayelitsha, South Africa to document the contextual factors that challenged ART adherence in this community. Interviews were conducted with 19 HIV positive patients who had defaulted on ART and were admitted to Khayelitsha Hospital for clinical complications, and 9 ART service providers including doctors, nurses and HIV counsellors. Interviews assessed reasons patients defaulted on ART with the consequence of requiring hospitalization and explored ways this could be prevented. Data from both groups were analyzed collectively using thematic analysis.
**Results:** The interviews revealed a landscape of competing environmental risks with adhering to ART including patients' regular migration with the Eastern Cape province interrupting their treatment, and poverty hindering patients' access to food to take with ART and transport to attend clinics. Yet, all patients managed to overcome these contextual barriers at some point in their treatment phase indicating the fluidity of patients' needs and decision-making. Distrustful relationships with service providers could inhibit patients' understanding of ART, ability to seek support and/or interrupt their care. Patients also described more unfamiliar expressions of rationale and agency underlying non-adherence, such as carefully managing their CD4 count to not risk losing their disability grant, and testing their bodies' physical limits without ART medication.
**Conclusions:** The study speaks to the need to appreciate social and structural barriers related to ART adherence, and how these are negotiated by specific sub-groups including according to gender and age, to support an appropriate response. It is imperative to assess patients' subjective trajectory of their ART journey, decision-making and agency with adhering to ART, their relations with HCWs, and how these dynamics are intertwined with broader health systems and power constraints.

## THPEE512

### LINKAGE TO CARE FOR INDEX CLIENTS IN THE ASSISTED PARTNER SERVICES (APS), KENYA

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**Background:** Early diagnosis and linkage to care of newly infected HIV seropositive individuals is critical for HIV suppression and improved life expectancy. Healthcare worker assisted partner services (APS) have been used to increase HIV case finding among individuals unaware of their HIV serostatus. We analyzed linkage to care among index cases that received APS.
**Methods:** Between August 2013 and September 2015, the APS Study, a cluster randomized clinical trial, was conducted in 18 HIV Counseling and Testing (HCT) facilities in Central and Western Kenya to evaluate the effectiveness of healthcare worker APS in augmenting linkage to care for HIV seropositive individuals and their sexual partners. The sites were divided equally into intervention sites (sexual partners notified immediately after index enrolment), and control sites (notification conducted 6 weeks after index enrolment). Linkage to care was defined as self-reported HIV Comprehensive Care Center (CCC) registration. We evaluated linkage to care for index clients at the 6 week follow-up visit.
**Results:** Of the 1760 clients approached to the study, 1119 (63.6%) were enrolled [female: 62%, median age: 30, married monogamous: 55%], 964 (86%) returned for the 6 week follow-up visit, with 473 (49%) in the immediate arm. 876 (91%) clients had ever registered at a CCC, 718 (74%) had blood drawn for CD4 count and 359 (37%) reported taking ART since study enrolment. Index clients in the immediate arm were more likely to enroll in HIV care by the 6 week visit (440/473, 93% versus 436/491, 88.8%; OR 1.69, 95% CI: 1.02 - 2.81) compared to those in the delayed arm. Among those who enrolled in HIV care during the first 6 weeks, the immediate and delayed arms had similar proportions of index clients receiving a CD4 blood draw (OR 1.24, 95% CI 0.63 - 2.46) and taking ART (OR 1.03, 95% CI 0.33 - 3.28).
**Conclusions:** In this Kenyan population, APS was associated with increased index client enrollment in HIV care, with no significant difference in CD4 blood draw or ART use. This linkage to care benefit of APS may be a result of active healthcare worker involvement in the follow-up of their sexual partners.
**Funding:** NIH R01-AI1099974

## THPEE513

### HIGH ACCEPTABILITY FOR WORKPLACE BASED HIV TESTING IN A CLOSED COMMUNITY OF FACTORY WORKERS IN PUNE, INDIA

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**Background:** Migrant labourers have low access to health care and HIV-testing services (HTS).To make HIV test accessible, we tested a workplace intervention for a closed community of factory workers mostly living on premises in Pune, India.
**Methods:** A team of doctors, counsellors,nurses set up a temporary sample-collection facility on premises for HIV and Haemogram tests. An awareness talk was followed by invitation to avail HTS. HIV reports were provided individually in a nearby facility, with post-test counselling at which time views and attitudes about HIV-testing were assessed.
**Results:** Of 100 awareness lecture attendees, 81(mean age 29yrs) volunteered and underwent HIV-testing. HIV-test report could be given to 71 as10 participants returned to native place. While, only 18% reported having contemplated getting tested in past, 81% availed HTS. Peer motivation (90.4%), curiosity (63%), workplace testing opportunity (49%) were most cited reasons for HIV-testing. Only 16.7% showed willingness to share report at workplace while majority wanted to share report with family, physician and friends.
Attitudinal data summarized in graph below indicates high awareness about HIV, however negative attitudes about individual's rights for voluntary HIV-testing and rights to have a family.
**Conclusions:** High acceptability and low stigma, for workplace HIV-testing can be attributed to peer-motivation, curiosity and easy testing access. This seems to be a promising approach to achieve the first of the WHO 90-90-90 goal among migrants in Pune, India. Although group education was useful in retention of knowledge and some positive attitudes, it was inadequate to bring about attitudinal changes regarding family life of People Living with HIV/AIDS (PLHIV).

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*[HIV related knowledge and perceptions of factory workers undergoing VCT in Pune, India]*

## THPEE514

### THE CHURCH WORKPLACE: A MISSED OPPORTUNITY FOR SCALING UP HIV RESPONSE

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**Background:** Although faith leaders shape attitudes and behaviours around HIV and AIDS within society, little is known about current attitudes towards HIV and AIDS and risk behaviours among church employees in Southern Africa. A better understanding of attitudes and practices among church employees is needed to discern gaps and inform the design of effective faith-based interventions that model positive behaviours and reduce stigma.
**Description:** To ascertain attitudes and practices around HIV and AIDS among church employees in Southern Africa, a survey of 157 Lutheran lay-workers and clergy in three countries (Malawi, Mozambique, and Zimbabwe) was conducted during training workshops where all participants volunteered to respond to a set of questionnaires on knowledge, attitudes and practices on HIV and AIDS and the stigma index.
Purposive sampling was used to select a small group of church workers to participate in focus group discussions. Using a semi-structured focus group guide that covered the same areas as the questionnaire, 30 participants from the total sample (10 from each country, comprising men and women) participated in the discussion. The SPSS package was used to analyse data.
**Lessons learned:** Levels of risk behaviours were high among married middle-age/elderly employees where 43 (40%) of the survey respondents, all being males, reported having multiple concurrent sexual partners. Only 25 (20%) of survey questionnaire respondents and 18 (60%) of focus group participants reported regular condom use. Although more than 94 (60%) of all respondents reported that they would be comfortable working closely with PLHIV, 19 (20%) of these demonstrated attitudes of stigma (stating "they deserve it") toward PLHIV and people who identify as LGBTQI. More males than women admit to higher risk behaviour while a high percentage of the respondents including men and women revealed tendencies of discrimination.
**Conclusions/Next steps:** Church employees show high risk behaviours and still uphold attitudes of stigma towards people living with HIV. Intensifying HIV and AIDS programmes tailored to church workplaces is needed to target these gaps so that churches become an effective player in leading behaviour change and eliminating HIV and AIDS-related stigma.

## THPEE515

### A SCOPING ANALYSIS OF THE REFERRAL SYSTEM FOR HIV SERVICES IN TANZANIA

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**Background:** To achieve full continuum of care, HIV programs require strong linkages among prevention, testing, clinical care and social support services, which are often delivered by different providers working out of diverse locations that range from the community to tertiary hospitals. Referrals facilitate the movement of clients and the exchange of health information from provider to provider. MEASURE Evaluation's approach to strengthening referrals in Tanzania entails assessing the status of referral system, designing referral system monitoring guidance and establishing referral system monitoring as a priority at national and sub-national levels.
**Description:** In 2014, MEASURE Evaluation conducted document review and consultative meetings with several key informants to better understand the configuration and functionality of HIV referral systems at the national and sub-national levels in Tanzania. Key informants within the Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC) included technical teams from prevention of mother-to-child transmission (PMTCT), home-based care (HBC), HIV testing and counseling (HTC), and care and treatment (CT) programs, and from the Department of Social Welfare. We also interviewed monitoring and evaluation officers from implementing partner organizations working at the community and health facility levels. The key issues addressed were:
1) existence of national referral guidelines and tools for HIV programs;
2) mechanisms to support referral system monitoring at national and sub-national levels; and
3) configuration, status and functionality of the current referral system.
**Lessons learned:** The key informants noted that there are different national guidelines for each program area, such as HBC, PMTCT, CT, HTC, which discuss the importance of referrals, but many of the guidelines do not elaborate on coordination or implementation of referral system. Many referrals continue to be made verbally. Lack of mechanisms for referral monitoring, such as referral registers, tracking system, proper documentation of referrals made and completed, linkage between community and clinical services and lack of Quality Improvement (QI) teams affect the functionality of referral system.
**Conclusions/Next steps:** Without strong referral monitoring system at the national and sub-national levels, the functionality of referral system will not be effective. Referral performance indicators are required to improve the referral system.

## THPEE516

### REACHING KEY POPULATIONS IN URBAN SETTINGS THROUGH HOME-BASED HIV TESTING AND COUNSELING BY URBAN HEALTH EXTENSION PROFESSIONALS IN ETHIOPIA

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**Background:** Home-based HIV testing and counseling (HBHTC) is a widely accepted strategy for countries seeking to expand HTC. It is widely believed that HBHTC addresses logistical barriers, increases access to needed services, and potentially reduces stigma.The USAID-funded, John Snow, Inc.- implemented Strengthening Ethiopia's Urban Health Program (SEUHP) provides HBHTC focused capacity building support such as materials development, training, and continuous quality improvement for urban health extension professionals (UHE-ps).
**Description:** In Ethiopia, although HBHTC has been offered as a component ofthe Urban Health Extension Program (UHEP) package of services, some Regional Health Bureaus were reluctant to include HBHTC in the service package because of concerns regarding the quality of services provided by UHE-Ps. SEUHP demonstrated the advantage of these professionals in expanding access to HTC at the household level to reach key population groups such as discordant couples, widows, pregnant women, and out-of-school youth.
**Lessons learned:** Between October 2013 and December 2015, UHE-psin 37 cities and towns counseled and tested **8,198** targeted members of these key populations. Of these, **75 (0.9%)** tested HIV positive and were linked to health facilities and other social service providers. After demonstrating the efficacy of this approach, HBHTC has been included in the UHEP service packages in all Ethiopian regions. Better identification of the target population, comprehensive mapping of local health and social service providers, developing guidelines for integrating HBHTC with other community-based health initiatives (such as TB), and developing supervision guidelines for UHE-ps are important next steps.
**Conclusions/Next steps:** In Ethiopia, the implementation of the UHEP created opportunities to expand access to HTC services. HBHTC is a less controlled and more complex intervention than facility-based HTC and the quality of HBHTC is therefore a concern. Key strategies to address quality issues in HBHTC such as proficiency testing, external quality assessment, and supervision systems should be in place. Further study is needed to better understand the level of the acceptance of HBHTC by the target population, their satisfaction with services provided, and the cost-effectiveness of HBHTC compared to facility-based testing. In addition, Ethiopia must develop a HBHTC policy to guide its proper planning and implementation.

## THPEE517

### RESULTS OF COMMUNITY-BASED RAPID HIV TESTING ON KAP IN MOLDOVA

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**Background:** Low uptake of HIV testing is one of key barriers in the HIV treatment cascade in Moldova. This operational research measured outcomes of community-based rapid testing on uptake of key affected population (KAP) with HIV testing and linkage to care.
**Methods:** Rapid saliva-based HIV testing and counseling was conducted by 14 community-based organizations (CBOs) in PWID, SW and MSM through outreach and community settings. People with preliminary positive test results were accompanied or referred to public facility for confirmatory HIV testing and linkage to HIV care.
**Results:** A total of 2,630 people from KAP received community-based rapid HIV tests during year 2015. Of the 2,630 tested, 95 (3.7%) had a preliminary positive HIV test result. From them 47 persons (49%) reached the public facility for confirmatory testing and 34 people (72%) were newly diagnosed with HIV and 8 people (17%) had already a known status, 5 (11%) had a negative result. Of the 34 newly diagnosed with HIV, 27 (80%) have a CD4 test. From the other 48 persons (51%) with preliminary positive HIV that did not reach the public facility in 2015, 18 (38%) declined confirmatory testing and 30 (62%) have immigrated internally or externally, went to prison or the information was missing. CBO continue work with each person towards its status confirmation and linkage to care.
Results highlighted main bottleneck in linkage between CBO and public health facility and determined efforts to improve the leakages in the HIV care continua.
**Conclusions:** Community based testing can efficiently reduce gaps in HIV testing and linkage to care of KAP. Continuous monitoring allows identifying bottlenecks and quality improvement and design interventions to further increase linkages between community-based prevention programs and public health providers.

## THPEE518

### DATA QUALITY ASSURANCE SYSTEM AS A TOOL TO IMPROVE CARE CONTINUUM IN CLINICAL PROGRAMS IN RUSSIA AND UKRAINE

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**Background:** Quality of data is considered to be one of the most important factors which determine the success of HIV care programs and patient outcomes. To monitor and evaluate programs and respond to the program challenges, Europe Bureau of AIDS Healthcare Foundation developed a data quality assurance system (DQA).
**Description:** DQA system consists of monthly reports, covering key issues related to patient flow and quality of services. Every month each doctor receives lists of patients who missed appointments without reason, lists of patients who have not had a CD4 or viral load test in the past six months, lists of active patients eligible but not on ART and lists of deceased patients where no reason for death has been documented. Within two weeks, clinics identify these patients , take actions to return lost patients into care and start eligible patients on ART or clarify reasons of death. The DQA system was implemented at 7 sites in Russia and 14 sites in Ukraine in the beginning of 2013.
**Lessons learned:** We compared performance of AHF-supported clinical programs in Russia and Ukraine in 2012 and 2015. HIV-related death rates decreased from 24.3/1000 in 2012 to 11.7/1000 in 2015 in Ukraine and from 16.7/1000 to 11.0/1000 for Russia. The lost-to-follow-up rate decreased from 5.5% to 0.6% in Russia, and from 2% to 0.1% in Ukraine. At the same time, antiretroviral coverage increased from 44% to 60% in Russia and from 67.3% to 81.2% in Ukraine. The number of eligible clients who had yet to initiate ART decreased from 22% out of all clients in 2012 to 8.3% in Russia, and from 8% to 2.7% in Ukraine. Mean CD4 counts at initiation increased from 228 cells/mcl in 2012 to 344 in 2015 in Russia, and from 183 to 263 in Ukraine.
**Conclusions/Next steps:** Development and implementation of DQA system greatly improved patient outcomes and performance of clinical programs in Russia and Ukraine. Thorough data quality assurance should be performed at every HIV care facility and wider use of DQA system across Eastern Europe should be implemented.

## THPEE519

### EFFECTIVENESS OF A MONETARY INCENTIVE ON GENERAL PRACTITIONERS' BEHAVIOUR OF PROMOTING HIV TESTING FOR PREGNANT WOMEN IN THE PRIVATE SECTOR

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**Background:** Early HIV testing is a crucial step for pregnant women in preventing mother-to-child transmission of HIV. In the public sector nearly all pregnant women presenting at antenatal clinics are screened for HIV. However, according to a large medical-aid administrator in South Africa, only 21.96% of pregnant women on their medical aid claimed for an HIV test as part of their antenatal care in 2012. Previous studies indicate that monetary incentives over and above the negotiated rate may motivate health providers to promote screening to patients, and this may lead to increases in the uptake of testing.
**Methods:** A quasi-experimental, 'before and after' study design, was conducted among 2,934 general practitioners who managed pregnant women on medical aid. Data was extracted from the billing system of a private medical insurance company in South Africa. The effectiveness of the intervention was assessed by comparing uptake of HIV testing in the pre intervention period between April 2011 and September 2012, and post intervention period between March 2013 and August 2014. A subgroup analysis was done to determine variations in the outcome measures, by practitioner and patient characteristics.
**Results:** There was no statistically significant difference in HIV testing by general practitioners in this network pre and post the intervention. Compared to general practitioners aged 25-44 years, those practitioners older than 65 years old were 13% less likely to test (OR 0.87, CI: 0.74-1.01) and those between 45 and 65 years were 9% less likely to do an HIV test (OR 0.91, CI: 0.85-0.98). This study found that as patients' age increased, they were more likely to be tested: beneficiaries aged 35- 44 years were 15% more likely to be tested compared to beneficiaries aged 15-24 years (OR 1.15, CI: 1.1-1.21).
Medium income beneficiaries were more likely to be tested compared to low income beneficiaries (OR 1.09, CI: 1.03-1.16) and beneficiaries from the "high income" scheme grouping were less likely to be tested (OR 0.87, CI: 0.82-0.92) compared to the low income scheme grouping.
**Conclusions:** General practitioners' behaviour to comply with clinical guidelines and best practice, has no association with the presence of financial incentives.

## THPEE520

### INTERVENTIONS TO INCREASE UPTAKE, RETENTION AND ADHERENCE TO HIV SERVICES: A CASE OF THE AUTOMOTIVE AND AGRICULTURE SECTOR IN THE EASTERN CAPE PROVINCE

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**Background:** While there has been massive investments aimed at combating HIV&AIDS in South Africa, a little has been done to develop interventions that can increase uptake, retention and adherence to HIV services especially at a time when South Africa recently adopted the new UNAIDS strategy code named 90-90-90 aimed at achieving an AIDS free generation by year 2020. This study presents the success story of the Automotive Industry Development Centre Eastern Cape (AIDC EC) wellness programme in achieving high HCT uptake in the automotive and agriculture sector in the Eastern Cape province.
**Description:** The AIDC EC Wellness management programme, with a specific focus on HIV & AIDS, is targeted at employees working in the automotive industry in Nelson Mandela Bay as well as citrus farm workers within the Sarah Baartman district (previously known as Cacadu district) in Eastern Cape Province. The programme offers baseline assessments such as situational assessments, cost benefit analysis, KAPB surveys and health risk assessments such as HIV Counselling and testing, Blood pressure assessment, Glucose, TB Risk assessment and Body Mass Index.
**Lessons learned:** Based on the Information Motivation Behavioral skills (IMB) model, the programme has, since 2009, through its tailored, culturally competent behavioural interventions achieved an average HCT uptake of 85% in the automotive and 70% in the agriculture sector. Using behavioural interventions such as facilitated screenings, educational theatre, posters and peer educator training sessions, the AIDC EC wellness programme has reached approximately 5000 employees in the automotive and agriculture sector since its inception. Results from the wellness drives shows that HIV prevalence is high in the Agriculture sector (22%) as compared to the automotive sector (6%). Employees who tested positive were referred to nurses and social workers for further counseling, care support. To ensure sustainability of the programme, a follow-up study is often conducted to ascertain what happens after employees test positive.

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**Conclusions/Next steps:** The success of the AIDC EC wellness programme provides evidence that behavioural models are an effective way of increasing HCT uptake, retention and adherence to HIV Services.

## Interventions to enhance uptake of HIV prevention interventions e.g. voluntary medical male circumcision, condom use, pre-exposure prophylaxis (PrEP) use, post-exposure prophylaxis (PEP) use

### THPEE521

### Expanding access to HIV post exposure prophylaxis (PEP) in Brazil

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**Background:** By 2014, Brazilian recommendations on PEP were available in four different protocols: occupational exposure, occasional sexual exposure, sexual violence and reproductive planning. Different ARV regimens were recommended in each of these protocols, in an individual approach, making them difficult to be followed by general practitioners in non-referral centers. This approach raised two major issues: (1) unawareness of PEP as preventive method for HIV; and (2) lack of ARV prescription resulting from prejudice or moral judgment in cases of sexual exposure. We present a strategy to expand access to PEP in Brazil, analyzing trends in PEP prescription following the release of a new protocol.
**Description:** The new PEP protocol was released in July 2015 bringing new approaches: (1) consolidation of PEP protocols into one single protocol; (2) PEP procedures based on algorithms; (3) one single preferred ARV regimen; (4) the use of PEP in emergency rooms; (5) reduced time of follow-up; and (6) focus on the feasibility of prescribing PEP in any healthcare facility, by any physician, regardless of previous experience.
**Lessons learned:** Simplifying ARV recommendations for PEP has increased the use of this technology. Between 2014 and 2015, there was a 50,9% increase in PEP prescription. Moreover, there were more than a two-fold increase in use of ARV in cases of occasional sexual exposure in 2015 (18,559) when compared to 2014 (7,912). The preferred ARV regimen (tenofovir/lamivudine/atazanavir/ritonavir), which had never been prescribed for PEP before the publication of the new guidelines, was the most prescribed regimen in 2015: 37,3% (6,919) of all regimens used.
**Conclusions/Next steps:** Brazil's new approach on PEP showed outstanding results, mainly on expanding access to this technology. A consolidated protocol, an algorithm-based PEP procedure, one single preferred ARV regimen and focus on prescription by non-specialized professionals have led to the greatest increase in PEP use in the history of Brazil's public health system.

### THPEE522

### Impact of mass media initiatives on HIV prevention among young people: a case for Straight Talk Foundation (STF), Uganda

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**Background:** The impact of mass media initiatives on HIV prevention among young people is debatable. In 2004, the UNAIDS Inter-Agency Task Team on Young People decided that timely review of progress and evidence for the effectiveness of interventions, focusing explicitly on interventions to prevent the spread of HIV among young people in developing countries was paramount. STF aimed at finding out if adolescents who are exposed to mass media interventions practice more safe behaviors than those who are not exposed.
**Methods:** A cross-sectional descriptive and analytical study design utilizing both qualitative and quantitative methods was employed. The study took place in 7 rural districts where a structured questionnaire was used to collect data. 1,189 young people aged 10-25 participated in the study. Data was entered using EPIDATA and later exported to SPSS version 19 for analysis. Bivariate and multivariate analysis was conducted. Consent and assent was obtained; ethical clearance sought from Uganda National Council for Science and Technology (UNCST).
**Results:** 70.4% of young people were exposed to at least 1 mass media intervention while 39.6% were unexposed. Results show that there is a relationship between the intervention exposure and age; sex; and school status (all p-values <0.05). Young people who were exposed to any interventions were 1.5 times more likely to mention that a person looking healthy can still be infected with HIV /AIDS (p-value=0.016 (aOR=1.5). Young people exposed to some intervention were more likely to have more sexual partners, though were also twice as likely to have used a condom at their last sexual intercourse (p-value=0.001; aOR=2.4). At p-value=0.000 and aOR=2.9, exposed young people were three times more likely to have ever visited a health facility for SRH/HIV services. Exposed young people were two times likely to have tested for HIV (aOR=2.2, p=000). Young people with multiple exposure were almost five times as likely to report taking a decision to get circumcised so as to prevent HIV (p-value=0.000 (aOR=4.7).
**Conclusions:** Consistent and intensive exposure to mass media interventions increases uptake of SRH/HIV prevention services such as HIV counseling and testing, condom use, as well as safe medical male circumcision.

### THPEE523

### Age, geo-spatial location and planned sexual encounters influence microbicide use: experiences with women in KwaZulu-Natal, South Africa

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**Background:** Young women bear a disproportionately high burden of HIV infection in sub-Saharan Africa, prioritizing pre-exposure prophylaxis (PrEP) as an integral part of HIV prevention combination strategies. Women initiated HIV prevention technology options require consistent adherence which is imperative for product effectiveness. With several PrEP clinical trials underway; exploring the user profiles, enablers and barriers to various product uptake, and development of a user-informed product identity; ensures the effective implementation of HIV prevention technologies during PrEP roll out.
**Methods:** This study utilized the opportunity of post-trial access to tenofovir gel for the CAPRISA 004 women (trial) and non-trial women from three geo-spatial settings (urban, rural and semi-urban) to identify the profile of women most likely to use HIV prevention technologies, understand what influences user choices and how this contributes to the development of a brand identity that is culturally relevant and context specific. Six participatory workshops using participatory action research with art-based activities and discussion groups were conducted in KwaZulu-Natal with 104 women from diverse age groups, geo-spatial locations and; social status to understand product needs and positioning of the product for future PrEP roll out. The data was analysed using thematic analysis to understand women's choices.
**Results:** The study found that women's acceptability of PrEP, and their description of how the product represents them differed according in rural and urban areas. Most urban women identified confidence, sexiness and classy as an indicator of how they would like to brand PrEP, while rural women focused on highlighting that the use of PrEP indicates respect, responsibility and confidence. Urban-rural differences in responses suggest a market segmentation for promoting HIV prevention technologies that is contextually specific, culturally relevant and locally responsive. Majority of urban and rural women in the study correlated adolescent sexual activity as an indicator of product readiness. Various sexual encounters further determined the types of HIV prevention technologies women would consider.
**Conclusions:** In line with WHO's recommendation that PrEP should be an additional prevention choice for people at risk of HIV, this study underscores the importance of user participation in pre-& post clinical trial setting for the promotion of HIV prevention technologies.

## Interventions to improve adherence to treatment and prevention behaviours and technologies

### THPEE524

### The effect of engagement in economic strengthening interventions on ART adherence in Ethiopia

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**Background:** Economic strengthening (ES) interventions are increasingly promoted to support the economic well-being and food security of people living with HIV (PLHIV) in resource poor settings. However, little is known about the contribution of engagement in ES activities on their antiretroviral treatment (ART) adherence. This study aims to assess the impact of ES interventions in Ethiopia designed to address poverty and food insecurity on treatment adherence.
**Methods:** Comparative cross-sectional design was employed to compare food insecure PLHIV benefitting from the ES project of WFP Ethiopia to food insecure PLHIV not participating in ES. The study covered a total of 1240 food insecure PLHIV in both groups identified using a set of criteria. In this study, two approaches, namely, Visual Analogue Scale (VAS) and AIDS Clinical Trials Group (ACTG) questionnaire were employed to measure ART adherence.
**Results:** Using the VAS approach to measure ART adherence, 9.9 percent of the ES group and 25.9 of the comparison group reported taking the medication below the standard requirements, which is a 95% adherence level. The proportion that reported poor ART adherence (below 85%) was 5.1 percent among the ES group and 16 percent among the comparison group (P=0,000). Applying the ACTG approach, which measures ART adherence by the number of pills taken out of the total prescribed in the last four days before the survey, the adherence level of 98.6 percent of the ES group was reported to be 'good'. The corresponding figure for the comparison group was 86.7 percent. Controlling for socio-economic and demographic variables using logistic regression models, engagement in ES activities increases the likelihood of having good ART adherence by a factor of 2.4 and 5.6 respectively (as measured by VAS and ACTG approaches) compared to those PLHIV that are not engaged in ES.
**Conclusions:** The findings of the study consistently suggest that one's engagement in ES contributes for improvement of ART adherence among food insecure PLHIV. If further studies validate this result, ES should be taken as key strategy to improve HIV treatment adherence in resource poor settings where adherence is an issue of concern.

### THPEE525

### Improving access to care to achieve the UNAIDS 90-90-90 treatment targets in rural Malawi: lessons learned from the Global AIDS Interfaith Alliance (GAIA) village based follow-up program for HIV+ individuals

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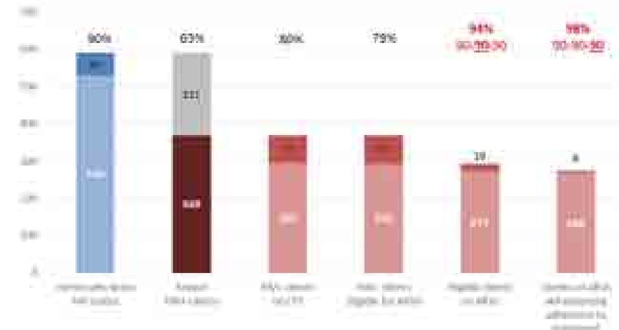
**Background:** To reach the ambitious UNAIDS 90-90-90 treatment targets, programs must focus on the hardest-to-reach populations lacking access to comprehensive treatment and care services, such as those living in remote, rural, high HIV prevalence areas in Malawi. Currently 95% of HIV service delivery in Malawi is facility based, far from many villagers.
To reach the 90-90-90 targets it is estimated that 30% of all services should be delivered in the community. GAIA's Elizabeth Taylor Mobile Clinics, operating since 2008, have helped fill the testing gap, but follow-up for initiation on treatment and adherence support remains challenging.
**Description:** In January 2014, GAIA initiated a Follow-up Nurse Coordinator (F/C) Program for clinic clients, primarily those testing HIV-postive. Nurses travel by motorbike to client homes to connect them to care. They encourage clients to seek confirmatory testing, evaluation for treatment initiation and treatment adherence. The F/Cs provide patient education and encourage adherence to treatment regimens as patients move along the treatment cascade until stable on antiretroviral therapy (ART).
**Lessons learned:** Outcomes for 590 clients to date: 64% remain in care, 26% were discharged from the program stable with health improving, 3% died, 2% opted out of care and 4% were lost to follow-up. Of the 79% of clients eligible for treatment according to the WHO treatment guidelines for resource limited settings, 94% were on ART and 98% were self-reporting adherence to treatment. Seventy-four percent of all HIV clients were on ART regardless of eligibility compared with a national estimate of 49% on ART.




*[GAIA Follow-up Nurse Coordinator Client Outcomes]*

**Conclusions/Next steps:** F/Cs dedication to serve remote populations fosters trust with communities and improves ART initiation and treatment retention. The coordinators identified important HIV care and treatment program gaps to be included in future iterations, including nutritional support, support groups, and ART adherence clubs for HIV+ individuals in impoverished villages.

### THPEE526

### How to best reach adolescents who use drugs and increase service demand among them: lessons learnt from the Bridging the Gaps programme in Ukraine

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**Background:** Reaching young key populations with effective HIV/STI prevention is crucial for curbing the growth of the HIV epidemic. According to UNICEF (2011) in Ukraine young people who injectdrugs (PWID) have higher risk of HIV-infection, STI, Hepatitis B, C due to their risky behaviour (33%). 12% of all PWID began injection drug use under the age of 15, and 72% under 18.years old. Only 24% of adolescent PWID are reached by prevention programmes. The study conducted within the programme "Bridging the Gaps: Health and Rights for Key Populations" funded by the Ministry of Foreign Affairs of the Netherlands, aimed to identifying effective interventions that contribute to reaching adolescents who use drugs and improving their adherence to HIV/STI prevention efforts.
**Methods:** Information was collected in four cities in Ukraine among 85 young drug users aged 14-19 years and 24 local service providers.11 group discussions were held with clients who received services at least once a week (25 girls and 36 boys), and 24 individual semi-structured interviews were conducted with clients who had dropped out of the programme (12 girls and 12 boys). Descriptive analysis was done for every intervention followed by comparative analysis.
**Results:** Adherence to programme is determined by the way clients got initial access to services. Voluntary applying for services seemed to guarantee better adherence, but was more difficult to accomplish since it requires significant effort to reach and engage young drug users. Clients who were referred by governmental authorities faced difficulties in building trust with social workers and psychologists from HIV-service NGOs. Barriers to access and adherence included stigma and discrimination, lack of service providers' knowledge in addressing violence, lack of knowledge on sexual and reproductive health issues and services available for young people.
**Conclusions:** Abuse, stigma and discrimination that adolescents experienced from service providers negatively impact service demand. It can be increased if clients are involved in the decision making regarding programme activities and engage in more active participation as volunteers. More capacity building is needed to address stigma and discrimination among service providers, including police, probation, education and social service agencies staff.

## THPEE527

### FACILITY-BASED STRATEGIES FOR ENHANCING RETENTION AND ADHERENCE AMONG PEOPLE WITH HIV AND AIDS IN MALAWI: THE EXPERT CLIENT MODEL OF CARE

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**Background:** In settings with high HIV burden and shortages of health staff, task-shifting strategies have used lay health workers to enhance retention in care and adherence to ART. While it is well accepted that patients derive benefits from peer support, there is limited recognition of the increasing role of lay health workers in Malawi.
**Description:** Dignitas International and the Malawi Ministry of Health have scaled-up an Expert Client (EC) program in 106 health facilities in the South Eastern region of Malawi after a pilot phase at Zomba Central Hospital. ECs are HIV positive individuals who are open about their status and are trained in providing psychosocial support, health promotion and defaulter tracing. They work in ART-PMTCT and Under 5 clinics and receive remuneration as lay health workers. Between August 2014 and December 2015, 328 ECs were enrolled. Routinely collected program data from 106 health facilities from August 2014 to December 2015 was used to explore the role of ECs in HIV service delivery.
**Lessons learned:** ECs reached 675,405 patients with health promotion messages, weighed 231,878 patients, and screened 56,069 children's nutritional status. Out of 1,070 defaulters identified by ECs, 802 (75%) returned into care, 98 (9%) were not found, 107 (10%) were on ART in other facilities and 63 (6%) were deceased. ECs gave psychosocial support to 362,458 individuals of whom 47,997 were Option B+ women and followed-up 6,813 PMTCT women and 7,000 HIV-exposed babies in their homes. Challenges in the program included dissatisfaction with low remuneration, continuing need of mentoring and training of an increasingly large workforce, false identity of ART patients and unofficial transfers making follow ups difficult. ECs offered a remarkable range of support to patients and relieved the burden of formal health workers by performing health promotion, defaulter tracing and simple medical tasks.
**Conclusions/Next steps:** A Further evaluation is needed of the contribution of ECs to reaching the 90-90-90 UNAIDS targets and how this compare to other types of lay-health workers, also in terms of cost-effectiveness. A more formal inclusion of ECs in the health care structure needs to be considered and prioritized in Malawi.

## THPEE528

### IMPROVING ADHERENCE TO HIV CARE AND TREATMENT WITH CONDITIONAL CASH TRANSFERS IN A CARIBBEAN MIDDLE-INCOME COUNTRY

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**Background:** Conditional cash transfers (CCTs) have proven to be a powerful intervention with potential to improve adherence to care for PLHIV. Despite success in increasing free access to care, this intervention was considered for Jamaica as adherence remains a major challenge. Assessments of missed appointments highlighted financial constraints thus leading to implementation of new structural approaches to address economic barriers to care.
**Description:** The project sought to pilot a CCT programme to affect behaviour change by improved adherence to HIV/AIDS care. The targets were to enroll 100 PLHIV susceptible to inconsistent and low clinic attendance who were assessed to need financial assistance (to ensure that those most in need were enrolled), and that 70% of intended appointments would be kept. Other elements of enrollment included transfer from a nearby large site to one of three smaller sites facilitating shorter wait period times and increased opportunity for monitoring. Conditions for disbursements over 12-months included on time doctor's visits, diagnostic tests, prescription refills and counselling sessions.
Despite over 2,500 active PLHIV from referral sites, uptake was slow and recruitment of 100 persons took 9 months, even though eligible clients who expressed dissatisfaction with the service at the large clinics were actively targetted. Furthermore, throughout the programme, counselling sessions had to be added as eligible for disbursements; and in spite of rewarding different elements of care, 10 participants (10%) became LTFU, 8 who never attended any of their appointments.
**Lessons learned:** Targets were achieved - 100 participants enrolled and over 70% completed all 4 doctor's visit, 4 counselling sessions, 2 CD4 tests and 2 VL tests - affirming that CCTs can work. However, implementation challenges suggest that financial need was not necessarily the main factor hindering adherence. This was reinforced in the programme delivery which became more than just financial disbursements as workers also intensified participant follow-up, making it difficult to primarily credit the socioeconomic support for its success.
**Conclusions/Next steps:** Further monitoring is needed to establish if participants continue to adhere to treatment without CCTs, and if viral suppression among those on ART was achieved. Consideration must also be given to mechanisms to strengthen and/or prioritize individual follow-up.

## THPEE529

### IMPROVING ADHERENCE TO TREATMENT AND PATIENT SAFETY BY IMPLEMENTING AN HIV/TB ACTIVE SURVEILLANCE SYSTEM IN SWAZILAND

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**Background:** Burdened with an HIV prevalence of 26%, a TB incidence rate of 1,350 per 100,000, and an HIV/TB co-infection rate of more than 80%, Swaziland has mounted a forceful response, focusing on high-impact interventions, including placing over 80% of people living with HIV on treatment. The high number of people on antiretrovirals (ARVs) and the toxicity associated with these medicines accentuate the need to monitor and manage their adverse drug reactions (ADRs) for improved patient safety and adherence. Timely and effective management of ADRs reduces the ill effects experienced by patients that may lead to non-adherence.
**Description:** The Ministry of Health, with support from the USAID-funded Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, established an HIV/TB active surveillance system to improve ADR management and inform decision making. The two-year prospective observational cohort study was introduced at five pilot hospitals providing HIV/TB services. The process included:
· Developing protocols and tools, including an electronic pharmacovigilance (PV) database
· Training health care professionals
· Clinicians enrolling treatment-naïve HIV patients and TB patients starting a new regimen (and monitored their ADRs for an initial period of two years).
· Monthly data collection, analysis, causality assessment, and supportive supervisory visits
· Developing a quarterly newsletter to disseminate PV data and share latest knowledge
**Lessons learned:** There are presently 3,031 patients enrolled in the active surveillance system (from June 2013-December 2015) (52% females and 48% males) with 1,136 ADRs reported, of which gastrointestinal effects (19%) and peripheral neuropathy (17%) are the most common, with nephrotoxicity, hepatotoxicity, and ototoxicity being the most severe. The evidence from the active surveillance activity supported the subsequent expansion of the system to three more facilities in May 2015, and active surveillance of ADRs for patients on ARVs has been adopted as part of the standard of care.
**Conclusions/Next steps:** Swaziland has effectively established an integrated PV system to reduce the risks associated with ADRs. The findings have been used to inform the revision of treatment guidelines and develop job aids for health professionals and patients to facilitate early identification and management of ADRs to promote patient safety and adherence.

## THPEE530

### APPLICATION OF TOOLS FROM MARKETING RESEARCH, DESIGN THINKING, AND BEHAVIORAL PRIMING TO UNDERSTAND VARIATION IN PATIENT EXPERIENCES AND OPPORTUNITIES FOR IMPROVING ADHERENCE AMONG ADULTS LIVING WITH HIV IN TANZANIA

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**Background:** Traditional approaches to improving HIV treatment adherence rely on the perspective of clinicians and policymakers. To better understand the patient experience and aspects of daily life that influence adherence, we applied an empathy-

based approach by adapting tools from marketing research and design thinking. We aimed to identify and assess latent factors influencing treatment adherence among adults living with HIV infection and tie intervention development directly to the patient experience. The ultimate goal was to develop and evaluate an intervention incorporating concepts from behavioral priming, which is when a stimulus indirectly influences behavior.

**Description:** At two HIV primary clinics in Shinyanga, Tanzania, we used four steps from design thinking: watch, listen, map, and test. This process included disciplined clinic and household observations, in-depth semi-structured and photo-based interviews, an approach to brainstorming to avoid group-think, focus groups for feedback on iterative intervention designs, and journey mapping. This process excited patients, engaged health staff, and raised fresh insights.

**Lessons learned:** We identified five 'patient segments,' an idea derived from the concept of customer segments, which describe perception of health, risk factors for poor adherence, and potentially successful interventions. For example, the "Big Picture Thinker" segment is motivated to stay healthy by their personal goals such as supporting their families. Ideal interventions for this segment should praise personal commitment and underscore treatment's role in maintaining health. In contrast, the "No Tomorrows" segment is typically younger, asymptomatic, and primarily motivated by pressing social aspirations such as marriage. Ideal interventions for this segment are discreet, support immediate goals, and impart a long-term perspective. We created corresponding "journey maps" for each segment to represent stages in the treatment experience that influence adherence. These maps guide when and how to support each group.

**Conclusions/Next steps:** The use of patient-centered tools to guide innovation is new in the HIV context. These tools are rooted in empathy, place the patient at the center of ideation, and can help identify user-specific insights related to preferences, motivation, and barriers in order to change attitudes or behavior. We used these tools to develop and refine interventions using behavioral priming, whose effectiveness we are evaluating in an ongoing study.

## THPEE531

### SAVINGS GROUPS: A CATALYST TO ENHANCE RETENTION ON CARE FOR WOMEN ON ART IN LOW-INCOME COMMUNITIES OF KITWE, ZAMBIA

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**Background:** Economic vulnerability has been documented as one of the key drivers of HIV infection in Zambia particularly for women and girls. HIV prevalence in Kitwe stands at over 20%. Prolife Advancement and Education Partners (PLAEP), a grass root faith based organization with support from USAID through the Zambia Led Prevention Initiative and the Positive Action Children Fund (PACF), has facilitated formation and operation of savings groups. At the end of 2015, over 500 women were members of the savings groups and saving consistently. Each group has at least 20% members who are HIV+. Savings groups have not only contributed to quantitative benefits such as increased incomes and improved nutritional status but also qualitative benefits such as improved assertiveness and discipline that has resulted in improved adherence to ART.

**Description:** PLAEP trained and deployed community volunteers resident in the target communities to monitor the weekly operations of the savings groups. The community volunteers collect information from the groups on their savings, lending and membership status of the groups. HIV+ members periodically volunteer to provide motivation and encouragement to new group members and new groups that are formed. As the economic status improved, the HIV+ members improved in self esteem. They became more open about their HIV status with other group members. Furthermore, the discipline developed in saving, borrowing and returning the borrowed funds has resulted in positive attitude in the uptake of ART.

The table below demonstrates the increase in the number of savings groups, their savings and the number of HIV+ women adhering to treatment and sharing their status with other women over a period of 4 years.

| Description | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|
| Number of Savings Groups(SGs) Formed | 2 | 4 | 11 | 26 |
| Number of women in the SGs | 20 | 52 | 168 | 510 |
| Amount of Savings in the SGs(USD$) | 600 | 3000 | 11000 | 37000 |
| Number of women disclosing their HIV status | 1 | 3 | 10 | 20 |
| Number of sex workers who are members of the SGs | 0 | 0 | 0 | 10 |

*[Table 1]*

**Lessons learned:** Savings groups are a cost effective intervention providing economic and psychosocial benefits to HIV+ women in low income communities contributing to adherence to treatment.

**Conclusions/Next steps:** Promote savings groups to ART clients at health centers in high density low income communities to contribute to improvement to adherence and retention in care.

## THPEE532

### MENTOR MOTHERS ENHANCING THE QUALITY OF EMTCT SERVICES THROUGH ADHERENCE SUPPORT IN UGANDA

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**Background:** UNAIDS Fast-Track Strategy to end the AIDS epidemic has indicated that high and consistent anti-retroviral therapy (ART) adherence is important in ensuring viral suppression. In Uganda, 66% of patients have three months adherence records; 90% good adherence, 7% fair adherence while 3% report poor adherence to ART. To establish the need for ART adherence support and contextualize adherence programming for Option B+ mothers in East Central Uganda, mothers2mothers (m2m) conducted a rapid assessment. m2m is a non-governmental and non-profit organization that works towards eliminating paediatric HIV and empowering women to nurture families using a peer approach.

**Description:** Sixteen high volume health facilities were conveniently sampled for the rapid assessment prior to roll out of the m2m adherence programme that would engage peer mentor mothers (MMs) in maternal ART adherence education, 7-day recall adherence assessment, and client follow-up. Ministry of Health client records for Option B+ mothers on treatment for 9-12 months (n: 197) were reviewed, data analysed using Excel, MMs trained and supported to provide adherence support and report outcomes. A follow-on assessment (n: 165) was conducted four months after the m2m adherence programme to assess the contribution of MMs towards patient adherence to therapy.

**Lessons learned:** Mothers receiving adherence education by facility health workers prior to maternal ART initiation improved from 56% (ci 49-63%) to 74% (ci 67-80%), and mothers assessed for non-adherence during their last visit from 60% (ci 53-67%) to 73% (ci 66-80%). Over the same period, MMs provided adherence education and pre-assessment for non-adherence to a monthly average of 1188 (100% of mothers seen by MMs). The proportion of Option B+ mothers identified in the category of 'low adherent clients' using a 7-day recall period declined from 7% (n: 1140, ci 55-88%) in September 2015 to 2% (n: 778, ci 24-45%) in December 2015. MMs contributed to increased coverage of adherence support and reduced non-adherence among peers.

**Conclusions/Next steps:** The positive differences between the pre-intervention and post-intervention periods confirm the contribution of MMs in increasing coverage of adherence support and reducing non-adherence among peers in Uganda. This has implications for control and eventual eradication of HIV infection and resistance.

## THPEE533

### ADHERENCE TO SCHEDULED CLINIC APPOINTMENTS FOR PEOPLE LIVING WITH HIV ON TREATMENT IN 8 FACILITIES IN CÔTE D'IVOIRE

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**Background:** Sustained adherence to antiretroviral therapy (ART) is essential to achieve and maintain HIV suppression, to avoid drug resistance, and to improve survival of people living with HIV (PLHIV). Adherence to scheduled clinic visits can provide an indication of ART adherence. In 2013 in Côte d'Ivoire, 67% of clients started on treatment were known still to be alive and on treatment after 12 months. One local study indicates 38% of loss to follow up (LTFU) occurs within the first 6 months. Jhpiego is supporting the government of Côte d'Ivoire to develop and implement an integrated chronic care model to improve patient adherence and retention. A quasi-experimental pre-test post-test design with intervention and matched comparison sites is being undertaken to evaluate the intervention's impact. ART adherence and predictors of adherence were analyzed using baseline data from 8 facilities.

**Methods:** Data were collected from 488 HIV clinical records for PLHIV 15 years of age or older who initiated ART between 1 January 2013 and 31 July 2015 in urban health centers. Data on sociodemographic characteristics, health history, HIV care received, and appointment attendance were collected. Using STATA, adherence to care was measured by comparing scheduled vs. actual date of clinic visit. Associations between adherence and patient characteristics were also assessed.

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The study received IRB approval from Johns Hopkins School of Public Health and Côte d'Ivoire National Ethics and Research Committee.
**Results:** Of the 488 eligible clients, only 395 had appointment data. Participants were on average 44.6% (SD 0.35) adherent as defined by attending a visit within three days of a scheduled appointment. The median number of days between scheduled and actual attendance of appointments for clients was 13. Age, gender, matrimonial status and education level were not correlated with adherence to scheduled appointments.
**Conclusions:** The current standard of care in Côte d'Ivoire necessitates PLHIV to visit a facility 8-12 times in the first year after initiating ART. The baseline results indicate a high risk for LTFU and potential drug resistance. A patient-centered approach, including bringing ART closer to the patient might address some of the issues contributing to low adherence, and if effective, improve patient outcomes.

## THPEE534

### OUTREACH WORKERS IN THE PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV (PMTCT) PROGRAMME IN INDIA: CHALLENGES AND OPPORTUNITIES

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**Background:** Outreach workers (ORW) are critical front-line health personnel and yet are often least equipped to address many challenges of their clients. The Indian PMTCT programme is one of the largest in the world and engages ORWs to facilitate uptake of services. However limited programmatic data are available and programme effectiveness is unknown. As part of baseline assessment of the COMmunity-Home Based INDia (COMBIND) Prevention of Mother to Child Transmission of HIV study, which will evaluate a mHealth technology based intervention to enhance ORW capacity in India, we collected baseline data on some of the challenges faced by ORWs and the opportunities perceived by them to enhance PMTCT programme implementation.
**Methods:** Group discussions from 40 ORWs from 3 trainings in three districts of Maharashtra were analyzed using thematic approach. An assessment of the primary challenges faced by ORWs as well as their perception of a novel behavioral training and mHealth platform to facilitate their work activities was performed.
**Results:** Numerous challenges exist for ORWs as they engage with their clients, such as lack of HIV testing kits, antiretroviral drugs (ARVs), lack of training/knowledge of PMTCT infant feeding guidelines among hospital staff. ORWs state that client's challenges include financial costs travelling to ART center, loss of daily wages, non-affordability of infant formula, and financial dependence on family. Both ORWs and clients reported lack of motivation and rude behavior of health care staff and not providing maternity services to women in the PMTCT programme. ORWs mention that there is a critical need for tools and trainings that can develop their capacity to communicate, engage, deliver appropriate care and guidance and enhance client's positive attitudes.
**Conclusions:** Given the significant challenges faced by ORWs and to address their perceived opportunities, we conclude that a tool that enhances the ORW's interpersonal counseling skills to better engage clients to access and retain in care and treatment is urgently needed. COMBIND study intervention using mHealth technology that supports effective communication through counseling videos, scripts and SMS alerts may enhance the ORW's capacity to increase uptake of PMTCT services by their clients may optimize PMTCT programme implementation.

## THPEE535

### THE EFFECTS OF FINANCIAL INCENTIVES ON VIRAL LOAD SUPPRESSION AMONG HOMELESS PEOPLE WITH HIV

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**Background:** While the evidence on the association between financial incentives and antiretroviral (ARV) adherence is mixed, previous efficacy studies have not examined this intervention in conjunction with integrated care in healthcare settings. This study examines the effectiveness of the Viral Load Suppression Intervention (VLSI), a two-year demonstration project at a large healthcare and social service agency in New York City. In order to achieve viral suppression (≤200 copies/ml) among homeless people with HIV on ARVs, the VLSI added a quarterly $100 gift card incentive to existing agency services such as primary care, psychosocial services, and case management. We hypothesize that financial incentives for marginalized people with barriers to adherence, when added to services, can trigger behavior change around adherence.
**Methods:** Using 441 participants as their own controls, we assessed laboratory results at three-month intervals for a year prior to VLSI enrollment, and followed participants for 21 months post-enrollment. Multiple pre-intervention time-points established a stable baseline, allowing us to control for engagement with existing services and examine the effects of adding the financial incentive.
**Results:** Among 441 participants at 21 months, 90% were virally suppressed, compared to 66% at enrollment (p< .0001). Comparing longitudinal data before and after enrollment, we found that 69.4% of participants were virally suppressed at every time-point after enrollment, compared to 50.3% of participants who were virally suppressed at all time-points before enrollment (p< .0001). Moreover, participants were virally suppressed at 83% of time-points post-enrollment, compared to 72% of time-points pre-enrollment (p< .0001).
**Conclusions:** Financial incentives added to existing services significantly improved ARV adherence among clients. These results, in conjunction with results from previous research, indicate that while financial incentives by themselves may not be effective, they interact with available services in real-world agency settings to significantly improve adherence among clients confronted with barriers such as homelessness, substance use and mental illness. The VLSI provides a protocol for utilizing financial incentives that can be implemented in other agencies serving similar at-risk populations on ARVs. Our results lay the foundation for future research that examines the ways in which financial incentives interact with agency services to effect health behavior change.

## THPEE536

### FLEXIBILITY AND STRUCTURE: USING AN INNOVATIVE MULTIMEDIA PLATFORM FOR ADAPTABLE ART ADHERENCE COUNSELING

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**Background:** Given the staggering numbers of people living with HIV in South Africa (SA), policy shifts to increase eligibility for antiretroviral therapy (ART), rapidly changing ART counseling policies, and the substantive role lay counselors with variable training play in counseling, an engaging, easily modifiable, structured approach to delivering ART adherence counseling is required. Electronic platforms offer potential strategies to address these needs.
**Methods:** Masivukeni is a multimedia laptop-based platform and tool, developed by a joint international team, for lay-counselors to deliver ART adherence counseling. Masivukeni uses video, visually impactful content, and interactive exercises to engage patients and empower counselors to effectively teach, guide, and problem-solve. Masivukeni runs locally, offline. The sessions are standardized, while offering patient-level personalization. Modifications can be deployed platform-wide as ART policies change. Counselor use of the tool is recorded. From 2007-2016, a pilot study and large-scale randomized controlled trial of the platform and tool were implemented in SA impoverished communities.
**Results:** Through intensive collaboration with patients, clinics, Departments of Health (DoH), and NGO counselor training centers, Masivukeni underwent multiple changes. These included addressing the need for both ART initiation and defaulter counseling sessions, videos in multiple languages, content changes to reflect newer ART regimens, monitoring (e.g. recording the length of time spent on activities), adding a patient notes field, and automating assessments to facilitate lay-counselors screening for mental health and alcohol/substance use problems. Counselors and patients gave positive feedback and noted ways to shorten sessions. Clinic and DoH partners suggested integration of additional content to address other comorbid health conditions. They also suggested features to generate usage reports for supervision, quality assurance, and health tracking.
**Conclusions:** With increasing prevalence of technology and internet access in SA, Masivukeni can be further modified to allow online delivery, centralized data management, counselor oversight, and integration with health care systems. Content-wise, Masivukeni can be adapted to integrate additional complementary modules covering comorbid health conditions. A district level implementation study incorporating these adaptations, as well as other lessons learned, is necessary to evaluate scalability.

## THPEE537

### STRENGTHENING COMMUNITY STRUCTURES FOR SUSTAINED ART PROVISION IN RESOURCE LIMITED SETTINGS

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**Background:** In Uganda there is a nationwide program to provide free antiretroviral treatment (ART). Despite this, the uptake of HIV care is still low in many of the rural areas. To address this, Rural Action Community Based Organisation (RACOBAO) in partnership with Pharmacists without Borders Sweden, funded by Forum Syd, implemented a project with the purpose of increasing uptake, retention and adherence to ART services.
**Description:** The project targeted people living with HIV, from remote rural communities of Kinuuka, Mpumudde, and Kasagama in Lyantonde district in south western Uganda from January 2012 to December 2013. The main duty bearer was the district health office. Health workers at lower level units were trained as a prerequisite for accreditation of those units as static ART sites. PLHIVs identified and seconded volunteers that were trained as treatment helpers providing individual support to clients, including adherence counseling. They also formed a linkage between clients and health workers through quarterly interface meetings. In addition, PLHIV were mobilized into support groups for peer counseling and advocacy for ART services.
**Lessons learned:** The training of health workers led to the accreditation of three health centers as static ART sites. Since then, this innovative approach that begun in Lyantonde became a national policy and was rolled out nationally 2015. Uptake to care tripled from 1,350 in 2012 to 5,467 in 2014 and to 6,495 by December 2015. Retention to care among the targeted PLHIV increased to 92% by December 2015 way above the 80% national average. Treatment helpers bridged the gap for monitoring of PLHIV in their homes, a mandate of the government health workers. The advocacy platforms for PLHIV improved their visibility and their capacity to present their needs to duty bearers. These approaches spearheaded by RACOBAO formed a model that was successfully replicated in neighboring Sembabule district during 2014-2015.
**Conclusions/Next steps:** Imbalances in the access and adherence to ART services are a function of structural and policy issues and this model aims at addressing both. It has successfully been implemented and evaluated in two rural districts in Uganda and can be replicated nationally to increase uptake, retention and adherence to ART services.

## THPEE538

### SUCCESSFUL INTEGRATION OF NURSE INITIATED TREATMENT OF HIV IN NQUTHU, UMZINYATHI AND ITS IMPACT ON THE HEALTH SYSTEM

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**Background:** Nquthu sub-district is one of South Africa most challenging areas for health intervention implementation due to its deep rural setting and in one of the most deprived parts of the country. Umzinyathi numerous challenges mean that it is often chosen to pilot and implement new services to assess cost and practicability before national roll-out. The district has been in the forefront of the roll out for both HIV and TB related interventions from the first pilots of ARV's to the development and implementation of community based treatment of MDR.
**Description:** Umzinyathi trained and appointed NIMART Nurses to work in all functioning Primary Health Care facilities for new cases of HIV. The aim was to reduce time, cost implications and other difficulties associated with treatment access and initiation in overburdened central facilities. Nquthu has one District Hospital and has 14 clinics and 4 mobile clinics for a population of ~160,000. We have used data from the period 2009 - 2015 for all HIV treatment initiations at all sites in the Sub-District.
**Lessons learned:** Since the start of the programme in 2012/13, over 81.4% (6126) of all new case initiations have taken place at PHC level, with Hospital initiations falling from a high of 1709 in 2010/11 to just 337 in 2014/15. Equally, the numbers of people being initiated on treatment has significantly increased year on year to a combined total of 2816 initiations in 2014/15, up 65% on the best pre-intervention enrolment figures, despite the slight reduction in overall HIV tests being carried out over the same period from 249,000 to 189,000
**Conclusions/Next steps:** NIMART has been successfully implemented, embedded and embraced in Nqutu with a significant impact on cost to both patient and Health facilities. The reduced costs and time in travel to facilities for patients mean that new patients are more likely to access treatment sooner. This in turn ensures that more patients are on treatment earlier, reducing critical care costs and improving outcomes for patients. The burden on Medical Officers based at district Hospitals has been significantly reduced, freeing them up for more critical roles within the facilities.

## THPEE539

### CHALLENGES OF TRANSITIONING FROM HEALTH FACILITY BASED ADHERENCE CLUBS TO COMMUNITIES

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**Background:** Patient retention in care is a critical challenge for antiretroviral treatment programs. Adherence clubs are an option for rapid service delivery where 30 patients are allocated to a group and meet either at a facility or community venue for less than an hour every 2 or 3 months depending on the supply of medication. Community-based models of antiretroviral therapy (ART) delivery has been recommended to support ART expansion and retention in resource-limited settings. The objective of the study was to establish perceived challenges moving adherence clubs from health facilities to communities.
**Methods:** A qualitative study was conducted at 36 clinics in Mpumalanga and Gauteng Province in South Africa in the month of December 2015 and January 2016. Purposive sampling methods were used to identify nurses, club managers, data capturers, pharmacists and pharmacy assistants who have been involved in facility based treatment adherence clubs. One-on-one key-informant interviews were conducted. A semi-structured interview design was used and interviews were digitally recorded then transcribed and analysed using thematic content analysis.
**Results:** A total of 108 health workers comprising of 36 (33.3%) males and 72 (66.7%) femalesparticipated in the study. Most of them (90.7%) indicated that taking clubs to the communities would be a good idea. However, the respondentshighlighted security, transportation of medication, distance from home to the identified venue, shortage of clinical staff for medication pre-packing and linkages togovernment database records (tier.net) were as possible challenges. Suggested solutions included linking to central dispensing unit to deliver medication, identification of venues secure and closer to patient homes, adoption and validation of community club registers by health facilities.
**Conclusions:** Health facility staff were agreeable to the moving adherence clubs from health facilities to communities. Although some challenges were identified these could be addressed by key stakeholders. However,government and non-governmental organisations need to exercise caution whentransitioning to community-based adherence clubs.

# INTERVENTIONS TO IMPROVE RETENTION IN THE PREVENTION OF VERTICAL TRANSMISSION CASCADE/CONTINUUM, INCLUDING EARLY INFANT DIAGNOSIS AND OPTION B+ PROGRAMMES

## THPEE540

### IMPROVING FIRST DNA-PCR UPTAKE FOR HIV-EXPOSED INFANTS IN SOUTH-WESTERN UGANDA

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**Background:** In conjunction with the Uganda Ministry of Health, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) under the USAID-funded STAR-SW project (2010-2015), supported prevention of mother-to child HIV transmission (PMTCT) at 234 health facilities in 13 districts in southwestern Uganda. By 2011 only 25% of expected HIV-exposed infants (HEIs) in the region were receiving an initial polymerase chain reaction (DNA-PCR) test within 12 months after delivery, at a median age of 2.7 months.
**Description:** EGPAF analyzed factors contributing to this gap and implemented four major interventions to improve coverage: 1) scaling up testing to more facilities through a sample transportation network, using motorbikes to ferry blood samples and test results between facilities and the central public health laboratory; 2) streamlining supply-chain management to ensure availability of EID commodi-

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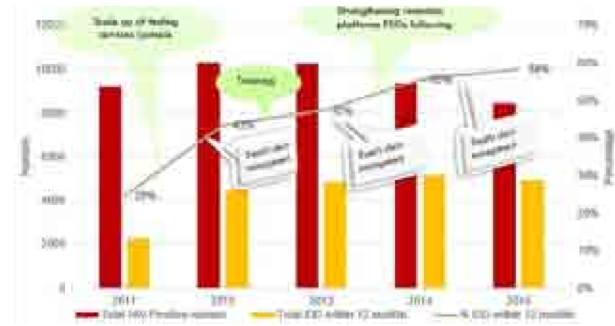
ties; 3) supporting retention of HIV-positive mothers through family support groups (FSGs); and 4) training staff in active screening for HEIs in immunization clinics and other service points and collecting samples at the mother-baby care points within MCH services.

**Lessons learned:** To improve first DNA-PCR uptake for HEIs, key bottlenecks must be identified at all points in the PMTCT cascade and addressed. While scaling up access to DNA-PCR testing led to an initial spike in uptake, incremental gains in the total number of infants tested and quality of the service were only realized after targeted interventions to resolve PMTCT programming gaps were implemented (see fig 1). The median age at first DNA-PCR progressively reduced from 2.7 to 1.8 months while DNA PCR positivity fell from 8.3% to 3.7%.



*[ First DNA-PCR uptake for HIV-exposed infants in Southwestern Uganda 2011-2015]*

**Conclusions/Next steps:** Scaling up DNA-PCR services should be complemented by interventions to improve program quality.

## THPEE541

### AGE AT HIV DIAGNOSIS AND TIME TO ENROLMENT INTO HIV CARE AND ART INITIATION IN CHILDREN AGED < 1 TO 14 YEARS FROM 2009-2014, TANZANIA

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**Background:** Early identification of HIV infection and timely enrollment into care are critical for successful treatment of HIV positive children. WHO recommends that all children <15 years are initiated onto antiretroviral treatment (ART) immediately after diagnosis. Information on age at which children are diagnosed for HIV and how long it takes to enroll and initiate ART is inadequate in Tanzania. We assessed changes in age at diagnosis and length of time from diagnosis to enrollment into care, and ART initiation from 2009-2014.

**Methods:** We analyzed routinely collected data from 291 HIV care and treatment clinics (CTC) with electronic recording of patient information. Demographic information of children aged ≤14 years enrolled between 2009 and 2014 were analyzed. Descriptive statistics were used to obtain median age at diagnosis, median time from diagnosis to enrolment; and proportions of children diagnosed by selected characteristics.

**Results:** 41,627 children were diagnosed with HIV and included in the analysis. Median age at diagnosis was 4.74 years (IQR 1.78-8.87) and did not change over the years. 17,306 (41.6%) were diagnosed at the age of ≥5 years. The majority were diagnosed by Provider Initiated Testing and Counseling (PITC) (83.7%) mainly through hospitals (58.6%) while Home Based Care (HBC) and Prevention of Mother to Child Transmission (PMTCT) contributed few children (0.9% each). Median time to enrolment was 2.1 days across all calendar years with 39,053 (86.9%) enrolled within 1 month. Median time to ART initiation decreased from 1.6 months (IQR 0.3-11.5) in 2009-2010 to 0.7 months (IQR 0-4.2) in 2011-2012 and 0.2 (IQR 0-1) in 2013-2014 ($p< 0.0001$). 22,502(49.9%) initiated ART within 1 month while 8,951(19.8%) initiated within ≥6 months.

**Conclusions:** Children are still being diagnosed at older ages, and few children are enrolled directly from the PMTCT program. Most children are enrolled into HIV care within a month of HIV diagnosis, but 20% of them wait more than six months before ART initiation. Strengthening the linkage between PMTCT and CTC will ensure that infants with an early diagnosis of HIV at PMTCT sites are enrolled and initiated on ART in line with WHO recommendations.

## THPEE542

### A SYSTEMATIC REVIEW OF FACILITY AND COMMUNITY-BASED INTERVENTIONS TO IMPROVE RETENTION OF HIV-POSITIVE PREGNANT WOMEN AND HIV-EXPOSED INFANTS ALONG THE PMTCT CONTINUUM OF CARE

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**Background:** Despite the demonstrated success of Prevention of Mother-to-Child Transmission of HIV (PMTCT) programs in improving maternal and infant health outcomes, the poor retention seen in the "Option B+ era" poses a formidable challenge to achieving the elimination of vertical HIV transmission in low and middle-income countries (LMICs). This systematic review summarizes literature on facility-based and community-based strategies that demonstrate statistically significant improvements in retention of HIV+ pregnant and breastfeeding women and infants along the PMTCT cascade.

**Methods:** A systematic search of PubMed, EMBASE, CINAHL and PsycInfo was conducted to identify peer-reviewed studies published between 1990 - 2015 that captured significant PMTCT outcome improvements for retention of pregnant women and infants. All reviewed studies contained data on retention along the PMTCT cascade of care—from maternal HIV testing and counseling through infant diagnosis and follow-up. Studies were grouped by maternal or infant retention indicators as defined by the principal outcomes measured in each study. Study rigor was assessed by an 8-item assessment tool previously developed for systematic reviews of HIV behavioral interventions.

**Results:** Out of 686 citations reviewed, 24 articles (12 prospective cohorts, 7 retrospective cohorts, and 5 controlled trials) met criteria. Among studies of maternal retention indicators, most measured pregnant women initiated on combined antiretroviral therapy (cART) (n=11) and loss to follow-up (LTFU) rates (n=8). Among studies of infant indicators, the majority measured uptake of early infant diagnosis testing (n=14) and LTFU rates (n=10). Three community interventions, ten facility-based interventions, and eight combination interventions of community and facility-based components were reviewed. Four studies assessed retention of women and infants in Option B+ programs. Limitations of reviewed studies include small sample size, limited geographical location, and non-randomized assignment and selection of participants.

**Conclusions:** This review summarizes standalone and combination interventions, including comprehensive, family-centered care, and patient tracking, that are demonstrably effective in retaining HIV-positive mothers and their infants in the PMTCT continuum of care. Given the recent international normative guidance recommending the universal testing and treatment of all people living with HIV, additional research is needed to design effective interventions that improve retention in PMTCT and broader HIV programs.

## THPEE543

### EFFECTIVENESS OF A BI-WEEKLY MATERNAL HEALTH TEXT MESSAGES INTERVENTION AIMING TO IMPROVE CLINICAL OUTCOMES OF HIV-POSITIVE WOMEN PARTICIPATING IN MAMA SOUTH AFRICA IN JOHANNESBURG

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**Background:** mHealth interventions have the potential to improve health outcomes, but mHealth intervention research focussed on HIV-positive pregnant women is sparse. Mobile Alliance for Maternal Action (MAMA) South Africa was a maternal health mHealth intervention implemented in public health clinics.

**Methods:** Between April 1, 2013, and August 20, 2014, free bi-weekly maternal health and PMTCT messaging through MAMA South Africa was offered to pregnant HIV-positive women attending public antenatal care (ANC) clinics in Johannesburg's inner-city. Messages were customised for gestational age and age of infant and relevant to the South African context. The content included maternal health and HIV-related support. We compared clinical and birth outcomes with HIV-positive pregnant women who did not receive the intervention.

**Results:** A total of 235 intervention, and 586 control participants were included. Most women attended their first ANC visits after 20 gestation (intervention: 63.8%; control: 75.7%, p=002). Controlling for differences in date of first ANC visit using ANCOVA, intervention participants attended more antenatal care visits (4.8 vs 4.3, p=0.019). Intervention participants were also more likely to attend the four recommended ANC visits (RR 1.41 (95% CI=1.15-1.72, p=0.001)). There was a trend in the intervention group towards attending infant PCR testing within the recommended six weeks after birth (81.3% vs 75.4%, p=0.064). Intervention participants were likely to have a normal vaginal delivery (RR: 1.1009 (95% CI=1.02-1.19) and a lower risk of delivering a low birth weight infant (< 2500 g) (RR=0.1368 (95% CI=0.02-1.07, p=0.035)). There was at least one piece of missing data for each participant.
**Conclusions:** While the intervention group was more likely to attend PCR testing within the recommended time, this result was not statistically significant. However, a statistically significant increase in average number of ANC visits attended was found, along with an increased likelihood of attending at least four ANC visits, and improved birth outcomes for pregnant women and newborns. Based on these findings, national maternal mHealth programmes, such as MomConnect, have potential to improve pregnancy outcomes and impact should be regularly evaluated.

## THPEE544

### Low rates of successful defaulter tracing and re-engagement in care in Option B+ women in Central Malawi

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**Background:** Under EQUIP, a USAID/PEPFAR project, Health Surveillance Assistants (HSAs) were trained to trace women lost to follow up from Option B+, provide basic education about the importance of antiretroviral therapy (ART) for maternal and infant health, and encourage women to return to care. Limited data exist around whether women traced in this manner re-engage in care and are retained.
**Methods:** Between October 2014 and April 2015 we reviewed ART registers at 14 health centers in Central Malawi to determine the number of women who had defaulted from care (>60 days without ART). HSA records were reviewed to determine how many women were successfully traced, and of these, how many agreed to return to care. ART registers and patient files were reviewed three months after tracing to determine how many women re-engaged in care (defined by having at least one appointment after tracing) and were retained in care for at least 90 days.
**Results:** A total of 289 women met criteria for default and were traced by HSAs. Fifty women (17%) were successfully located and received ART education. Of these, 49 (98%) agreed to return to care and were confirmed to re-engage in care with at least one clinic appointment. Twenty-six women (53%) were retained and 23 (47%) defaulted again within three months of returning to care (Table). Among women retained, 19/26 (73%) remained in care at the same site, 6/26 (23%) transferred to another facility, and 1/26 (4%) died after re-engaging in care.

| Facility | Number of women meeting criteria for default (>60 days without ART) | N (%) successfully traced by HSAs | N (%) retained 3 months after tracing* |
|---|---|---|---|
| 1 | 12 | 6 (50) | 4 (67) |
| 2 | 6 | 1 (17) | 0 (0) |
| 3 | 12 | 4 (33) | 3 (75) |
| 4 | 29 | 1 (3) | 0 (0) |
| 5 | 5 | 4 (80) | 0 (0) |
| 6 | 15 | 12 (80) | 7 (58) |
| 7 | 45 | 4 (9) | 4 (100) |
| 8 | 25 | 4 (16) | 1 (25) |
| 9 | 16 | 1 (6) | 0 (0) |
| 10 | 61 | 1 (2) | 1 (100) |
| 11 | 25 | 7 (28) | 5 (71) |
| 12 | 19 | 2 (11) | 0 (0) |
| 13 | 13 | 1 (8) | 0 (0) |
| 14 | 6 | 2 (33) | 1 (50) |
| Total | 289 | 50/289 (17) | 26/49** (53) |

*Those who transferred to another facility or died after return to care were considered retained in care.
**Of the fifty individuals traced, one individual declined to return to care

*[Table. Site-level data on the number of women defaulting from care and successful tracing and retention rates]*

**Conclusions:** A small proportion of women who defaulted from Option B+ were successfully traced by HSAs and almost half of these women were lost from care within three months of re-engagement. Interventions that identify women's challenges and help address specific barriers are needed to improve retention in Option B+.

## THPEE545

### "When do I stop this?": Challenges to accepting lifelong treatment among pregnant women in Kinshasa, DRC, and counseling strategies to address them

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**Background:** Implementation of universal lifelong antiretroviral treatment ("Option B+") for HIV-infected pregnant and breastfeeding women began in the Democratic Republic of the Congo (DRC) in September 2013. Other country experience suggests pregnant women initiated on treatment the day they are diagnosed HIV-positive are at elevated risk of defaulting from antenatal care. One study objective was to document factors contributing to loss to follow-up among HIV-positive pregnant women and suggested additional strategies to address retention.
**Methods:** In July-August 2015, 29 healthcare providers participated in interviews; 25 mentor mothers (HIV-positive expert patients) participated in four focus groups. Sixteen EGPAF DRC-supported facilities in Kinshasa with high volume and high HIV prevalence were purposively selected. Topics included women's Option B+ perceptions and experiences and counseling strategies to encourage lifelong treatment acceptance. Audio recordings from sessions were transcribed and translated from French or Lingala into English. Data were prepared for analysis using a standardized codebook and analyzed using MAXqda (V10).
**Results:** Study respondents described pregnant women's difficulty with accepting lifelong antiretroviral therapy (ART). Women often expressed shock or felt punished and struggled to comprehend, with questions such as *"When do I stop this?"* With intensive and ongoing counseling and the establishment of trusting relationships with clinic staff, most women accepted and adhered to medication. However, nearly all facilities had cases of women who refused treatment. Frequently reported reasons included conflicting guidance from pastors to pray instead of taking medication and fear of stigmatization, particularly from male partners. Table 1 depicts strategies employed by providers and mentor mothers to encourage treatment acceptance and reasons women provided respondents for refusing lifelong treatment. Responses were similar across participant groups, though providers reported drug functionality and mentor mothers reported testimonials slightly more often as strategies.

| Option B+ Counseling Strategies Used to Encourage Treatment Acceptance: |
|---|
| • Delivering counseling messages with kindness and sensitivity to cultivate a trusting relationship between provider/mentor mother and clients • Providing messages that include the importance of taking ART and how drugs function in the body • Including testimonials from mentor mothers on how they remain healthy and have prevented infection in their children • Likening HIV to a chronic disease like diabetes that requires management • Referring to a possible future cure for HIV |
| Reported Reasons for Refusing Lifelong Treatment: |
| • Relying upon religious convictions or guidance from pastors to pray instead of taking medication • Not disclosing HIV status to partner or family members out of fear of stigmatization • Believing in witchcraft or demonic origins of illness • Experiencing side effects, for those who may have initially accepted • Looking and feeling healthy • Not believing test results, possibly due to having a serodiscordant partner |

*[Table 1: Frequently Reported Option B+ Counseling Strategies and Reasons for Refusing Lifelong Treatment]*

**Conclusions:** Treatment acceptance is a significant challenge for Option B+ scale-up. Lessons learned through this evaluation to encourage treatment acceptance and promote retention could be incorporated, such as sensitization workshops for religious leaders, couples counseling strategies, and HIV-related training for mentor mothers to comprehensively address women's needs.

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## THPEE546

### IMPROVING PMTCT COVERAGE AND EFFECTIVENESS THROUGH REMINDER CALLS AND COMMUNITY INTERVENTIONS IN THE EAST REGION OF CAMEROON: EXPERIENCE FROM SIMECAM-FGSK

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**Background:** In 2014, Cameroon adopted the option B+ strategy released the previous year in the World Health Organization guidelines to eliminate mother to child transmission of HIV (MTCT). However, high rates of lost to follow-up (LTFU) observed in many countries with a generalized HIV epidemic could jeopardize the effectiveness of this strategy. Within the framework of the SIMECAM-FGSK study that aims at facilitating integration of couple-oriented counseling and option B+ in the antenatal care (ANC) package in primary health care structures, we evaluated the impact of reminder calls and community interventions on PMTCT.
**Description:** An intervention called couple-oriented counseling (COC) successfully increased the number of male partners who came back for HIV testing in ANC units in urban areas. The SIMECAM-FGSK study introduced COC in the ANC package together with option B+ intervention in the PMTCT program in six health care facilities in rural areas in the East region of Cameroon. Reminder calls were conducted if appointments were missed for at least two week. In case of unsuccessful calls, home visits (HV) were carried out. This analysis was realized in the subgroup of HIV-infected women who missed at least one scheduled visit.
**Lessons learned:** From February 2014 to September 2015, 719 pregnant women were included. Among them, 13.5% (97/719) were HIV-infected. Ninety five (98%) HIV-infected were initiated on ART and 29 (30%) missed at least one scheduled visit for care. 81 calls (median per woman: 2 (IQR, 1-4)) and 21 HV were made leading to 83% (24/29) HIV-infected women being reintegrated in care. These interventions increased retention rate among HIV-infected women to 91% at six months. This figure was significantly higher compared to 21% reported before implementing these interventions (p< 0.001). During the study period, seventy two HIV-infected pregnant women delivered and EID coverage was 72.2% (52/72); significantly higher compared to the 40% nationwide. A MTCT rate of 5.8% (3/52) was observed.
**Conclusions/Next steps:** Interventions to reduce defaulters and cases lost to follow-up maintain an acceptable rate of HIV-infected women in care, help to increase access to option B+ intervention and assess elimination of MTCT.

## THPEE547

### A FACILITY-BASED APPROACH TO IMPROVE TRACKING OF HIV-EXPOSED INFANTS IN THE PMTCT TREATMENT CASCADE: EXPERIENCE FROM SOKOTO, NORTH-WEST NIGERIA

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**Background:** Nigeria has the highest number of children contracting HIV in the world. However, loss to follow-up of HIV-exposed infants (HEI) along the continuum of care within the prevention of mother-to-child transmission (PMTCT) cascade remains a major challenge.
The objective of this pilot study was to describe the impact of a simple facility driven intervention in improving the tracking outcomes and retention of HEI within the PMTCT cascade especially in resource constraints settings with no electronic medical record system (EMR).
**Methods:** A unique birth cohort filing method was introduced in a tertiary hospital, which involves filing of HEI cards according to their birth month and year for easy monthly reporting of HEI outcomes at ages of 2, 12 and 18 months. A total of 109 HEI were co-opted into this pilot study for the study. The HEI that were entered into the birth cohort filing system were tracked through phone calls and home visits.
**Results:** This Exposed Infants Tracking System (EITS) revealed that a total of 56 HEI out of the 109 enrolled in the study were retained in care (51.4% retention rate) across all ages. The remaining 53 (48.6%) have been loss to follow up. The default rate increases with advancing age with 22.9% and 53% at ages 12 months and 18 months respectively. Meanwhile, all (100%) HEI within the 2 months cohort were retained. Ascertainment of HIV status in the three birth cohort revealed that at 18 months, only 36.4% had their DNA-PCR as against 40.9% at 2 months cohort. None of the HEI had HIV status determined at 12months cohort. While all DNA-PCR tests came back negative for HIV at 2 months cohort, in the 18 months cohort, 18% were positive, while 27% were discharged uninfected.
**Conclusions:** EITS is simple and easy to replicate in low resource settings. It enables easy identification of primary outcomes, promotes efficient tracking, allows for timely planning of HIV interventions, and serves as an excellent tool for research purposes.

## THPEE548

### INCREASING ACCESS TO PMTCT FOR YOUNG WOMEN IN SOUTH AFRICA

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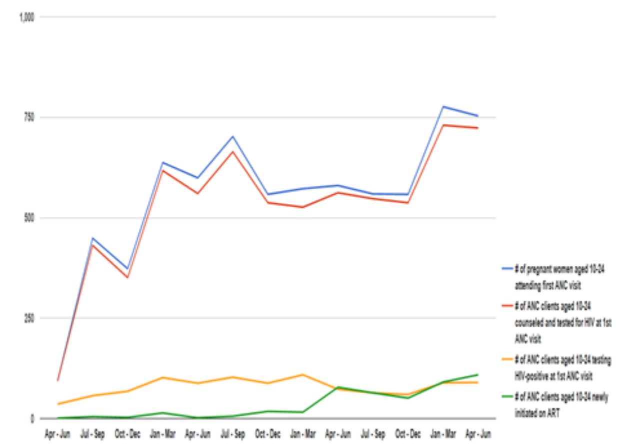
**Background:** South Africa is home to the world's largest population of pregnant people living with HIV. Twenty percent of women ages 20 to 24 have begun childbearing by age 18, and among pregnant women ages 15 to 24, HIV prevalence is 19.3%.[1] Yet, PMTCT services are often not accessible to or targeted towards young people living with HIV (YPLHIV).
**Description:** Pathfinder International worked with public sector facilities to increase PMTCT provision to women between the ages of 10 and 24, using a multi-faceted approach. Youth-friendly services (YFS) were generated, dependent on resources available, either by creating separate youth zones within larger primary healthcare settings, or by creating separate youth-friendly clinics with a dedicated provider. Pathfinder collected disaggregated data to monitor use of PMTCT services by YPLHIV. To promote both scalability and sustainable capacity building Pathfinder facilitated effective leadership in 19 facilities in seven districts, developing human capacity through in-service training, strengthening of management systems, and infrastructure.
**Lessons learned:** As the graph below illustrates, over the course of the project, the number of young women accessing PMTCT services increased significantly. The interventions found to be most effective were:
• Training clinic staff to provide YFS
• Improvement of facility infrastructure
• Community-based activities to reduce stigma and generate demand.
The project also ensured sustainability and scalability through integrating youth-friendly models into existing services, and adapting to accommodate the existing resources.




*[ANC Uptake April 2011 to June 2014]]*

**Conclusions/Next steps:** In a country with a high prevalence of both HIV and early pregnancy, PMTCT services tailored towards YPLHIV are both accessible and sustainable to increase uptake of services among this vulnerable group. Issues such as training of staff to provide YFS, integration of YFS into existing health care systems, and collection and monitoring of disaggregated data need to be key aspects of any PMTCT program to ensure access for those who are most in need.

## THPEE549

### CONDITIONAL CASH TRANSFERS TO INCREASE RETENTION IN PMTCT CARE, ANTIRETROVIRAL ADHERENCE, AND POSTPARTUM VIROLOGICAL SUPPRESSION: A RANDOMIZED CONTROLLED TRIAL

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**Background:** Novel strategies are needed to increase retention in prevention of mother-to-child HIV transmission (PMTCT) services and virologic suppression. We have recently shown that among HIV-infected women, small, incremental financial incentives resulted in increased retention along the PMTCT cascade. However, it is unknown whether women who receive incentives to attend clinic visits will be as adherent to antiretrovirals as those who do not.
We sought to determine whether the proportions of women in care at six weeks postpartum who adhered to their antiretrovirals (measured by pill counts) and achieved an undetectable viral load differed between the two study groups.
**Methods:** Newly diagnosed HIV-infected women, ≤32 weeks pregnant, were recruited at antenatal care clinics in Kinshasa, Democratic Republic of Congo. Women were randomized 1:1 to an intervention or control group. The intervention group received compensation ($5, plus $1 increment at each subsequent visit) conditional on attending scheduled clinic visits and accepting offered PMTCT services; the control group received usual care.
**Results:** Among 433 women enrolled and randomized (216 intervention and 217 control), 332 (76.7%) remained in care at six weeks postpartum, including 174 (80.6%) in the intervention group and 158 (72.8%) in the control group. Pill count data were available for 297 participants (89.5%), 156 (89.7%) and 141 (89.2%) in the intervention and control groups, respectively. The proportion of women with perfect adherence was 69.9% (109/156) and 68.1% (96/141) in the intervention and control groups, respectively (risk difference ([RD], 0.02; 95% confidence interval [CI], -0.06, 0.09). Viral load results were available for 171 (98.3%) and 155 (98.7%) women in the intervention and control groups, respectively. An undetectable viral load was attained by 66.1% (113/171) of the intervention group and 69.7% (108/155) of the control group (RD, -0.04; 95% CI, -0.14, 0.07). Results were similar after adjusting for marital status, age, education, baseline CD4 count, baseline viral load, gestational age, and initial antiretroviral regimen.
**Conclusions:** While provision of cash incentives to HIV-infected pregnant women led to higher retention in care at six weeks postpartum, among those retained in care, adherence to antiretrovirals and virologic suppression did not differ by study group.

## THPEE550

### THE EFFECT OF CONDITIONAL CASH TRANSFERS ON RETENTION IN AND UPTAKE OF PMTCT SERVICES VARIES BY PERCEIVED SEVERITY OF HIV AND PMTCT BENEFIT: A RANDOMIZED CONTROLLED TRIAL

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**Background:** To elucidate the mechanisms by which a cash incentive intervention increases desired prevention of mother-to-child transmission (PMTCT) outcomes, we identified perceptual factors associated with retention in and uptake of PMTCT services through six months postpartum, and assessed their interactions with a cash incentive intervention.
**Methods:** We used data from a randomized controlled trial in Kinshasa, Democratic Republic of Congo. Four hundred thirty-three newly diagnosed HIV-infected women, ≤32 weeks pregnant, were randomized to the standard of care (control group) or to the standard of care plus small and increasing financial compensation conditional on clinic attendance and service uptake (intervention group). Perceptual factors associated with loss to follow-up (LTFU) and uptake of PMTCT services (in care and accepted all available PMTCT services) through six weeks postpartum were first identified in the standard of care group. Then, in the combined dataset, linear risk models were used to assess risk difference modification.
**Results:** In the control group, participants were less likely to be LTFU if they perceived HIV as a "very serious" health problem for their baby vs. not (perceived severity of HIV), and if they believed it would be "very likely" that they will pass HIV on to their baby if they did not take any HIV drug vs. not (perceived PMTCT benefit) (Table 1). Perceived severity of HIV was the only factor associated with increased uptake of PMTCT services. Receiving the cash incentive intervention was strongly protective against LTFU and improved uptake of PMTCT services. However, the protective effects of 1) perceived severity of HIV and 2) perceived PMTCT benefit were not additive to the protective effect of the cash incentive.

| Question | Response options | Loss to follow-up | | |
|---|---|---|---|---|
| | | Intervention group: RD(95% CI) | Control group RD(95% CI) | IC (95% CI) |
| Now think about your baby. How serious a health problem would it be if your baby had HIV? | Very serious | -0.20 (-0.37, -0.03)* | -0.13 (-0.30, 0.04)* | 0.16 (-0.04, 0.35)* |
| | Other | -0.23 (-0.41, -0.04)* | 1 | |
| How likely or unlikely do you think it is that you will pass HIV on to your baby if you do not take any HIV drug? | Very likely | -0.22 (-0.39, -0.05)* | -0.15 (-0.32, 0.02)* | 0.19 (-0.01, 0.38)* |
| | Other | -0.25 (-0.44, -0.07)* | 1 | |
| | | Uptake of prevention of mother-to-child HIV transmission services | | |
| Now think about your baby. How serious a health problem would it be if your baby had HIV? | Very serious | 0.29 (0.10, 0.47)* | 0.19 ( 0.00, 0.37)* | -0.28 (-0.52, -0.04)* |
| | | 0.38 (0.16, 0.59)* | 1 | |
| *significant at alpha = 0.20. | | | | |

*[Risk differences of the conditional cash incentive intervention, perceived HIV severity, and perceived prevention of mother-to-child HIV transmission]*

**Conclusions:** A small cash incentive intervention, perceived severity of HIV, and perceived PMTCT benefit all had protective effects on retention in PMTCT care. However, the effects were not additive, suggesting competing mechanisms.

## THPEE551

### TOWARD ELIMINATION OF MOTHER TO CHILD-TRANSMISSION OF HIV: INTEGRATING HIV TREATMENT WITHIN MATERNAL AND CHILD HEALTH SERVICES FOR IMPROVED RETENTION OF MOTHER-BABY PAIRS AND OUTCOMES IN MOMBASA COUNTY, KENYA

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**Background:** Traditionally, MCH clinics provide prophylaxis for PMTCT, but women and infants who need ART are usually referred to HIV clinics in another area of the facility or to another facility altogether. The need to attend separate clinics creates barriers to care, including increased cost, stigma, missed appointments, and even loss-to-follow-up.
**Description:** The USAID-funded APHIAplus Nairobi-Coast project, led by Pathfinder International, supported high-volume facilities in Mombasa county to integrate HIV treatment within MCH services from 2014 to 2015. Health workers were trained, and the project provided basic equipment, ARV and OI management drugs, standard government data collection tools, ongoing mentorship, and regular supportive supervision. Key integration components included: ensuring that all pregnant and breastfeeding women were tested; initiating immediate HAART for those found to be positive; follow-up of mother-baby pairs with infant testing during immunization visits; and mothers' viral load testing, according to Kenya's national guidelines. From 2014 to 2015, a total of 340 HIV-infected pregnant women and their HIV-exposed infants (HEI) were followed throughout the cascade until 18 months of age. Data from three facilities (Coast PGH, Port-Reitz and Tudor) was collected using standard government tools during the intervention to document lessons learned.

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**Lessons learned:** HIV testing at ANC remained consistently high at 98% even before the intervention; yet, provision of HAART to HIV-positive women improved markedly—from 55% (98 of 178 women) in 2014 to 99% (187 of 189 women) in 2015. DNA PCR testing of HEI at six weeks improved from 70% in 2014 to 94% in 2015, with transmission rates at six weeks of 3% in 2014 and 1% in 2015. Follow-up of mother-baby pairs at 9 months also improved from 62% in 2014 to 87% in 2015, with transmission rates of 5% in 2014 and 2% in 2015.
**Conclusions/Next steps:** Integration of comprehensive HIV care and treatment services into MCH has the potential to: expand access to ART for HIV-infected pregnant and breastfeeding women; improve follow-up and retention of mother-baby pairs; and improve provision of prophylaxis for HEI. This could help achieve elimination of vertical HIV transmission. The project has since scaled up this intervention to other high-volume MCH facilities.

## THPEE552

### EARLY ART INITIATION AMONG HIV-POSITIVE PREGNANT WOMEN IN CENTRAL MOZAMBIQUE: PRELIMINARY FINDINGS FROM A STEPPED WEDGE RANDOMIZED CONTROLLED TRIAL OF AN OPTIMIZED OPTION B+ APPROACH

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**Background:** The present randomized trial studied the performance of Option B+ in Mozambique, and evaluated an enhanced retention package in public-sector clinics.
**Methods:** 761 pregnant women tested HIV+, immediately initiated ART, and were followed to track retention across 6 clinics in Sofala and Manica Provinces, Mozambique from May 2014 - May 2015. Clinics were randomly allocated within a stepped-wedge fashion to intervention and control periods, with the intervention including:
(1) workflow modifications;
(2) enhanced patient tracking;
(3) adherence committees to systematize follow-up;
(4) active patient follow-up including home visits;
(5) text messages to patients; and
(6) improved counselling and supervision.
**Results:** During control periods, 52.3% of women returned within 10 days of their scheduled 30-day ARV pickup, compared to 70.8% of women in intervention periods (Odds ratio [OR]: 1.80; 95% Confidence interval [CI]: 1.05, 3.08). This difference was 46.1% control vs. 57.9% intervention at 60 days (OR: 1.82; CI: 1.06, 3.11), and 38.3% control vs. 41.0% intervention at 90 days (OR: 1.04; CI: 0.60, 1.82). We hypothesize effects at 90 days may be biased towards the null due to 149 women (19.6%) having clinic intervention initiation prior to their 90-day pickup. In pre-specified sub-analyses, birth prior to scheduled pickups was strongly associated with failure - women giving birth prior to their ARV pickup were 33.3 times (CI: 4.4, 250.3), 7.5 times (CI: 3.6, 15.9) and 3.7 times (CI: 2.2, 6.0) as likely to not return for ARV pickups at 30, 60, and 90 days, respectively. The intervention showed a trend towards higher effect sizes for retaining women who gave birth prior to ARV pickups at 30 days (OR: 5.0; CI: 0.52, 47.5) and 60 days (OR: 2.4, CI: 0.96, 6.2), but not 90 days (OR: 0.97, CI: 0.49, 1.9).
**Conclusions:** An enhanced retention package was effective at increasing retention at 30 and 60 days for women attending public-sector clinics. However, retention at 90 days under Option B+ was very low - only a combined 40% returned within 10 days of their 90-day ARV pickup. Targeted efforts to increase retention may be particularly important for women giving birth prior to their first few ARV pickups.

## THPEE553

### RETENTION-IN-CARE FROM DELIVERY THROUGH 18 MONTHS POSTPARTUM AMONG HIV-POSITIVE MOTHERS RECEIVING LIFELONG ART IN KIGALI, RWANDA

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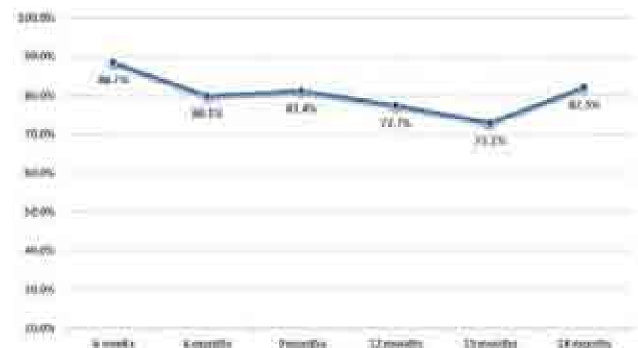
**Background:** The Kigali Antiretroviral and Breastfeeding Assessment for the Elimination of HIV (Kabeho) Study is an observational prospective cohort evaluation of the PMTCT program in Kigali following Option B+ implementation. Maternal retention-in-care from delivery (n=601) through 18-months postpartum was assessed.
**Methods:** Mothers enrolled from third trimester of pregnancy until two weeks postpartum from 14 high-volume sites were scheduled to attend monthly study visits, aligned with their routine PMTCT clinic visits. Health facilities conducted tracing within two weeks after missed clinic visits. If a mother did not attend a study visit within one week before or three weeks after the scheduled appointment, it was considered a missed study visit. Full retention was defined as attendance at 70-100% of scheduled visits, partial retention was 30-69.9%, and not retained in care was less than 30% of scheduled visits, excluding deaths.
**Results:** Between May 2013 and November 2015, PMTCT attendance was tracked with highest attendance at 6 weeks (88.7%), 9 months (81.4%) and 18 months (82.3%), corresponding to testing time points for HIV-exposed children. 80% of samples for early infant diagnosis were collected by 14 weeks. Thirty-four (5.8%) mothers terminated their infant's involvement; reasons included 26 relocations, 5 consent withdrawals, 3 other reasons, although women may have continued to attend PMTCT. Of the 601 women who gave birth to 608 infants, there were 32 infant deaths, with 18 of those deaths and one withdrawal before the 6-week visit.
A total of 458 (80%) women were fully retained at 18 months postpartum, 91 (15.7%) were partially retained and 31 (5.3%) were not retained in care. Overall, 121 (20%) women missed three consecutive visits throughout the study.
**Conclusions:** Retention-in-care was high, yet missed visits and thus, ART interruption remains an issue even in an urban area with easier access to facilities. Highest attendance was at testing times for HIV-exposed children.



*[Figure 1. PMTCT attendance from delivery through 18 months postpartum among Kabeho Study participants receiving lifelong ART]*

## THPEE554

### VIROLOGIC OUTCOMES AMONG WOMEN INITIATING ANTIRETROVIRAL THERAPY THROUGH THE OPTION B+ PROGRAM IN MALAWI: 6 MONTH RESULTS FROM THE PURE STUDY

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**Background:** In 2011, Malawi launched Option B+, a program of universal ART treatment for pregnant and lactating women to optimize maternal health and prevent pediatric HIV infection. For best results, women need to achieve HIVRNA suppres-

sion. The Malawi ART program supports HIVRNA testing at 6 months as a first assessment of treatment success. We report the 6 month HIVRNA results for women participating in the PURE study.

**Methods:** The PURE study is an ongoing cluster-randomized trial evaluating three strategies for promoting uptake and retention in the ART program;
Arm 1: Standard of Care,
Arm 2: Facility Based Mentor Mothers, and
Arm 3: Community based expert Mothers.
Pregnant and Breastfeeding mothers were enrolled at the time of HIV diagnosis in the ANC or post-partum clinics and followed according to Malawi ART guidelines. Dried Blood spots for HIVRNA testing were collected at the 6 month visit. HIVRNA < 1000 copies/ml was considered HIV suppression. We evaluated risk factors for HIV suppression using Chi-2 and t-tests as appropriate.

**Results:** We enrolled 1272 women across 21 sites in Southern and Central Malawi. The majority enrolled while pregnant (86%), were WHO Stage 1(95%), and the median age was 26 years (IQR 22-31). At 6 months, 833/1272 (65%) had HIVRNA testing conducted. Among those tested, 80.5% (671/833) were suppressed. By intent to treat analysis (missing HIVRNA= failure), the overall cohort suppression rate was 53% (671/1272) but this likely underestimates suppression. There was no statistical difference in HIV suppression according to age (< 25 vs. 25 and above), WHO stage (Stage 1 vs. Other), or Pregnancy vs. Breastfeeding status.

**Conclusions:** The virologic suppression rate of 80.5% seen in our study is comparable to national estimates but is below proposed targets of 90% suppression while on ART. High virologic testing rates must be achieved to accurately determine HIV suppression rates. Increased effort to promote adherence in the Option B+ program is necessary to achieve optimal outcomes.

## THPEE555

### A SHIFT IN FOCUS: THE ROLE OF EARLY INFANT DIAGNOSIS INTERVENTIONS TOWARDS ACHIEVING 90-90-90

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**Background:** Early infant diagnosis is a critical component of prevention of mother to child transmission (PMTCT) services that ascertains outcomes of PMTCT interventions through early identification of HIV exposed infants for prevention services and timely linkage to care and treatment of HIV infected infants. As countries strive to attain global 90-90-90 targets, early identification of children living with HIV is urgently required. To improve EID services, the National AIDS & STI Control Programme (NASCOP) with support from partners developed an early infant diagnosis (EID) website that service providers and program managers can use to track EID results at facility, sub-county, county and national level.

**Description:** The EID website is a real-time online portal through which patient level and systems data on the follow up of EID and PMTCT interventions is collected. A programmatic review was done for the period January - December 2014 using the aggregated data as collected from Kenya's 47 counties in the EID website. Only data entries that had complete documentation in each variable were analysed in this process.

**Lessons learned:** Approximately 59,416 infants tested in this period with 38,434 (64%) having completed documentation on the system. There was a 1:1 ratio of males and females tested. A total of 2504 (6.5%) infants were identified as HIV positive. Majority of the infants identified as HIV infected accessed testing in PMTCT/MCH (62.5%) and comprehensive HIV care (19%) settings with the fewer accessing EID services in out-patient departments, maternity wards and in-patient departments (9%, 6%, < 1%). However, higher yields of HIV infection were observed in those tested in the IPD, OPD and other unspecified settings respectively (41%, 25%,15%).

**Conclusions/Next steps:** This web-based platform has guided the country to effect a policy shift. Kenya is increasing investments for EID to in and out-patient service delivery points in addition to traditional PMTCT settings. Analysis of the EID data has further enabled the country to improve linkages to HIV care and treatment among children.

## THPEE556

### MOBILE PHONE TEXT MESSAGE INTERVENTION FOR PROMOTING HIV TESTING OF INFANTS BORN TO HIV-POSITIVE WOMEN IN RURAL COMMUNITIES, OSUN STATE, NIGERIA

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**Background:** Early diagnosis of HIV in infants provides a critical opportunity to strengthen follow-up of HIV-exposed children and assure early access to antiretroviral (ARV) treatment for infected children. Infants born to HIV infected mothers are exposed to the virus and if infected, have a 50 percent chance of dying before they reach the age of two. This intervention therefore designed to determine the effectiveness of using text messages to improve HIV testing rate of infants born to HIV-positive women in Osun State, Nigeria.

**Description:** This intervention was carried out among 132 HIV-positive women who were recruited after delivery. Health Belief Model was used for the development of discussion guides and crafting of text messages. Infant HIV prevention education were discussed with participants' through text message for promoting post natal clinic attendance. Participants' were followed up for 12 months and the intervention was evaluated at 6 and 12 months. Data were analyzed using descriptive statistics, Chi-square and t-test.

**Lessons learned:** Mean age of participants was 24.2 ± 6.1 years and 83.9% had secondary education. Participants' knowledge of HIV prevention among infants increased from 5.8% to 30.2% within 6 months and 91.1% at 12 months. Post natal clinic attendance increased from 21.2% to 59.4% within 6 months and 91.9% after 12 months. Number of children identified as HIV positive increased from 1.7% to 4.3% within 1 year and 2.2% of the children died before the return of their DNA PCR results. Lack of information, fear of HIV testing, religious beliefs and transportation cost were identified as important barriers to postnatal clinic attendance. Most participants felt the study text messages were brief, caring, polite, encouraging and educative for promoting women bringing their children to clinic after delivery. Participants generally suggested that text messages should not mention HIV.

**Conclusions/Next steps:** Information and education are important to encourage and remind women to attend postnatal clinic, facilitate early infant HIV testing. Text message could be a useful tool to disseminate information and promote postnatal clinic attendance but such messages should not mention HIV/AIDS.

## THPEE557

### IMPROVED CLINICAL OUTCOMES AND REDUCED LOSS TO FOLLOW-UP AMONG PEOPLE LIVING WITH HIV (PLH) EXPOSED TO THE *NAMWEZA* INTERVENTION IN DAR ES SALAAM, TANZANIA

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**Background:** Psychosocial factors have been linked with significant loss to follow-up among people living with HIV (PLH), and there is substantial evidence that psychoeducation improves clinical outcomes. However little has been reported on the effect of psychoeducation on retention of PLH to care. We describe results of the *NAMWEZA ("*Yes I Can") intervention on clinical outcomes and retention to care among PLH. *NAMWEZA* is based a novel program using an "appreciative inquiry" approach that promotes positive psychology and hope for PLH.

**Methods:** From 2010 to 2014, PLH participating in the *NAMWEZA* intervention in HIV care clinics in Dar es Salaam, Tanzania were matched with controls using a routine clinic electronic database and followed longitudinally for 24 months. Baseline sociodemographic, CD4, HBG, BMI and loss to follow-up information were collected with clinical outcomes measured every eight months. Changes over time for the clinical outcomes and loss to follow-up were calculated and compared through multivariate random affects models. Matching by age and stratified analysis were used to address confounding.

**Results:** Among 418 intervention and 406 control participants, 23% and 28% were severely immune suppressed (CD4 <200cells/mm$^3$), 5% and 11% had severe anemia (HGB< 8 mg/dl), 5% and 18% had severe malnutrition, respectively, at baseline. At the end of 24 months the mean CD4 count and hemoglobin increased significantly in the intervention group (p=0.009 and <0.0001, respectively). Obesity decreased

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with time in the intervention group but was not significant at the end of 24 months (P=0.186). Loss to follow-up (LTFU) was three times higher in the control group as compared to the intervention.
**Conclusions:** PLH in the intervention group had improved clinical outcomes over time and very minimal LTFU during their active participation in the intervention. The results suggest the need for additional engagement of and support of PLH through psychoeducation programs such as *NAMWEZA* to supplement the current routine counseling in order to improve clinical outcomes and reduce LTFU in the long-term.

## THPEE558

### Option B/B+ strategy improves access to ART for pregnant women in South Africa

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**Background:** Universal multi-drug antiretroviral treatment in a fixed dose combination in pregnancy (Option B/B+) is a global strategy to eliminate mother-to-child transmission of HIV and to ensure that women requiring ART are initiated in pregnancy. The study aims were to assess whether change in ART guidelines increases the number of women accessing ART treatment and assess other benefits of universal triple drug treatment for HIV positive pregnant women in South Africa.
**Description:** We conducted a maternity audit at a large regional hospital in KwaZulu Natal, South Africa during July-December 2011 and January-June 2014. During 2011, women received either ZDV/sdNVP or D4T/3TC/NVP if their CD4+ count was < 350 cells/ml (Option A). During 2014, all HIV positive pregnant women were eligible for a fixed dose combination (FDC) of triple ARVs (TDF/FTC/EFV) (Option B/B+).
**Lessons learned:**

| Indicators | Jul-Dec 2011 | Jan-Jun 2014 |
|---|---|---|
| Number of Deliveries | 4644 | 5738 |
| Number of HIV Positive Women | 1732 | 2219 |
| Antenatal HIV Prevalence % (95%CI) | 37.3 (35.9-38.7) | 38.7 (37.4-39.9) |
| Women with CD4 Results Available | 879 (50.7%) | 394 (17.8%) |
| women with CD4<350 | 374 (42.5%) | 172 (43.9%) |
| Women eligible for ART and Initiated Triple ART in Pregnancy | 225 (60%) D4T/3TC/NVP | 148 (88.2%) FDC-TDF/FTC/EFV |
| Overall HIV+Pregnant Women Initiated Triple ART in Pregnancy n (%; 95%CI) | 225 (35.9%; 33.6-38.2) | 2104 (94.8%; 93.8-95.7) |
| Stillbirths >20 weeks gestation - HIV + Women | 59 (3.7%) | 57 (2.7%) |
| Preterm Births <37 weeks gestation - HIV + Women | 369 (22.8%) | 461 (21.9%) |

*[Policy Change and Women on ART and Birth Outcomes]*

**Conclusions/Next steps:** A universal strategy of a fixed dose combination of 3 antiretrovirals for all HIV positive pregnant women (Option B/B+) resulted in a significant improvement in the number of women who needed ART being initiated on therapy. An improvement in birth outcomes is also likely associated with the increased coverage of triple antiretroviral treatment amongst pregnant women. Postnatal followup would be needed to monitor maternal adherence to ART.

## THPEE559

### IYCF services integration into PMTCT services: processes and outcomes

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**Background:** PEPFAR and other technical partners rolled out a campaign-Partnership for HIV Free Survival (PHFS) to test to provide optimal nutrition for infants and to protect those infants from HIV infection. PHFS postulated that HIV-free survival of infants born to HIV-infected mothers would greatly improve amidst effective antiretroviral drugs (ARV) services and recommended IYCF practices to reduce deaths due to malnutrition, diarrhea and pneumonia.
**Description:** SPRING worked with partners and MoH to roll-out the initiative in 3 districts of high HIV and Malnutrition prevalence working with HIV/AIDS care partners (STAR-EC/SW) to build capacity of district health staff to integrate IYCF services into on-going PMPCT services (Option B+). Through QI approaches, SPRING with partner USAID-ASSIST built structures of district quality improvement team (DQI) to conduct coaching of health workers in documentation, provision of standard care package to ensure early identification of HIV+ mothers, initiation and retention of mother baby pairs into ART care.
**Lessons learned:** The initiatives improved HIV cares services for HIV+ mothers and the exposed infants (HEI), through improved QI approach to service delivery by health workers, participation at district and national level through support supervision and learning sessions for cross learning. From FY13 third quarter to FY15 third quarter; antenatal HIV testing improved from 28% to 91%, initiation to ART form 75% to optimal (100%), testing HEI at 6 weeks (1st PCR) improved from 28% to 68%, IYCF counselling from 58% to optimal, nutrition assessment from a half to optimal, malnutrition from 8% to 1 percent. In addition, retention of mother-baby pairs improved form 41% to 99%, and HIV sero-conversation from 25% to 4 percent in FY15 first quarter.
**Conclusions/Next steps:** The integration of IYCF practices and HIV care services has potential to improve access to early HIV care for pregnant and lactating mothers, retention in care, reduce malnutrition and sero-conversion, and the health facility -community linkages facilitates uptake of health services. The QI approach to integration of IYCF and HIV care services encouraged participation of health workers besides coaching and learning sessions creates a platform for continuous learning for health workers and VHTs.

## THPEE560

### Evaluation of a cost effective tracking mechanism of HIV positive pregnant mothers until the baby is tested at 18 months, during 2015, India

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**Background:** In India, out of the estimated nearly 28 million annual pregnancies, nearly 40% are accessing antenatal care services in the private sector . Out of the pregnant women availing ante natal care services in public sector, the coverage for HIV testing has increased steadily, from 40 per cent in 2004 to 85 per cent in 2015.
Prevention of mother to child transmission services are being scaled up but the monitoring of outcomes - whether new-born are free of HIV or require initiation of anti retro viral treatment - is not yet systematic or comprehensive. This results in largely unknown outcomes after years of gearing up the health system to prevent mother-to-child transmission. Operationally, the lack of systematic recording and data collection at facilities underpins a high rate of losses of mothers and new-born at various points of the referral chain.
**Description:** A format for tracking the pregnant women detected HIV positive in the HIV testing facility and followed up until the baby is 18 months was designed in 2013. All the 33 provincial functionaries involved were trained on the importance of correct and consistent date entry in the tracking format so that the gaps could be identified and corrective action taken at the earliest.
**Lessons learned:** Data generated from the format were analyzed for important PMTCT indicators, 94% of the positive pregnant mothers accessed care and support services and 95 % of the pregnant women were initiated on ART, as compared to 63% earlier. Spouse testing improved to 85% in 2015 from 50% earlier. ARV prophylaxis was given to 94% of HIV exposed babies in 2015. 85% of the Babies were tested for DNA PCR at 6 weeks in 2015 as compared to only 21% earlier. 67% of the HIV exposed babies were tested at 18 months of age.
**Conclusions/Next steps:** Proper documentation and strong tracking mechanism ensured 67% of HIV exposed babies were tested at 18 months of age by minimizing loss of follow up of HIV-exposed infants in the postnatal period. Improving the indicators of PMTCT cascade, has facilitated toward planning for elimination of new HIV infections in children in the country.

## THPEE561

### Mother-infant pair clinic and SMS messaging as strategies to improve retention for HIV+ pregnant women and mothers in Malawi: a cluster randomized control trial (the PRIME study)

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**Background:** In 2011, Malawi's Ministry of Health adopted the Option B+ strategy, defined as immediate initiation of all HIV+ pregnant women on lifelong antiretroviral therapy (ART), in a step to combat mother-to-child transmission of HIV. However,

retention of pregnant women, especially through the end of the breastfeeding period, remains a significant problem. The Promoting Retention among Infants and Mothers Effectively (PRIME) study aims to evaluate the effectiveness of two innovative strategies: mother-infant pair (MIP) clinics and MIP plus SMS technology compared to the standard of care (SOC). MIP clinics combine HIV and routine maternal and child health services in the same place and same time while the third arm includes text messages to follow-up women who miss scheduled appointments (MIP+SMS).
**Methods:** PRIME is a three-arm stratified cluster randomized control trial conducted in 30 facilities across two districts. All HIV+ pregnant women attending antenatal care (ANC), regardless of ART status were eligible for enrolment. Subject enrolment and informed consent were conducted by facility staff while follow-up data were collected retrospectively by the study team from ANC and ART registers. The primary outcome of the study is retention in care 12 months post-partum. This abstract shows preliminary results on ART initiation, using generalized estimated equations accounting for clustering to examine any differences between study arms.
**Results:** 1,365 women were enrolled between May 2013 and December 2014 (SOC n=399; MIP n=469; MIP+SMS n=497). We compared ART initiations among ART-naïve women across arms (n=928). 88% in SOC compared to 91% and 93% in the MIP and MIP+SMS arms, respectively, initiated on ART. ART initiations on the first ANC visit date were also compared: 55%, 48%, and 53% in the SOC, MIP and MIP+SMS arms, respectively. No statistically significant differences were found between any two arms.
**Conclusions:** Intermediate results show similar ART initiation rates for ART-naïve women between all study arms. These rates for women were high, yet programmatic concerns arise as all women should be initiated at their first ANC visit under Option B+. This ongoing study will be completed in July 2016, at which point the impact of the interventions on retention in care will be examined.

## THPEE562

### COMPARISON OF HIV TESTING YIELD RATES FOR PREGNANT AND LACTATING WOMEN TOWARDS ZERO NEW PAEDIATRIC HIV INFECTION: EXPERIENCES FROM BWAILA DISTRICT HOSPITAL, LILONGWE, MALAWI

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**Background:** In 2011, Malawi adapted Option B+, program in which all HIV-infected pregnant and lactating women are initiated on lifelong antiretroviral therapy regardless of WHO clinical stage or CD4 cell count threshold. This program has led to dramatic reductions in mother-to-child transmission (MTCT) among those diagnosed during pregnancy. However, MTCT may still occur in mothers who acquire HIV during the pregnancy period. We implemented an initiative to identify women who were newly diagnosed with HIV during labour and delivery.
**Methods:** We aimed at estimating proportion of women who were newly diagnosed with HIV during labour and delivery and estimate incidence in this population at Bwaila District Hospital. Bwaila is a large maternity hospital in Lilongwe, Malawi with 20,000 deliveries annually. All women in labour and delivery wards were tested for HIV following national protocol, regardless of past HIV testing history from Feb 2015 to December 2015. We calculated HIV incidence by assuming that each newly diagnosed HIV infected woman had been tested 4.5 months earlier with a range of 3.5 to 5.5 months earlier.
**Results:** A total of 4900 and 14322 women registered in labour & delivery ward during targeted and universal HTS, respectively. Referrals were 12.8% and 10% during targeted and universal HTS, respectively. Among 1,488 (30%) tested during targeted HTS, 20% pregnant, 10 were confirmatory tests, 17 (1%) were new HIV positive and incidence was estimated at 3.1 women per 100 per year (Range 2.5 - 3.9). Of 11,547 (81%) tested during universal HTS, 23% pregnant, 1025 (9.1%) were confirmatory tests, 66 (0.6%) were new HIV positive and the incidence was estimated at 1.4 women per year (range 1.4-2.2).
**Conclusions:** Universal testing was essential in establishing confirmatory results, in order to provide women with treatment packages for mother infant pair. However, targeted testing had a higher yield rate when compared to universal testing. A combination of routine third trimester testing during antenatal follow up, along with targeted testing focused on women that have not been tested within 3 months at time of delivery may be appropriate in resource limited settings where testing efforts could focus on other high yield points of care.

# INTERVENTIONS AT LARGE SCALE (COMMUNITY, DISTRICT, PROVINCIAL, REGIONAL, COUNTRY LEVELS) TO INCREASE UPTAKE OF AND RETENTION IN HIV SERVICES

## THPEE563

### ASSESSING THE IMPACT OF ADHERENCE FOR FACILITY-BASED, CLIENT-LED, AND COMMUNITY DRUG DISTRIBUTION POINTS ON ADHERENCE ACROSS THESE MODELS OF ART DELIVERY IN TASO-UGANDA

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**Background:** TASO offers three models for antiretroviral therapy (ART) delivery- facility-based, client-led ART (CLAD) and Community Drug Distribution points (CDDPs) in 11 centers throughout Uganda. In these models, patients are allocated based on their preferences, eligibility and elapsed time on antiretrovirals (ARVs). We assessed the impact of these three delivery models on ARV adherence across all the TASO centers.
**Methods:** We analyzed electronic adherence data of all patients who were active on ARV in each of the models of delivery between January 1, 2004 and March 31, 2014. We then computed adherence level for each model as the number of pills taken divided by the number of pills to take since last appointment. Adherence levels were categorized as poor adherence (< 85%), fair adherence (85-94%) and good adherence (>95%).
**Results:** We enrolled 62,129 patients, 37% were attending a TASO facility, 59% were attending CDDP and 4% were on CLAD. The adherence level was 87% for patients attending the facility and 88% in both patients at the CDDP and CLAD delivery models. Only 1% of the patients reported poor adherence across all the three models. Approximately 60% of TASO patients were on decentralized community model of ART delivery and achieved similar adherence levels compared to the facility model. Over a 12-month period of January -December, 2014, patient retention was measured at 78% in facility-based delivery compared to 88% in either community models.
**Conclusions:** The majority of TASO patients were attending a community model and reported comparable adherence levels across all the models. These results could be because of a clearly defined eligibility and exclusion criteria for being enrolled on each models.

## THPEE564

### TASK SHIFTING INCREASING ACCESS TO ART AND SUSTAINING TREATMENT SUCCESS IN A PERI-URBAN PRIMARY HEALTH CARE SETTING IN SOUTH AFRICA

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**Background:** The eThekwini District, in Kwa-Zulu Natal South Africa, has a high HIV prevalence, exceeding 40% among pregnant women. To scale-up anti-retroviral therapy (ART) to all those who require treatment, the South African Government implemented a task shifting strategy known as NIMART to enable nurses to initiate and manage ART. The purpose of this analysis was to demonstrate the impact that NIMART has had on access to ART and HIV treatment outcomes in peri-urban primary health care centre in the eThekwini District.
**Description:** Over 900 nurses have been trained on NIMART programme in the eThekwini District. In the Cato Manor Community Health Centre (CHC), 19 nurses and one master mentor (a nurse coaching NIMART nurses) were trained. Fourteen of these nurses have been independently initiating patients on ART since 2012. Patients with complications are referred to the two doctors based at the facility, but all the other cases are seen by nurses. Data on the number of people on ART and those retained in care from 2008 was compared to data from 2015 to determine the impact of NIMART.
**Lessons learned:** Between 2008 and 2012 before the introduction of the NIMART programme, about 3000 patients were receiving ART at the Cato Manor CHC,all initiated by doctors. Between 2012 and 2015, a further 6000 patients have been initiated on ART at Cato Manor CHC, with 66% of new initiations done by nurses. Importantly nurses have integrated HIV testing and ART initiation services in all departments within the clinic in contrast to referring AIDS patients to a dedicated vertical ART clinic. Nurses have gained a lot of experience and skills through NIMART mentorship and their skills in ART management continue to improve. Viral load suppression of patients in this facility is currently about 85%. Patients who are virally suppressed are provided with 3 months ART supply, reducing the number of visits in the facility.

**Conclusions/Next steps:** Treatment coverage in this community has increased substantially since 2012. The introduction of NIMART programme at the Cato Manor Clinic has shown that nurse initiated ART is feasible and sustainable and does not compromise treatment outcomes.

## THPEE565

### MULTI-DISEASE APPROACH TO HIV TESTING AND COUNSELING (HTC) OUTREACHES IN THE COMMUNITIES IMPROVES UPTAKE IN NIGERIA

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**Background:** HIV Testing and Counseling (HTC) outreach is a critical service delivery approach that can improve coverage of HTC. It eliminates the barriers of access to facility based HTC and provides opportunity to serve different populations. Based on these benefits, the National Agency for the Control of AIDS (NACA), Nigeria coordinates HTC outreaches across the nation annually. However, community uptake of HTC gradually dwindles if other health needs are not addressed.
**Description:** In 2013, NACA adopted a strategic methodology to improve uptake of HTC during outreaches. A multi-disease approach was implemented for the outreaches in place of the single disease approach (HIV focused). In addition to HTC, blood pressure and sugar level checks were added to the package. Free medical consultations were also included and free drugs provided for treatment of minor ailments. Depending on what the community has identified as a need, items such as mosquito nets and water guard were also distributed.
**Lessons learned:** The implementation of multi-disease approach has improved uptake of HTC services. A four day HTC outreach as a single disease intervention applied in 3 states achieved an average coverage of 1458 persons per Local Government Area (LGA). A multi-disease approach to the delivery HTC services over four days in 20 states achieved an average coverage of 5022 persons per LGA. The screening for other medical conditions, free consultation and medications meets other health needs of the community. Collaboration with relevant health agencies and other programme partners is crucial for implementation of an efficient multi-disease approach.
**Conclusions/Next steps:** In addition to what NACA is already doing, there is a need to identify an effective strategy for successful linkage of positive clients at outreaches to HIV care and treatment.

## THPEE566

### PSYCHOSOCIAL SUPPORT INTERVENTIONS TO IMPROVE RETENTION ON ART IN PEOPLE WITH HIV IN LOW- AND MIDDLE-INCOME COUNTRIES: A SYSTEMATIC REVIEW

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**Background:** In low- and middle-income countries (LMIC), better access to antiretroviral therapy (ART) has benefited people living with HIV (PLHIV) clinically and has decreased transmission. However, retention on ART can be a challenge for many patients. Psychosocial support interventions may help to improve retention in care and HIV clinical outcomes.
**Methods:** We used Cochrane Collaboration methods to search a range of databases for studies published between 1996-2015. Eligible studies could be in any language. Randomized controlled trials (RCTs) and observational studies with comparators conducted in LMIC were eligible for inclusion. We defined psychosocial support as patient support provided by non-physicians (including laypeople) to improve retention in ART care, after ART initiation. Our principal outcome of interest was retention as reported, or the combined outcome of lost-to-follow-up (LTFU) and death as reported in the studies. We considered lost to follow-up or death outcomes as the inverse of retention. We calculated relative risk (RR) with 95% confidence intervals and conducted meta-analysis when appropriate. We used the GRADE approach to assess evidence quality (EQ) across the literature for each outcome.
**Results:** One RCT from Mozambique and five cohort studies from Kenya, Mozambique, Peru, Rwanda and South Africa met inclusion criteria.
We identified three types of interventions:
1) community-based, multi-faceted treatment supporter programs;
2) facility-based adherence clubs; and
3) additional nursing care for high-risk patients.
One treatment supporter intervention was in caregivers of children with HIV; all other studies were in adults.

| Intervention | Studies | Outcomes and Duration | RR (95% CI) | Quality of Evidence |
|---|---|---|---|---|
| Community-based treatment supporter (adults) | 1 Cohort | Retention (60 months) | 1.07 (1.07 to 1.08) | Low |
| Community-based treatment supporter (adults) | 1 RCT | Retention (12 months) | 1.14 (1.02 to 1.27) | Moderate |
| Community-based treatment supporter (adults) | 2 Cohorts | Retention (12 months) | 1.10 (1.04 to 1.16) | Low |
| Community-based treatment supporter (children) | 1 Cohort | Retention (36 months) | 1.07 (1.03 to 1.11) | Low |
| Community-based treatment supporter (children) | 1 Cohort | Retention (24 months) | 1.05 (1.02 to 1.09) | Low |
| Community-based treatment supporter (children) | 1 Cohort | Retention (12 months) | 1.05 (1.02 to 1.07) | Low |
| Facility-based adherence clubs | 1 Cohort | LTFU or death (40 months) | 0.20 (0.12 to 0.33) | Moderate |
| Additional nursing care (adults) | 1 Cohort | LTFU or death (12 months) | 0.76 (0.66 to 0.87) | Low |

*[Summary Table of Included Studies]*

**Conclusions:** Multi-faceted, psychosocial support interventions are associated with increased likelihood of retention of ART patients in care, but evidence quality is generally low to moderate.

## THPEE567

### RAPID PROGRAM EVALUATION ON DETERMINANTS OF POOR RETENTION AMONG PLHIV ACCESSING CARE IN PERIPHERAL HIV CLINICS IN NIGER STATE, NORTH CENTRAL NIGERIA

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**Background:** Retaining both pre- and current antiretroviral therapy (ART) patient population in care is a serious challenge for treatment programs in sub-Saharan African countries such as Nigeria. A retention analysis conducted showed poor retention rates across selected facilities. This Rapid Program Evaluation was aimed at identifying the underlying causes of this challenge, through a direct involvement of clients on ART in a programmatic survey and use findings to improve program interventions.
**Methods:** Two health facilities with retention rates lower than 50% out of sixteen health facilities supported by the USAID funded Pro ACT project implemented by MSH in Niger State, North Central Nigeria were selected for the survey. A short questionnaire was developed and administered to 55 clients (37 females and 18 males) currently on treatment who have defaulted in HIV clinic attendance in the last 6 months (between March and September 2015) and were tracked back to care. Data was analyzed using Microsoft Excel.
**Results:**
- Of the 54 clients interviewed, 50% clients had missed appointments at least once in the last three months. Raw data showed a higher female to male ratio (58% to 44%) of missed appointments.
- Findings showed that 75% of clients who missed appointments came from a distance less than 10km to the facility, making distance from the clinic a non-determinant for missing appointments.
- None of the clients who had missed appointments in the last three months reported being a member of a support group for people living with HIV (PLHIV).
- 33% of clients interviewed identified stigma as a reason for defaulting, 25% cited distance to health facilities, 17% stated lack of transportation, 17% other reasons and 8% refused to answer the question.

**Conclusions:** Although, the survey population is small, findings suggest a key reason for clients' defaults to be associated more with stigma than distance from HIV Clinic and lack of transport fare. Also, they offer some critical insight into programming gaps in Niger State, North Central Nigeria. Key to these programming gaps is the need to strengthen support groups for PLHIV and interventions that address stigma.

## THPEE568

### FORMATIVE RESEARCH TO DEVELOP HIV SELF-TESTING INTERVENTION AMONG NETWORKS OF MEN IN DAR ES SALAAM, TANZANIA: A MIXED METHODS APPROACH

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**Background:** HIV testing serves as the gateway to HIV prevention and treatment but remains underused among men in Sub-Saharan Africa. HIV self-testing may reach men who do not use current HIV testing services. The purpose of this mixed methods study was to assess factors associated with HIV self-testing willingness among networks of men in Tanzania and the acceptability of an HIV self-testing intervention.

**Methods:** Data are from a midpoint survey of a cluster randomized controlled trial consisting of 989 men recruited from networks called "camps" in Dar es Salaam and 24 qualitative follow-up interviews conducted with men who have and have not tested for HIV. Binary logistic regression were performed to examine correlates of willingness to self-test. Participants' characteristics included were socio-demographics, HIV testing history, number of sexual partners, condom use, HIV risk perception, and network influence of two friends in the camp. For the qualitative data, we developed a codebook of a priori and emergent themes.

**Results:** 51% of the men had not tested for HIV in the past 12 months and 66% of those who had not tested were interested in self-testing. Logistic regression analyses showed that having a close friend in the camp who encouraged HIV testing was the only factor associated with men's willingness to self-test (OR: 2.07: 95% CI= 1.47 - 2.92). In the qualitative findings, participants provided more information on how their friends encouraged them by engaging in conversations about previous HIV testing experience and advising each other to test. Despite the network influence, participants reported they do not test for HIV for several reasons including lack of confidentiality and privacy. Participants believed that self-testing can overcome these barriers but expressed concerns regarding the lack of post-test counseling associated with self-testing. Recommendations for implementation included a campaign to raise awareness about HIV self-testing and provision of pre-and-post-test counseling via mobile cell phones for men with positive self-test results.

**Conclusions:** Findings from this study suggest that HIV self-testing is acceptable and interventions need to promote discussion about HIV testing among networks of men. Addressing men's concerns by offering post-test counseling and assistance with linkage to care is also necessary.

## THPEE569

### REFERRAL SYSTEM STRENGTHENING IN BOTSWANA: A STRATEGY FOR IMPROVING ACCESS TO CARE

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**Background:** FHI 360, through the USAID-supported Maatla Project, aimed to strengthen the capacity of civil society organizations (CSOs) to effectively address the HIV and AIDS epidemic in Botswana. Evidence indicates that weak referrals contribute to people defaulting treatment and high TB/HIV co-infection rates. Maatla partners including the Botswana Christian AIDS Intervention Program (BOCAIP), the Botswana Network of People Living with HIV and AIDS (BONEPWA+) and Kuru Health, were tasked with complementing the Ministry of Health's response through community based activities.

**Description:** A new two-way referral system linking CSOs and health facilities was implemented to strengthen the referral process within HIV care and treatment. Community workers promoted client retention in treatment through pre-antiretroviral therapy and adherence counseling, and community follow up of those late for treatment or lost to follow-up. Project strategies included: defining roles and referral linkages for each partner, developing district referral directories, developing community maps with referral sites, conducting district referral system workshops to build understanding of roles and working relationships in the referral network, developing referral standard operating procedures and harmonized referral tools, and an analysis framework. The project supported site-level referral network meetings where active referrals were verified with CSOs and Health facilities, allowing for individuals not completing referrals to be followed up.

**Lessons learned:** Strengthened collaboration among partners promoted a greater awareness of available referral services, improved client linkages and quality of care. Site-level referral meetings provided an opportunity to exchange feedback between CSOs and Health facilities, thus resulting in strengthened referral and improved quality of services. USAID SIMS visits revealed improved referral completion rate for individuals testing positive at partner testing sites and registering for care at government health facilities between 2014 and 2015 from 50% to 90%.

**Conclusions/Next steps:** Strong collaboration between CSOs and health facilities is critical for an effective referral system between the two. Community workers can be effective partners in HIV and AIDS referral systems by offering complementary services to government, and helping to ensure individuals are retained on treatment through peer support and community-based follow up.

## THPEE570

### USE OF BIOMETRIC MANAGEMENT SYSTEM: KEY TO ENHANCEMENT OF PERFORMANCE OF ANTIRETROVIRAL THERAPY CENTRES IN TAMILNADU, INDIA - A PIONEERING STEP

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**Background:** Good adherence to antiretroviral (ARV) drugs is key to optimal viral-suppression and better treatment outcome. Factors like accessibility, job related hurdles, side-effects, sense of well-being, stigma & discrimination determine drug-adherence. In order to address this issue and improve programme performance, Tamilnadu State AIDS Control Society piloted Biometric Patient Management System in December 2015 in one center.

**Description:** 55 treatment units have been setup at government health facilities across 32 districts in Tamilnadu. As a pilot initiative, Biometric system has been implemented at Karur District's ART centre. Each patient's details along with thumbprint were recorded. Patients were contacted over phone to visit centre for registration irrespective of their due date. Proxy registration (by spouse/close relative) was permitted for bed-ridden/out-station patients with subsequent registry-updation of concerned patient after recovery/return.

**Lessons learned:** In 5 days, all patients enrolled at Karur District's ART Centre were registered in biometry with no difficulty.
The system found 2 duplicate registrations, lost-to-follow-up, gave benefit of pill-collection from other centers as per patient's convenience. It also alerted staff on patients who were due but have missed. SMS alerts are sent to patients for CD4 test & pill-collection.

| Category | Male | Female | Transgender | Male Child | Female Child | Total Registration |
|---|---|---|---|---|---|---|
| Pre ART | 30 | 75 | 0 | 0 | 0 | 105 |
| On ART | 769 | 942 | 2 | 19 | 10 | 1742 |

*[Registration Details]*

**Conclusions/Next steps:** By march 2016, all ART facilities in the State will be linked to biometry & all patients'-information will be available at State. Patients will have convenience of availing service from any Centre in the State, if need arises. All duplications can be segregated and actual HIV burden in the State ascertained.
Proxy registration is beneficial to bed-ridden patients & those on long-distance travel. Defaulters' number will reduce drastically. These pave way to improvement in drug-adherence leading to sustained viral suppression for longer duration. Opportunistic infection episodes will decline.
1st line failure cases will reduce thereby reducing demand for more costly 2nd line drugs. Thus financial burden on the government will be lessened.

## THPEE571

### ACHIEVING THE FIRST 90 OF THE 90-90-90 TARGET: EFFECT OF HIV TESTING DEDICATED CADRE IN MALAWI

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**Background:** Malawi adopted the UNAIDS 90-90-90 treatment target towards ending the AIDS epidemic. A major bottleneck impeding achievement of the first 90 (90% of all people living with HIV know their status) is inadequate Human Resources for HIV Testing and Counselling (HTC). The Health Surveillance Assistants (HSAs) in charge of HTC have primary tasks in the communities, hence their contribution to HTC in the facilities is suboptimal.

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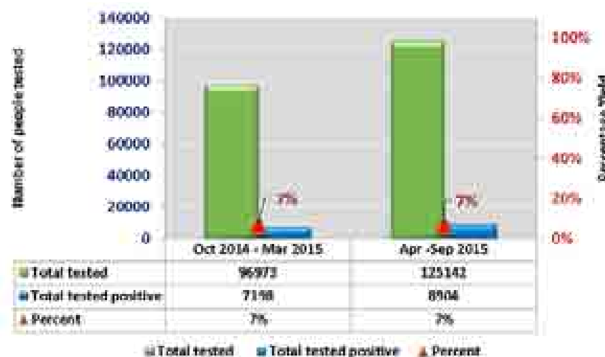
**Description:** To increase access to HIV-diagnosis, the Ministry of Health recommended establishment of a dedicated HIV-testing cadre - HIV Diagnostic Assistants (HDAs) - to be responsible for HTC, viral load testing, and early infant diagnosis. Jhpiego recruited 106 HTC volunteers as HDAs in April 2015, and deployed them to its four focus districts following intensive training. One to four HDAs were deployed to each of 52 facilities, depending on client volume and service delivery points. Monthly HTC data were tracked for a 12-month period (October 2014 - September 2015). Mean HTC uptake was computed for 2 periods: 6 months before and after HDA deployment. Two mean t-test was used to test for difference between the means for the 2 periods.
**Lessons learned:** A total of 208,067 clients were tested in the one-year period exceeding the annual target (183,172) by 27%. Monthly HTC uptake continuously increased as more HDAs were recruited. There was a statistically significant 20% increase in mean HTC uptake between the pre-HDA (15,755) and since-HDA period (18,923), p=0.041. Although deployment of HDAs increased numbers tested, the HIV positive yield remained the same at 7%.




[Figure 1: HIV Testing and Yield Before and After HDA Deployment]

**Conclusions/Next steps:** Establishing a dedicated HIV-diagnostic personnel increased the number of people tested and consequently diagnosed, thus increasing Malawi's potential to achieve the first 90-target. To increase the positive yield, HDAs will also conduct targeted testing among key populations, through outreach services and moonlight testing in their hubs and hot spots.

## THPEE572

### COMMUNITY CLIENT-LED ART DELIVERY MODEL AS A TOOL FOR IMPROVING TREATMENT OUTCOMES AMONG HIV-POSITIVE CLIENTS TASO SOROTI EXPERIENCE, UGANDA

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**Background:** Studies indicate that keeping HIV positive individual in care improves ART outcomes, however most programs suffer with the issue client retention in care, TASO Soroti adopted a community Client ART Distribution Model increase sustainability of ART delivery, decongest facility clinics to enable trained staff to effectively support the novices on ART and involve clients in their monitoring to maximize retention in care.
**Description:** In TASO the CCLAD model started by identifying leaders from the existing Community Drug Distribution Points (CDDPs) who were trained in ART Basics, using a criteria based on CD4≥500, groups of 10 clients coming from the same village were formed in the community, TASO counselor delivers drugs to the CDDP nearest to the clients, the CCLAD leader receives the drugs and transports them to an agreed nearest point in the village, clients contribute a fee of 2,000 UGX for the service, 25% of which is used by their leader as transport cost. If a client does not come for his/her refills the leader follows up with the client, fills a report and returns to TASO for action at the same point the client conduct peer counseling. The CCLAD leaders are support by the expert clients, this model enables clients networks draw synergies for prevention care and support at community level.
**Lessons learned:** Task shifting and capacity building of clients in leadership, has increased clients ownership of the model.
Good adherence levels of as 97% of clients on ART had viral suppression to less than 5000 copies per mil in period of evaluation, over 80% of the none suppressing clients are found at the facility, 97% (4/138) of infants born to HIV positive Mothers tested negative for HIV at 18 months, 90% of the clients interviewed have a great sense of ownership, retention in to care at 96.6%.
**Conclusions/Next steps:** The Community Client ART Delivery model is a sustainable, affordable and cost effective model for improving retention and achieving viral load suppression among clients on ART while promoting ownership of HIV/AIDS interventions by People Living with HIV and AIDS.

## THPEE573

### PANGAEA GLOBAL AIDS AND THE CLINTON HEALTH ACCESS INITIATIVE (CHAI) BEST PRACTICES CASE STUDY SERIES: THE ACADEMIC MODEL PROVIDING ACCESS TO HEALTHCARE (AMPATH): PERPETUAL HIV COUNSELING AND TESTING (PHCT) PROGRAM

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**Background:** In partnership with the Kenya Ministry of Health, AMPATH provides HIV care and treatment in eight counties in Western Kenya with a catchment population of 3.5 million people. The Pangaea/CHAI project team visited AMPATH in May 2014 to perform an in depth review and costing analysis on AMPATH's Perpetual HIV Counseling and Testing (PHCT) and Find, Link, & Treat, & Retain (FTLR) programs in Kosirai & Bunyala, Kenya. The site visit included meetings with representatives from the Ministry of Health, AMPATH and Moi University Hospital staff, and field visits to interview counselors and clients. The team also reviewed routine PHCT monitoring & evaluation data, and commodity data to better understand resource needs for the program.
**Description:** AMPATH's PHCT program is a component of its FLTR model. This program assigns a PHCT counselor to a set location for two years and tasks them to go door-to-door to counsel and test for HIV, link to treatment, perform screenings for diabetes, tuberculosis, blood pressure, treat children for intestinal worms, malaria education and check childhood vaccination records. The PHCT counselors use smart phones to capture individual and household information that is uploaded to the AMPATH Electronic Medical Record Systems.
**Lessons learned:**

| Statistics-at-a-Glance | 2013 Kosirai Patient Numbers | 2013 Bunyala Patient Numbers |
|---|---|---|
| 2013 Total Catchment Population & HIV Prevalence | 68,000 / HIV Prevalence: >1% | 67,669 / HIV Prevalence: 8.3% |
| Number of Households Reached | 967 | 2,778 |
| Number of Individuals Reached | 3,223 | 11,640 |
| Number of Counselors | 5 | 7 |
| Number of Individuals Tested for HIV | 1,981 (715 New Testers) | 7,102 |
| Number of HIV+ Individuals Identified | 32 | 788 |
| % Linked to Care | 56% | 87% |
| Cost Per Person Tested | $15.41 | $5.46 |
| Cost per HIV positive Individual Identified * Costs in Kosirai were higher due to low HIV prevalence and fewer individuals tested. | $955 | $50 |

[Statistics-At-A-Glance]

**Conclusions/Next steps:** AMPATH has implemented an innovative approach of using the home setting as an entry point for the identification and provision of health care needs and services. This model successfully integrates HIV testing and counseling with testing for Non Communicable Diseases, thus increasing the value of the client interaction and 'normalizing' HIV testing, care, and support. Another success of this model is that through the use of handheld devices the ability to track real-time progress of individuals' medical needs and linkage to care is improved.

## THPEE574

### FAST-TRACK CITIES INITIATIVE TECHNICAL IMPLEMENTATION: USING A FIVE POINT TECHNICAL STRATEGY AS PART OF EFFORTS TO ACHIEVE 90-90-90 AND ZERO DISCRIMINATION

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**Background:** An increasing number of people live in urban settings with a large proportion of the global HIV burden. Launched on December 1 2014, the Fast Track Cities Initiative (FTCI) involves 61 Cities from all regions and is focused on achieving

the 90-90-90 targets and zero stigma by 2020. FTCI is a global partnership between the International Association of Providers of AIDS Care (IAPAC), Joint United Nations Programme on HIV/AIDS (UNAIDS), United Nations Human Settlements Programme (UN-Habitat), and the City of Paris, in collaboration with local, national, regional, and international partners and stakeholders.
**Description:** IAPAC has developed a 5 point technical implementation strategy focused on the following areas: process and oversight, program interventions, monitoring and evaluation, communications, and resource mobilization (Figure 1). The strategy serves as the framework for City driven strategies, will be cloud-based as part of the FTCI web portal and dashboards, and will improve through "wiki" contributions from individual Cities as they gain and contribute their implementation experience. The FTCI Implementation plan includes a strong monitoring and evaluation component focused on 90-90-90 and other objectives, and includes a global software platform with individual city dashboards that will allow Cities and their citizens to communicate and measure implementation progress.
**Lessons learned:** Having a clear implementation strategy with a limited number of domains has provided a strong framework for the Initiative. While many Cities already have an HIV response plan, the FTCI implementation strategy provides a common language and objectives. Web-based monitoring and evaluation provides a platform to measure global and individual city progress towards 90-90-90 and other objectives.
**Conclusions/Next steps:** FTCI now has 61 Cities and through technical support for the Cities, the Initiative is benchmarking and guiding the HIV response across the network of Cities. Many Cities have already made significant strides toward realizing the FTCI objectives.

*[Figure 1: FTCI technical implementation plan and objectives]*

## THPEE575

### EFFECTIVENESS OF COMMUNITY HEALTH EXTENSION WORKERS (CHEWS) IN CONTRIBUTING TO THE OVERALL UNAIDS GOAL OF 90-90-90: A PILOT PROJECT IN SOUTH-WESTERN UGANDA

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**Background:** Low levels of HCT uptake have predominantly been attributed to structural and service barriers, including limited choices to HIV Counselling and Testing (HCT) approaches. The goal of this pilot is to evaluate the effectiveness of lay Community Health Extension Workers (CHEWs) in accelerating community access to integrated testing for HIV/AIDS, Malaria and Hepatitis B. We report on the HIV results, 3 months into this 6 month pilot.
**Methods:** Working with the Sheema District Health Office, we identified and provided 5 day training to a team of 62 lay persons (CHEWS) from 31 parishes of Sheema District, South-Western Uganda in September 2015. Training covered basics of HIV/AIDS, testing using rapid tests, reporting and referral (linkage for the HIV positives) as well as key prevention messages. CHEWS were each provided a $30 monthly stipend; a field testing kit that included: a bag, umbrella, gumboots, bicycle, reporting booklet, HIV testing kits and other appropriate biosafety materials. Supplies were replenished monthly. Home based HCT began October 1, 2015 and still ongoing. Routine HCT is provided at the 8 district health facilities in the area (1 Hospital, 2 health center level IV, and 5 heath center level IIIs).
**Results:** From October - December 2015, District health facilities in Sheema have tested 3,884 clients with 1,486 (38%) males and 2,398 (62%) females. Of these 217 (9.0%) tested HIV positive and 31(14.2%) were linked to HIV care services. CHEWs in the same period covering the same area tested a total 23,940 people of whom 11,292 (47%) were males and 12,648 (53%) female. 498 (2.1%) of the people tested by CHEWS were HIV positive and 316 (63.1%) were linked to care.
**Conclusions:** Findings demonstrate the high utility of CHEWs in accelerating access to integrated testing, including HCT. CHEWs can be a great support to the health care system in Uganda to enhance attainment of UNAIDS goals of testing the majority of the people and link them to care timely at a relatively low cost. CHEWs are able to reach more men and also link most people tested to care than routine HCT at public health facilities.

## THPEE576

### USING INTERPERSONAL COMMUNICATION APPROACHES TO PROMOTE EMTCT: LESSONS FROM UGANDA

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**Background:** Most of the recent studies indicate that a considerable number of new HIV infections in sub Saharan Africa occur within stable relationships. In Uganda HIV prevalence among the married is estimated at 7.4% (UAIS, 2011) of which a significant proportion are sero-discordant and in reproductive age group. This therefore means that more couples are grappling with the challenge of having HIV free babies. Although elimination of mother to child transmission of HIV programs have shown considerable potential, couple HCT uptake for elimination of mother to child transmission of HIV (eMTCT remains very low.
This paper describes undertaken by Communication for Healthy communities (CHC) a USAID supported project in promoting couple HCT for eMTCT.
**Description:** In 2015, a campaign promoting eMTCT was launched in western Uganda under the theme; Test. Know Disclose together. CHC used a two pronged approach consisting of interpersonal communication (IPC) for behavioral change. Community champions that included Village Health Teams, media, cultural and religious leaders were trained and equipped with tools to conduct discussions to promote eMTCT. These discussions were supplemented with edutainment activations at community level as they received services.
**Lessons learned:** Within one month of intense IPC activities in the communities, there was an increase in the uptake of eMTCT services by about 30%. For instance at Kigorobya HCIV couple HCT for eMTCT rose from 48 to 137, Kisiita HCIII from 27 to 49 within a month growing steadily over a year compared to previous years. From these interventions it was established that IPC can be effective if the messaging is focused and specific to a particular audience. Secondly, the intensity of the message is critical and that community resources need to provide standardized and accurate information on available services.
**Conclusions/Next steps:** Based on the positive outcomes of these interventions, there is need to consolidate on the gains while expanding on the reach and scope using region specific data. The capacity of the community resource persons needs to strengthened to monitor and document outcomes but also use data to focus their IPC interventions.

## THPEE577

### NEW HEIGHTS FOR DIFFERENTIATED CARE: 3 YEARS OF COMMUNITY ART GROUPS IN THE MOUNTAINS OF RURAL LESOTHO

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**Background:** Lesotho, a mountainous country with approximately 2,171,000 inhabitants, has the third highest HIV prevalence in the world. The Lesotho ART programme suffers from high loss to follow up and treatment scale up has been plagued by chronic understaffing, medicines shortages and patient access challenges. Community ART groups (CAGs) allow stable patients take turns to collect antiretroviral therapy (ART) for fellow group members who only attend clinics once per year, allowing for VL measurement. We present outcomes from 3 years of CAG implementation in rural Lesotho.
**Methods:** In this retrospective cohort study, we compare outcomes among CAG members with stable adult patients on ART at 9 clinics in rural Lesotho. Patients eligible to join CAGs were those retained in care after > 6 months on ART with a CD4 above 350 cells/µl. Outcomes of CAG members were analysed using survival analysis. Loss to follow-up (LTFU) was defined as missing a scheduled appointment by three or more months. A semi structured interview was used to explore perceptions of CAGs among a purposeful sample of patients and nurses.

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**Results:** Between September 2012 and September 2015, 888 stable ART patients enrolled in a CAG at the sites of interest. There were 2,326 comparable stable ART patients in conventional care during this period. Retention at 12 months for CAG participants was 85% compared to 62% among non CAG patients. Virological suppression among those retained in CAGs at 1 year was 79%. Qualitative data show how CAG membership reduced the time and money spent by patients, and enhanced adherence, allowing patients to remain on ART. Clinicians working in the study area also reported a workload reduction following CAG introduction.
**Conclusions:** Patients in CAGs had a higher retention in care than patients in conventional care and good virological suppression. In Lesotho where almost 60% of people live below the poverty line and access to clinics is particularly challenging, CAGs have the potential to remove barriers to access ART and thus facilitate ART scale up in this very constrained healthcare system.

## THPEE578

### UPTAKE OF HIV COUNSELING AND TESTING IN A MOBILE CLINIC PROGRAMME WITHIN THE INNER CITY OF JOHANNESBURG: A CROSS-SECTIONAL STUDY

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**Background:** The success of the newly adopted UNAIDS 90-90-90 strategy relies heavily on accessible HIV counselling and testing (HCT) services. Numerous studies conducted in sub-Saharan Africa have shown that mobile services increase uptake of HCT when compared to fixed clinics and are able to access hard-to-reach populations. The aim of this study was to describe the service delivery model implemented by the Wits Reproductive Health and HIV Institute (RHI) Mobile Clinic Programme, the populations served and the characteristics of the clients who accessed the service.
**Methods:** This was a retrospective cross-sectional study in the inner City of Johannesburg (CoJ). The Mobile Clinic Programme utilised two vans that were dispatched to highly populated areas including Hillbrow, Berea, Braamfontein, Mayfair, Rosettenville, and Newtown in the inner-city. HCT was offered to clients along with other services including tuberculosis (TB), diabetes, hypertension and STI screening and management. Demographic and service utilisation data were routinely collected from clients who visited the mobile clinics between January 2013 and December 2015. Descriptive statistics were calculated.
**Results:** Between January 2013 and December 2015, 4557 clients accessed the mobile clinic within the inner City. Clients were predominantly males (55%) and black (83%). The mean age was 31.2 (±10.3) years old, ranging between 13 and 85. Adolescents (13-19 years) and young adults (18-32 years) represented 63.7% of the study population. HCT was offered to 94% of clients with 7% (273/3857) testing HIV-positive. Approximately 39% of clients were either first time testers or had their last HIV test more than 12 months ago. Linkage to care was facilitated for patients requiring antiretroviral treatment; however poorly documented.
**Conclusions:** The Wits RHI mobile clinics provides a great opportunity to increase HCT uptake, to find first-time testers and to access those populations who do not typically access services at fixed clinics i.e. males, adolescents and young adults. In order to meet the UNAIDS 90-90-90 targets, strategies adopting mobile outreach should be tested and scaled. To ensure continuity of care, linkage to care systems within this service delivery model must be strengthened.

## THPEE579

### UPTAKE OF DIFFERENTIATED MODELS OF ART DELIVERY IN UTHUNGULU KWAZULU-NATAL

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**Background:** In 2012, Kwazulu-Natal Department of Health supported by Médecins Sans Frontières implemented differentiated models of ART delivery aiming to decongest health facilities and support adherence and retention in care for stable patients on ART in uThungulu district. A mix of ART delivery strategies were offered: standard care (2-monthly clinical consultation and ART collection), facility (FC) and community clubs (CC, lay counsellor-led groups of up to 30 patients meeting 2-monthly for ART collection and yearly for clinical consultation) and/or Community ART groups (CAG, patient-lead groups of 3 to 8 patients rotating 2-monthly for ART collection for all members and yearly clinical consultation).
By 2015, FC were implemented in 8 clinics, CC in 2 clinics and CAGs in 4 clinics.
In order to further adapt the roll-out of these models, we assessed the uptake of patients per model.
**Methods:** Routine data was abstracted from national electronic database (Tier.net) and models' specific registers, marking the choice per patient per model.
**Results:** Out of 7267 stable patients on ART, 1512 (21%) opted for a grouped model of ART delivery.
In the 3 urban clinics, out of 4743 stable patients, 897 patients (19%) enrolled in grouped model of ART delivery. Amongst them, 864 (96.3%) opted for FC, 20 (2.2%) for CC and 13 (1.4%) for CAG.
In the 5 rural clinics, out of 2524 stable patients, 616 patients (24.4%) opted for a grouped model of ART delivery. Amongst them, 417 (67.7%) opted for FC, 91 patients (14.8%) for CC and 108 (17.5%) for CAG.
**Conclusions:** The high uptake of differentiated models of ART delivery shows they can decrease the burden on the health system and patients. Preferences for certain models depend on the setting; more patients in rural settings opted for models of ART delivery in the community. Not all patients want to join a group, hence the need to develop improved individual ART delivery strategies such as fast lane spaced appointment systems.

## THPEE580

### ACCESSING IMPACT OF NURSES IN ART INITIATION IN RURAL KWAZULU-NATAL PROVINCE, SOUTH AFRICA: A PILOT STUDY

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**Background:** Studies have proven that antiretroviral therapy (ART) reduce chances of transmission, improves longevity of people living with HIV and is cost-effective. It is important to put in place strategies to promote timely ART initiation. The purpose of this study was to assess the impact of nurses initiating and managing ART on access to ART services in rural KwaZulu-Natal.
**Description:** The pilot study was undertaken at a rural primary health facility in Umgungundlovu District in Kwazulu-Natal South Africa between 2009 and 2012. A retrospective review of HCT and CD4 count registers for the past quarter, and data analysis of ART initiation pre and post Nurses Initiated Management of ART. In-depth interviews were conducted using an open ended questionnaire between August - December 2008, administered on clients selected at random at the ART clinic. The questionnaire included assessed time taken between HIV test and CD4 count and location of both services in the clinic. Data were analysed using content analysis and common themes identified were validated through an independent review of the interview transcripts. Following the responses, a Quality Improvement team was formed and HCT was integrated into the ARV clinic where CD4 count, clinical staging and ART initiation is done. Community health education on benefits of treatment was carried out in partnership with traditional healers and community care givers.
**Lessons learned:** Stigma and discrimination and consultation with tradition healers when sick were identified as reasons for low service uptake. Data analysis revealed that with the clinics and nurses accredited to provide ART, the overall number of people initiated on treatment by one nurse steadily increased from 51 in 2009 to 227 in 2012. In 2008, all initiated clients were women. Immediately after the community health education, uptake by men increased to 51.4% in 2009 then declined to 44.4% in 2012. Average waiting time for clients at the clinic was reduced from 3 hours to 1 hour.
**Conclusions/Next steps:** While preliminary, this pilot study showed that integrating services, using nurses to initiate ART treatment and community health education can improve ART initiation. Partnership with traditional healers is also important in getting men to initiate on treatment.

## THPEE581

### IMPROVING ACCESS TO CHRONIC MEDICATION USING THE CENTRAL CHRONIC MEDICINE DISPENSING AND DISTRIBUTION (CCMDD) IN UMZINYATHI DISTRICT, KWAZULU-NATAL

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**Background:** Umzinyathi, a rural district in KwaZulu-Natal, is one of ten districts piloting the National Health Insurance (NHI) in South Africa. As of December 2015, uMzinyathi Health District had over 46 000 people accessing antiretroviral therapy (ART) through the public sector. Providing services to these clients and others on medicine for chronic diseases places considerable strain on public health facilities in the district which has high staff shortages and sub-optimal infrastructure. With an aim to reduce the burden on public health facilities and improve access to ART and other chronic medicine, the Department of Health launched the Central Chronic Medicine Dispensing and Distribution (CCMDD) program.
**Description:** Through the CCMDD, patients have an option to collect their medicine from locations other than primary healthcare clinics (PHC) which were facing high headcounts. Alternate collection points include community pharmacies and general practitioners. The district, however, also emphasized the use of community based pick up points (PUPs). PUPs which met the requisite criteria were appointed by the National Department of Health.
**Lessons learned:** Since the launch of the CCMDD in uMzinyathi in February 2014, 29 832 patients from 56 PHCs have enrolled on the program. The district has maintained a retention rate over 61%. By January 2016, patients had an option of collect their medicine from three community pharmacies, eight GP rooms as well as two community based collection points. Some PHCs have reported a reduction in patient waiting times of over 30%.
Several factors have contributed to the success of the program:
- Leveraging existing sites used for other community based interventions such as the war room and Phila Mtwana sites as collection points;
- Development, dissemination and implementation of standard operating procedures for facility level processes for enrolling and managing patients on the CCMDD;
- Effective engagement of stakeholders including dispensing service providers, community clinic committees and local non-governmental organisations.

**Conclusions/Next steps:** Implementation of the CCMDD presents a viable and effective opportunity for improving access to ART and other chronic medicine. Reduction of patient waiting times also has the potential to contribute to the overall patient experience in public health facilities.

## THPEE582

### BEST PRACTICES IN CLINICAL EDUCATION: A CASE STUDY IN ENDING THE EPIDEMIC IN NEW YORK STATE

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**Background:** New York State (NYS) has been an epicenter of the HIV epidemic in the United States. In 2014, the Governor of New York announced a Plan to End AIDS by 2020 with the goal to reduce new HIV infections from an estimated 3,000 to 750. This Plan seeks to identify persons with HIV who remain undiagnosed, link and retain persons diagnosed with HIV to health care, and facilitate access to PrEP for high-risk persons to keep them HIV negative. As enthusiasm unfolds, clinician buy-in plays a vital role in its implementation. Quality clinical education provides the opportunity for medical providers to stay abreast of emerging issues and implement practice change that ultimately benefits patients.
**Description:** Clinical education trainings and tools have been launched by the Mt. Sinai Institute for Advanced Medicine (IAM) to accelerate the implementation of the Governor's Plan. This presentation will highlight the Center's debut of a series of conferences aimed at increasing clinician knowledge and practice change intentions as it relates to the Plan. The conference held in Staten Island will serve as a case study. Curricula development, marketing, speaker selection, government collaboration, the dissemination of clinical tools, as well as barriers and challenges will be discussed.
**Lessons learned:** Twenty-nine clinicians were present at the Staten Island conference. Qualitative feedback indicated a positive response to quality of content covered. Two attendees signed up to be PrEP providers during this meeting and local providers were able network and hear experiences in providing HIV services in Staten Island. With these successes, concerns still remained on finding creative ways to engage clinicians who don't provide HIV services or may not consider HIV as a priority.
**Conclusions/Next steps:** In resource limited communities, identifying current community assets such as funding and local champions who are advocates for HIV prevention and care were crucial in making such conferences a success. While the focus of the conference was to increase clinician HIV knowledge, several attendees expressed interest in implementing what they learned into their own practice. We seek to continue with this momentum and offer additional training assistance to increase provider knowledge and practice change intention.

# INPATIENT AND OUTPATIENT SERVICES FOR HIV CARE AND TREATMENT

## THPEE583

### INTEGRATION OF HIV/TB TESTING AND SCREENING BY VCT COUNSELORS IN URBAN SLUMS IN NAIROBI, KENYA

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**Background:** Case identification is the first step of bringing HIV and or tuberculosis (TB) infected persons into care. There are high rates of TB/HIV co-infection as such, TB/HIV collaborative activities are essential in decreasing TB burden among people living with HIV (PLHIV). Urban slums dwellers are classified among high risk sub-populations for undetected TB, poor access to health and TB transmission. Kenya national guidelines recommend intensified TB case finding among PLHIV and universal HIV testing among TB cases.
**Description:** Eastern Deanery AIDS Relief Program (EDARP) provides integrated TB/HIV services in Nairobi and serves 95 urban slum settlements. To address the high demand of TB screening in Nairobi's urban slums, the program trained 64 voluntary counselling and testing (VCT) counsellors to provide integrated TB screening and HIV testing services. On average 13,034 clients are screened for TB/month; 54% at facility and 46% at community, VCT counselors refer presumptive TB cases to clinicians for confirmatory tests.
**Lessons learned:** Between April 2013 and March 2015, a total of 288,820 received HIV testing 38% in VCT, 16% provider initiated testing and counselling (PITC), and 46% community with Positivity rate of 3%(8359). Of the 288,820 clients screened for TB, 29,986 were identified as presumptive TB cases. Of these, 5%(1512) were confirmed though genxpert, chest x-ray or smears to have TB; 2% at VCT and 11% at PITC. Out of 1512 TB cases, 165(31%) at VCT and 277(28%) at PITC were TB/HIV co-infection. All TB patients were initiated on TB treatment at EDARP facilities.
Trained Non clinical VCT counselors carried out TB screening and referred presumptive TB cases to clinicians for confirmatory diagnosis. This strategy enhanced TB screening and treatment acceleration ensuring there were no missed opportunities for TB/HIV treatment and prevention. Integration of TB/HIV screening services using VCT counselors may be embraced to Eliminate TB by 2050.
**Conclusions/Next steps:** Integrated TB-HIV accelerated screening and treatment could be adopted with minimal additional resources. TB intensive case finding by VCT counselors at clinic and community setting may lead to increased early TB case detection, treatment and improved outcomes.

## THPEE584

### PRIORITIZING HIGH YIELD ENTRY POINTS IN MOVE TOWARDS 'TEST ALL' IN LOW-RESOURCE SETTINGS: EVIDENCE FROM MANICALAND PROVINCE, ZIMBABWE

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**Background:** With an estimated adult HIV prevalence of 16.7%, reaching ambitious 90-90-90 targets in Zimbabwe will require strengthening access to HIV testing and counselling (HTC) at all health care entry points as well as ensuring effective linkages to treatment and care for all people diagnosed with HIV. The objective of our assessment was to establish current HIV test yields and documented linkage of HIV positive individuals to treatment and care from different health care entry points.
**Methods:** We selected 11 health facilities in Makoni and Mutare Districts using a simplified probability proportional to size technique. In October 2015, we conduct-

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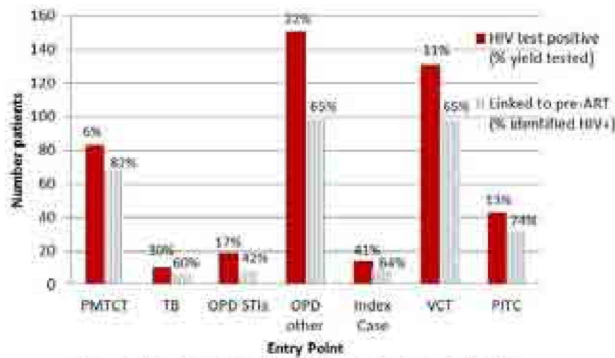
ed a retrospective cohort analysis, tracing all individuals testing HIV positive from Jan-Mar 2015 through registers to document testing entry point and access to care and treatment services among those testing HIV positive. De-identified data was entered into MSExcel and analysed descriptively using StataV12.
**Results:** From Jan-Mar 2015, 4,398 individuals were HIV tested at selected sites, 10.6%(n=467) were HIV positive. Entry points with highest test yield were those in which patients were seeking care for other illnesses (TB:30%, OPD 'other':27%) and index cases (41%). Linkage rates to pre-ART care were highest in PMTCT (82%) and lowest in OPD for STI treatment (42%).




*[HIV test yield, and linkage to pre-ART by entry point (N=4,398)]*

Process evaluation data indicated variability in documentation of entry point codes by site.
**Conclusions:** Our assessment demonstrated high HIV test yields and low rates of linkage to pre-ART care in outpatient departments in which patients were seeking care for other illnesses. Expanding 'test all' strategies should begin with prioritizing HTC for all in and out-patients with unknown status and index case finding, while strengthening linkages to HIV care and treatment between departments. Enhanced health information systems are required to enable accurate documentation of HIV services provided and patient outcomes within integrated service environments.

## THPEE585

### HIV CLINICAL BASELINE RESULTS PRIOR TO HIV HEALTH SERVICE DELIVERY INTEGRATION IN A LARGE URBAN HIV CLINIC IN GABORONE, BOTSWANA

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**Background:** By the end of 2015, Botswana had initiated over 270,000 people on ART using a variety of highly medicalized service delivery models. Looking towards the future, facing the financial realities of growing global economic uncertainty, decreases of diamond revenues and international donor support and critical shortages of health care workers, Botswana must now take action to ensure the long-term sustainability of their HIV Response. To this end, Botswana is improving efficiencies in HIV health system delivery by integrating comprehensive health services into stand alone infectious disease clinics (IDCCs), task shifting clinical care for stable patients to nurses trained in ART prescribing and dispensing, creating express pharmacy stops to decrease monthly pharmacy visits to bimonthly, and improving M&E mechanisms. To determine whether these integration efforts are successful, clinical baseline line data was collected and analyzed.
**Methods:** Beginning in June 2015 through December, patient level data was extracted from a series of random sampling of individual medical records from a total of 19,774 patients initiated after 2002. "Stable" patients were defined as those who were fully suppressed (VL< 400 copies mL) and on ART for 2 years without co-morbidities. "Lost-to Follow Up" was defined as not returning for pharmacy pickup for >90days. Prevalence data on TB, HTN, DM and SRH information were also collected for descriptive analysis.
**Results:** Cumulative Deaths (n=19,774): 10%, Cumulative LTFU 14.5%. Active Patients: 33%. Cervical CA screening (n=824): 67.2%, Contraceptive use recorded: 20%. Co-morbidities (n=777): Ever had TB 19.8%, Current HTN 20.2% (25% with BP readings >140/90), Dyslipidemia 9.5%, DM 1.3%. Total stable patients (n=514): 65%.

**Conclusions:** Baseline data reveal that integration of health care services into IDCCs may greatly improve service delivery quality and clinical outcomes by fast tracking care for stable patients. Triage of stable patients to nurses may decongest IDCCs by 65%, decrease time spent in facilities and optimize adherence. Providing routine SRH services such as contraception and cervical CA screening are currently lacking and would greatly improve quality of care for women. The 35% of patients with co-morbidities would also receive a higher level of care and improved clinical monitoring.

# MIGRATION AND MOBILITY AND HIV PROGRAMMING

## THPEE586

### CONFLICT-AFFECTED DISPLACED PERSONS NEED TO BENEFIT MORE FROM INCLUSION INTO HIV NATIONAL STRATEGIC PLANS AND APPROVED GLOBAL FUND GRANTS WITH AN HIV COMPONENT

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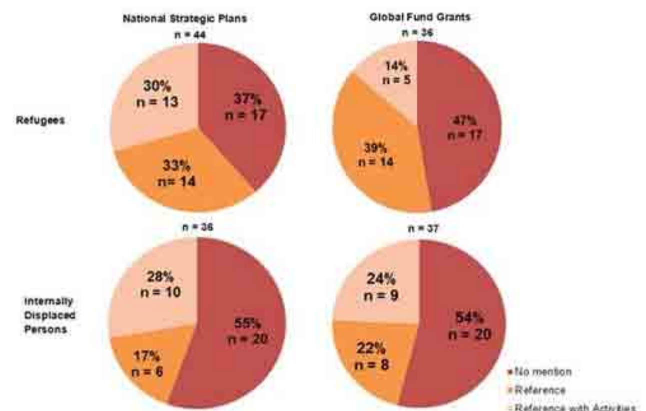
**Background:** Access to HIV programmes for refugees and internally displaced persons (IDPs) is an equity and human rights issue and a public health priority. We conducted an analysis on HIV National Strategic Plans (NSPs) and Global Fund approved proposals with an HIV component for countries hosting populations ≥10,000 refugees and/or IDPs to document their inclusion in 2014.
**Methods:** Inclusion criteria were countries with refugee and/or IDP populations of ≥10,000 persons. NSPs were retrieved from primary and secondary sources. Approved Global Fund proposals were obtained from the organisation's website. Refugee figures were obtained from UNHCR's database and IDP figures from the Internal Displacement Monitoring Centre. Inclusion of refugees and IDPs in plans and approved proposals was classified into three categories:
1) no reference;
2) reference; and
3) reference with specific activities.
**Results:** There were 62 countries with ≥10,000 refugees and 47 countries with ≥10,000 IDPs. We analysed 44 NSPs for refugees and 36 NSPs for IDPs; 15 countries had no NSPs and 6 could not be retrieved. Comparing similar data from a 2010 study on African countries, more NSPs referenced/listed activities for refugees and IDPS in 2014 (52% vs 60% and 43% vs 56%, respectively); similarly for approved Global Fund proposals (38% vs 56% and 38 vs 54%, respectively).
**Conclusions:** There have been improvements in the inclusion of refugees and IDPs in NSPs and approved Global Fund proposals in African countries. However, stronger advocacy at global, regional and country levels needs to occur to ensure displaced populations are systematically included in these plans and proposals. Such integration is essential if we are to reach the 90-90-90 treatment targets and end AIDS as a public health threat by 2030.




*[Inclusion of ≥10,000 refugees and/or IDPs in HIV National Strategic Plans and Global Fund approved proposals, 2014]*

| | | NSPs | | | Global Fund Grants | | |
|---|---|---|---|---|---|---|---|
| | | No mention | Mention | Activities | No Mention | Mention | Activities |
| Refugees | 2010 | 10 (47.6%) | 5 (23.8%) | 6 (28.6%) | 43 (61.4%) | 19 (27.1%) | 8 (11.1%) |
| | 2014 | 10 (40%) | 7 (28%) | 8 (32%) | 11 (46.8%) | 10 (42.7%) | 3 (13.5%) |
| Internally displaced persons | 2010 | 8 (57.1%) | 3 (21.4%) | 3 (21.4%) | 16 (61.5%) | 5 (19.2%) | 5 (19.5%) |
| | 2014 | 8 (44.4%) | 2 (11.1%) | 8 (44.4%) | 8 (47.1%) | 5 (29.4%) | 4 (24.5%) |

*[Inclusion of ≥10,000 refugees and/or IDPs in HIV National Strategic Plans and Global Fund approved HIV proposals in Africa, 2010 and 2014]*

## THPEE587

### TARGETED INTERVENTION FOR MIGRANTS AT DESTINATION: A SUCCESS IN CONTAINING HIV/AIDS EPIDEMIC AMONG MIGRANTS IN INDIA

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**Background:** Prevalence of HIV amongst Migrants is highest in any group, after High Risk Groups of FSW, MSM and IDUs. Further, importance of migration/mobility in the spread of HIV infection in India is evidenced. Considering this, NACO has revised the destination migrant intervention which focus on high risk migrants (both male & female) unlike the single male migrants covered earlier. Interventions are focused in the towns and cities having high migrant population spread out across the city, engaged in construction works, hotel services, seasonal labourers hired for agricultural work, labourer working in the heavy industries, small and medium enterprises.
**Description:** The revised migrant strategy came into force in 2011. With involvement of labour contractor, peers from the originating states the programme has been designed to focus on outreach in work place of migrants, congregation points and at places where they resides. Migrants are covered through health camps, interpersonal communications by outreach staffs, mid media activities, counselling. For impact analysis programme data has been taken for three year from 2012 to 2015 as programme streamlined since 2012.The data has been analysed on major indicator like total migrant population covered across TIs in the states, total STI cases treated, HIV positivity found & total linked to the ART centre.
**Lessons learned:** Migrant coverage with HIV services increased from 2.8 million in 2012 to 3.1 million in 2015 with an increase in number of Intervention from 251 in 2012 to 311 in 2015. HIV testing increased from 0.1 Million to 0.5 million and HIV positivity decreased from 0.77% to 0.27%. Linking of HIV positive migrants to ART centre increased from 40% to 84% in 2015. STI cases treated has reduced from 8.81% in 2012 to 6.47% in 2015.
**Conclusions/Next steps:** The existing govt health facilities in the urban area and private hospitals to be roped into to provide free medical services to the migrants and increase in HIV testing facilities and ART linkages.

# MULTI-SECTORAL RESPONSES, INCLUDING FOR KEY POPULATIONS

## THPEE588

### ENGAGEMENT OF LAW ENFORCEMENT AGENCIES (LEAS) AND CIVIL SOCIETY ORGANIZATIONS (CSOS) FOR HIV PREVENTION AMONG PEOPLE WHO INJECT DRUGS (PWID) IN NIGERIA

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**Background:** The HIV prevalence among PWIDs is 4.2% and they contribute about 9% of the annual new HIV infection in Nigeria. Over the years, efforts made to reach PWIDs with HIV/AIDS prevention, treatment, care and support have recorded minimal results. Some actions of the LEAs, stigma and discrimination drive the activities of this group underground thereby making them difficult to be identified and access HIV services. In order to create an enabling environment and scale-up access of these services among PWIDs, LEAs and CSOs in Nigeria were sensitized and engage to address issues related to PWIDs in the context HIV infection.
**Description:** The National Agency for the Control of AIDS (NACA) in collaboration with the United Nations Office on Drug and Crime (UNODC) held two workshops to Enhance Partnerships between LEAs and CSOs to support HIV Interventions among PWIDs. Participants include LEAs, CSOs, PWIDs and other partners that work with PWIDs. This workshop sensitized the LEAs and CSOs on access to the comprehensive HIV/AIDS services available for PWIDs in Nigeria. The engagement also provided the opportunity for PWIDs to share their experiences and identify areas of collaboration between LEAs and CSOs. Participants were equipped with skills to assume key roles as collaborative partners in HIV prevention and care services for PWIDs.
**Lessons learned:** The workshops provided a better understanding of harm reduction among the LEAs and CSOs thereby changing their mindsets and attitudes toward the PWIDs. LEAs are willing to partner with CSOs to provide enabling environments for access to harm reduction interventions for PWIDs. With adequate knowledge, Law Enforcement officials and Civil Society Organizations can effectively complement each other, share information, identify issues and also prevent HIV.
**Conclusions/Next steps:** Initiation of advocacy with the heads of LEAs, the media and state level trainings will foster partnerships for HIV/AIDS prevention and increase access to harm reduction services for PWIDs. Regular stakeholders meetings to ensure support from the stakeholders for PWID programming in Nigeria.

## THPEE589

### DEVELOPMENT AND IMPLEMENTATION OF A GENDER-BASED VIOLENCE CASE MANAGEMENT SYSTEM FOR MULTIPLE USERS AT RAPE CLINICS

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**Background:** One of the responsibilities of the Foundation for Professional Development (FPD) is the development and implementation of infrastructure at Thuthuzela Care Centres (TCCs) to improve capacity to support the survivors of rape and sexual abuse, and to reduce the risk of secondary victimisation. TCCs are linked to sexual offences courts, which are staffed by prosecutors, social workers, magistrates, NGOs and police.
**Description:** The statistics contained in reports of the TCCs are processed and compiled manually from hardcopy case reports. This is not a sustainable or accurate method for the processing and collation of information as evidence-based statistics, which is why the implementation of an automated information processing and reporting IT solution is required. The objectives and outputs of the project are:
1) To design, develop and implement a data gathering and processing software system for the capturing and processing of Case Information from Case Documentation, pertaining to survivors of rape and sexual abuse and,
2) To design, develop and implement a sustainable Case Information reporting dashboard and solution for the structured reporting of Case Information pertaining to survivors of rape and sexual abuse. It is the responsibility of the TCC and its staff to ensure that the Case Information contained in the Case Documentation is valid, accurate and complete. Information pertaining to the survivor as well as the case of rape or sexual abuse is manually captured on a number of forms and serves as supporting evidence for the National Prosecuting Authority (NPA) as well as for reporting purposes to project principles.
**Lessons learned:**
• Automated application controls at input level ensures the completeness, accuracy and validity of Case Information,
• A real-time web-based dashboard displays Information that is easy to interpret, understand and assimilate,
• A standard printable and downloadable document exported.
**Conclusions/Next steps:** The GBV case management system is an action research project, operating in a multi-sectoral, multi-level environment. Case management ranges from rape kits, HIV tests, PEP, medication, emergency medicine, counselling, feeding and clothing. Lessons learnt will be incorporated as the project advances. Initially the system is installed into four TCCs, but it will be rolled out to all 52 TCCs nationally.

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## TARGETED INTERVENTIONS IN GEOGRAPHIC HOTSPOTS

### THPEE590

### USING PROGRAMMATIC MAPPING TO IDENTIFY LOCATIONS WHERE PEOPLE WHO INJECT DRUGS CONGREGATE AND TO ESTIMATE THEIR POPULATION SIZES IN THREE SOUTH AFRICAN CITIES

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**Background:** The criminalisation of drug use and associated stigma results in the "invisibility" of people who inject drugs (PWID) and presents challenges for HIV-related service provision. We aimed to confirm locations where PWID congregate in Cape Town, Durban and Pretoria (South Africa) and to estimate PWID population sizes within selected electoral wards to inform the outreach strategy for South Africa's first HIV prevention project for PWID.
**Methods:** PWID and other stakeholders were engaged to select wards to be mapped. Community informants were interviewed to identify locations where drug use and injecting was suspected. Project team members visited locations where injecting was suspected and interviewed PWID about accessibility of sterile injecting equipment and PWID mobility. Location coordinates were also recorded. PWID population size estimates for the mapped wards were developed using wisdom of the crowd estimates from PWID interviews. Estimates were adjusted for movement and compared with the literature and early programmatic data. The Delphi method was used to reach consensus on population sizes.
**Results:** Forty-five wards were mapped between January and April 2015. In Pretoria, 39 PWID were interviewed at different locations and the PWID population in the 12 mapped wards was estimated between 568 and 1 431. In Durban, 40 PWID were interviewed at different locations, and 184 to 350 PWID were estimated to be accessible in the 15 mapped wards. In Cape Town, 61 PWID were interviewed at different locations and the PWID population in the 18 mapped wards was estimated between 398 and 503. Sterile needles were only seen at one location. Almost all were bought from pharmacies. Between 80% - 86% of PWID frequented more than one location per day. PWID who moved visited a median of 3 locations a day.
**Conclusions:** PWID can be reached using peer-based methods in locations where PWID services do not exist or are nascent. The limited visibility and reported access to injecting equipment in these cities highlights an important HIV prevention need. Outreach programmes should take the mobile nature of PWID populations into account. The population size estimates can be used to set service delivery targets and as baseline measures.

### THPEE591

### FAST TRACKING MUNICIPAL HIV RESPONSES TO ADDRESS THE DISPROPORTIONATE BURDEN OF HIV AMONG KEY POPULATIONS

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**Background:** A 2012 epidemiological analysis by UNAIDS indicated that the thirty biggest city epidemics in Eastern and Southern Africa hosted a total of 4.2 million PLHIV - nearly a quarter of the epidemic in the sub-region . A related programmatic review undertaken by UNDP further revealed that most cities lacked appropriate and adequate strategies to reach key population (KP) groups - who due to complex legal, social and economic factors, are at higher risk of HIV infection. This includes men who have sex with men, sex workers, people who use drugs and transgender people. The 'African Cities and HIV Initiative' launched by UNDP and partners in 2011 aimed at addressing this critical gap in the African HIV response.
**Description:** By the end of 2015 the initiative was implemented in more than fourteen cities in Africa, including Lagos, Douala, Kigali, Kampala, Dar es Salam, Lusaka and Maputo, to review their responses and develop specific HIV prevention, treatment and care strategies for KPs. The project activities also strengthened the capacity of KP groups including regional KP networks such as the African Men for Sexual Health and Rights (AMSHeR) to engage with municipalities. KP groups are directly involved in the planning, implementation and monitoring of the initiative.
**Lessons learned:** A dashboard has been developed to track the progress of each city using different criteria that look at the situation analysis and data generation, identification of activities, budget allocation, setting specific indicators and ensuring participation of KPs in the cities HIV response. The dashboard showed that despite some progress, several challenges remain, including lack of city level data on KPs, no direct budget allocation for KP interventions, and lack of indicators to measure progress. It is also observed from the dashboard that the challenges differ between different KP groups and different cities.
**Conclusions/Next steps:** Given Africa's rapid urbanization rate, HIV will continue to be a crucial public health issue for municipal authorities. Hence, the planning and implementation of municipal HIV responses must ensure that KP focused interventions are based on detailed analysis and adequate data, include clear operational plan with targets and indicators and make direct resource allocation for KPs.

### THPEE592

### MEETING THE SEXUAL AND REPRODUCTIVE HEALTH, INCLUDING HIV NEEDS, OF SOUTH SUDANESE REFUGEES IN GAMBELLA, ETHIOPIA

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**Background:** Sexual and Reproductive Health services are more often than not perceived as low in the hierarchy of needs during humanitarian crisis yet populations in crisis need and have a right to reproductive health; affected populations at the very least need and must be provided for an enabling environment to access these services whether inform of a minimum package or comprehensive service depending on context of crisis. To meet the sexual health needs of populations in crisis and post crisis, a project has been designed to address gaps in the provision of Minimum Initial Service Package (MISP) implementation for reproductive health.
**Description:** UNHCR estimates over 190,000 people displaced into Ethiopia during the 2013/2014 South Sudan crisis. While the government opened refugee camps in Gambella region in Ethiopia in 2014, IPPF through its partnership with IMC implemented an SRH emergency response. The response was guided by the five MISP objectives; coordination, prevention of sexual violence, reduction of HIV transmission, prevention of excess maternal and neonatal mortality and morbidity and provision of comprehensive RH services. The project targeted 57,861 (5,413 men, 30,852 women, 21,596 adolescents) and reached 88,869 people. At the end of the project, a post emergency review (PER) was conducted to assess the performance of the project.
**Lessons learned:** Timely and speedy implementation of MISP at the onset of crisis and sustaining it throughout the crisis is critical as it saves lives. A transitioning plan to ensure continuum of care was needed for this intervention. Availability of RH friendly services for both young people and adults was another key component to compliment demand created for comprehensive SRH services after crisis. Meaningful engagement and collaboration with partners is important in implementing and sustaining a project of this nature; a multifaceted and multi-sectoral approach effectively addresses the vulnerabilities and needs in crisis settings.
**Conclusions/Next steps:** On commencement, it is necessary to conduct a rapid assessment to establish the baseline. Provision of HIV services as part of the integrated package was not well covered largely due to stigma attached to the disease and ignorance, a better understanding of the same would have achieved a meaningful intervention.

### THPEE593

### A QUALITATIVE EXPLORATION OF BARRIERS TO "TEST AND TREAT" FOR HIV, IN GEOGRAPHICALLY-ISOLATED FISHING COMMUNITIES OF RAKAI, UGANDA

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**Background:** The "test and treat" strategy is now recommended for key populations in Uganda, including fishing communities in Rakai south-west Uganda, where adult HIV prevalence is around 40% and incidence estimated at 3.9 per 100 person-years. Delivery of "test and treat" should occur through the Ministry of Health and PERFAR-supported district-led programming whose tenets include structuring HIV care around the traditional formal health facilities. As part of a broader comparative study being undertaken by the ALPHA Network to explore bottlenecks in accessing HIV care services, we aimed to document the HIV care-seeking experiences of patients along the treatment cascade in the context of "test and treat" roll-out.
**Methods:** Fisher folk were purposively sampled from HIV counselling, ART clinics and Rakai Cohort Study databases. Eighteen in-depth interviews were conducted using semi-structured topic guides iteratively developed and covered individual, community and programmatic factors that influence HIV care-seeking. Using a framework analysis, with a thematic approach we coded and mapped barriers to

accessing HIV services and examined their influence on implementation of "test and treat" in this setting. The study was approved by local and international institutional review boards.
**Results:** Lack of affordable transport, distance from health services, perceived stigma and reluctance to start ART because of beliefs that `treatment' is for people who are sick, shape the health care seeking behaviour of HIV positive patients. We found that these barriers delay patients' decision-making in respect of care-seeking, meaning they subsequently reach health facilities when they are ill rather than 'promptly', as per the "test and treat" strategy.
**Conclusions:** Despite introduction of "test and treat", trajectories of HIV care in this setting remain characterised by delays in reaching services due to social-cultural and logistical barriers. Service decentralisation will be essential to reduce distances that patients are expected to travel if "test and treat" strategies are to be successful in this setting.

## THPEE594

### Accessing gay men: transitioning from physical venues to online spaces

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**Background:** Gay men and other MSM are increasingly using geolocational mobile applications (such as Grindr) to meet each other, talk and build community. The use of mobile apps is the primary way men meet other men in Sydney, Australia, increasing from 23% in 2011 to 42% in 2014. There is a need to utilise mobile apps to communicate about HIV and other health messages that targets key populations (KP) and 'goes to them', accessing them where they are geographically.
**Description:** ACON's Peer Education project has successfully trialled an outreach strategy on Grindr, targeting gay men and other MSM in Sydney. This involved creating a profile that invites other Grindr users to "Ask me anything!" It uses a passive approach, waiting for men to message the profile and then provides a response in line with ACON's health promotion objectives.
This project has been trialled in the geographical hotspot of inner-city Sydney where a high proportion of gay men live. Following a decline in men attending bars and other traditional meeting places.
**Lessons learned:** ACON runs a program called Sexperts that deploys volunteers in SOPVs to answer questions about HIV and sexual health. This model has been adapted for mobile apps, with questions received online being similar to the sorts of questions being asked in physical venues.
Of those who asked questions about sexual health 38.2% asked about PrEP, 29.4% about testing, 23.5% asked about HIV risk while others praised ACON for providing the service or asked about STIs or health related concerns.
However, communicating online brings some additional challenges to peer education. Some respondents asked how they could trust that the profile was legitimate as the profile picture didn't show a person's face.
**Conclusions/Next steps:** Strategies are being explored to increase the number of people who are comfortable discussing HIV with the profile. Volunteer 'Sexperts' are being trained to respond to people's questions through the app, so that they can then conduct health promotion from their own homes in their local area, or while travelling. While this initial phase has been trialled on Grindr, this can also be expanded to other geolocational apps relevant to local populations.

## THPEE595

### Effectively reaching female sex workers with HIV prevention and testing services through mobile outreach services in Cape Town and Durban, South Africa

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**Background:** In 2011, an HIV prevention programme for female sex workers (FSWs) in Cape Town and Durban, South Africa began. Tailored peer-based mobile service delivery was used to provide services at sex work locations. The programme used unique participant identification codes (PICs) to protect the identity of FSWs and to enable monitoring. FSWs were asked their HIV status and a rapid HIV test was done on consenting FSWs who did not know their status or who identified as HIV negative.. HIV prevention commodities were provided and FSWs who were HIV positive were linked to care. The project aimed to quantify the number of FSWs reached, and understand the burden of HIV and need for linkage to care among FSWs who accessed the programme between July 2012 and June 2015.
**Methods:** PICs were used to identify FSWs who accessed the programme for the first time. Frequencies and proportions were calculated for HIV status, access to care among those who were reported to be HIV infected, and results from HIV testing.
**Results:** Overall, 7240 individual FSWs were HIV screened and counted when first accessing services. In Durban, 24.9% (992/3 980) of FSWs reported HIV infection, among whom 75.6% (750/992) were not in care. Eighty five percent (2784/3267) of FSWs consented to HIV testing and 34.3% (989/2784) were HIV infected. In Cape Town, 1.7% (55/3260) of FSWs reported HIV infection, among whom 67.3% (37/55) were not in care. Ninety eight per cent (3204/ 3260) of FSWs consented to HIV testing and 5.7% (183/3204) were HIV infected.
**Conclusions:** PICs are useful to maintain confidentiality while allowing programme reach to be monitored. The programme reached large numbers of FSWs with HIV testing services in these cities, highlighting the effectiveness of tailored peer-based mobile service delivery. The programme identified a high burden of HIV among FSWs in Durban, confirming the need to include a tailored HIV response for this key population. Over 3/4 of Durban FSWs who reported to be HIV infected were not in care, underscoring the need for programmes for FSW to include interventions to support linkage to care.

## THPEE596

### Women economic empowerment: a vehicle to reduce HIV vulnerability, access education, nutrition and health services for women and their children in Malawi: the Mponela women experience

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**Background:** Women economic empowerment does not only reduce vulnerability to HIV risks but also promotes rights to education, health and good nutrition. In a country with 65% of the population living in absolute poverty, subsisting on less than $1 per day, and with 61 % women living with HIV out of the total adult HIV population according to the Malawi NSP 2011-2016, ILO has targeted women and girls (80% of the beneficiaries) and has introduced an integrated package that combines the provision of HIV and AIDS services, entrepreneurial skills and the establishment of an innovative micro-finance system which is managed by the beneficiaries in collaboration with a locally-identified financial institution.
**Description:** The program supported about 12,000 women and girls beneficiaries located in 19 associations and cooperatives in the 12 hotspots of the transport corridors in Malawi, with interventions aimed at reducing HIV risk vulnerabilities through economic empowerment initiatives. Mponela women, a group of 150 members were among the targeted group. It comprised of widows, young women, women living with HIV and elderly women taking care of orphans. They were provided with a combination of skills on group formation, entrepreneurship skills, and business mentorship and on HIV risk-reduction strategies.
**Lessons learned:** Through a 3 year period of the interventions, 70 children were withdrawn from the street and are being supported with their education and food through the proceeds from their businesses, 20 elderly women living with HIV are supported with nutritional supplements, and over 100 businesses were established by women, creating about 1000 jobs, and a community garden has been developed to support the needy with food supplements and income for the group.
**Conclusions/Next steps:** The concept of economic empowerment model can be adopted by many key players in the sub Saharan region where poverty is one of the key drivers of the epidemic, as it does not only address HIV vulnerabilities but also promotes access to other key services (education and nutrition) that affect the HIV response.

## THPEE597

### Results from the national PLACE study in Uganda: addressing the need for local evidence to tailor prevention programs for those most likely to acquire and transmit HIV

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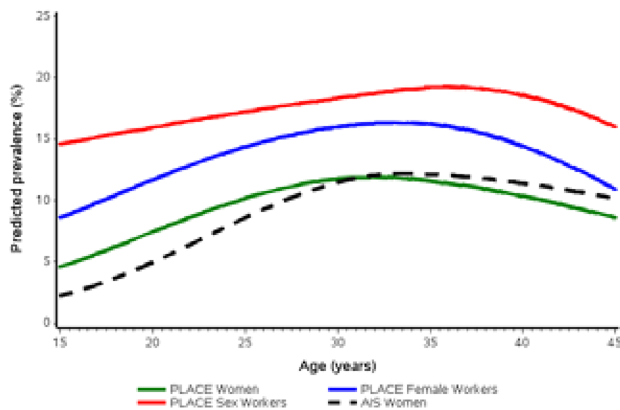
**Background:** Information on local HIV epidemics among high-risk populations is needed to tailor local prevention. In Uganda, national leaders identified a gap in strategic information at the district level.

**Methods:** 113 districts were categorized into 3 risk strata. A stratified random sample of 30 districts was selected. Local district stakeholders identified 3 high risk areas/district such as fishing villages or trading centers. Interviewers asked community informants to identify sites where people meet new sexual partners. A stratified random sample of 100 sites were visited, characterized and mapped. District samples of 600 site staff and patrons were interviewed and tested for HIV onsite using moonlight outreach HCT teams. Testing and referral for treatment followed national guidelines.

**Results:** 7,587 community informants identified 7688 sites unique sites across 30 districts. The most common type of informant was a boda-boda cyclist. Most of the sites served alcohol but less than a third had condoms. Almost half reported sex onsite. 18,553 patrons and workers were interviewed and tested. Approximately 12% of young men and women age 15-24 reported having 2+ sex partners in the past 4 weeks. 17% of young women reported exchanging sex for cash in the past 4 weeks. Prevalence varied by district but was higher among women who reported exchanging sex for cash and among women who worked at sites than among the general population (AIS survey). Over 800 respondents who had a positive HIV test reported that they did not know of their infection. Districts discussed their findings with broad group of stakeholders and prepared district level action plans.




*[HIV Prevalence By Age]*
*Restricted quadratic spline model used for age with knots at 17, 34 and 49]*

**Conclusions:** Relative to nationally representative surveys, district-level evidence on the HIV epidemic enabled sub-national stakeholders to generate local action plans for HIV prevention. Moonlight testing and condom distribution at social venues was acceptable and priority groups and venues for HIV prevention interventions were identified for effective programming.

## HIV PROGRAMMING FOR PEOPLE LIVING WITH DISABILITIES

### THPEE598

### OVERCOMING COMMUNICATION BARRIERS IN HIV PREVENTION AMONG IN-SCHOOL PEOPLE WITH DISABILITY (PWD) IN EKITI STATE: A CASE OF THE HEARING IMPAIRED AND VISUALLY IMPAIRED POPULATION

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**Background:** PWD are at significant risk of becoming HIV infected due to so many factors including lack of education, resources to ensure safer sex, risk of violence and rape, stigma and lack of legal protection amongst others. Situation analysis of HIV prevention intervention amongst in-school PWD in the three specials schools in the state show that 48% of the total population in these schools is hearing impaired, 16% visually impaired and 6% intellectually impaired. To this end, Ekiti State AIDS Control Agency with the funding of the World Bank and in collaboration with some Community Based Organizations carried out a two year intervention programme targeted at reaching the PWD population with HIV prevention services.

**Description:** Entry phase activities were carried out to relevant stakeholders to ensure community participation, the programme made use of the situation analysis report as baseline for intervention. Peer Education manual (200 copies) and IEC materials (1747) were reproduced in Braille and sign language (1,000 copies of Signing to HIV Prevention), Bill Boards with messages that address disability and stigma were produced and erected. Thirty five able teachers (12 males 23 females) with specialization in Braille (10) and sign languages (20) were selected and trained as peer educator trainers (TOT) amongst the special students (hearing and visually impaired), 25 Peer Educators (13 males and 12 females) were selected and trained by the trained teachers to carry out peer education using the Braille and sign language manuals. Anti HIV/AIDS club was formed in the schools and health workers in the school health centers were trained on effective communication with PWDs for HIV/AIDS service provision.

**Lessons learned:**

| A total of 514 PWD were reached with MPPI between February 2013 -October 2015 as highlighted | Male | Female | Total |
|---|---|---|---|
| Number of visually impaired in-school youth reached with MPPI | 34 | 20 | 54 |
| Number of hearing impaired in-school youth reached with MPPI | 253 | 207 | 460 |

*[A total of 514 PWD were reached with MPPI between February 2013 -October 2015 as highlighted]*

**Conclusions/Next steps:** The use of Braille and Sign language HIV specific materials to communicate with PWD in service delivery improved their understanding and knowledge of HIV/AIDS, HCT uptake and participation in all structural interventions including community dialogues and Anti-AIDS club. However, the intellectually impaired, who are highly sexually active and at risk of HIV remain a neglected population due to communication challenge.

## COUNTRY INVOLVEMENT IN DESIGN AND IMPLEMENTATION OF PROGRAMMES

### THPEE599

### NOVEL ORIENTATION PACKAGE FOR NEW GLOBAL FUND TO IGHT AIDS, TUBERCULOSIS AND MALARIA COUNTRY COORDINATING MECHANISM (CCM) MEMBERS AND SECRETARIAT STAFF

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**Background:** The USAID-funded Leadership, Management, and Governance (LMG) Project implemented by Management Sciences for Health (MSH) developed a Global Fund CCM orientation program for Zambia in 2014 and 2015. The orientation program prepares new CCM members and Secretariat staff to fulfill their responsibilities in CCM governance and grant oversight. With support from the Global Fund Secretariat, the LMG Project is building upon this orientation program to develop an orientation package for CCMs worldwide in late 2015 and early 2016. The orientation package combines the best of self-learning and adult-peer-learning techniques to inform new CCM members and Secretariat staff in an engaging way.

**Description:** The orientation of new CCM members and Secretariat over the first 2-3 months of their terms has five tiers:

1. Under the Mango Tree (2 hours) - basic introduction to CCM and its roles by CCM Chair and/or CCM Secretary
2. Self-Drive Orientation (4 hours) - virtual orientation on Global Fund, CCM, CCM committees, and country grant portfolio across three diseases
3. Face-to-Face Orientation (18 hours) - in-person orientation with other CCM members and Secretariat staff
4. CCM Committee Training (16 hours) - in-person training with other committee members
5. Coaching and Mentoring (16 hours) - ongoing one-on-one support

The learning modules include:

- Global Fund value chain: Country Dialogue, multi-stakeholder involvement, national strategic planning, needs assessment and gap analysis, Concept Note development, grant making, and grant signature
- Global Fund grant considerations: health systems strengthening (HSS), human rights, gender, key populations, and climate change and health
- CCM structures and functions
- Governance principles
- Oversight practices

**Lessons learned:** The orientation package combines self-learning and adult-peer-learning techniques because new CCM members and Secretariat staff:

- Need a structured approach to orientation without information overload
- Learn in different ways and at different speeds
- Learn more thoroughly with and from peers in “learning in action”
- Need training to understand the technical functions of the CCM committees
- Need ongoing one-on-one support through coaching and mentoring

The LMG Project is developing facilitator guides, participant guides, and evaluation guides.
**Conclusions/Next steps:** The orientation package will be available in English and French in mid-2016 on the Global Fund website and through digital media. The Global Fund Secretariat will develop a strategy to strongly encourage CCM members to complete the orientation package.

## THPEE600

### A PARTNERSHIP OF STRENGTHS: A MODEL COLLABORATION BETWEEN GOVERNMENT, NGOS AND THE PLHIV COMMUNITY FOR COMPREHENSIVE CARE AND SUPPORT: EXPERIENCE FROM THE VIHAAN PROGRAMME IN INDIA

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**Background:** There are an estimated 2.12 million PLHIV in India (NACO, 2015), of whom 1.17 million are registered with the ART centres across India. These facilities are the primary Government service delivery sites for ART and associated treatment linkages. Complementing the Government HIV programme, the Global Fund-supported Vihaan Care & Support programme, implemented by India HIV/AIDS Alliance and partner, promotes care & support for PLHIV to improve uptake and efficacy of treatment. A core component of India's national HIV strategy, Vihaan offers community-based outreach, follow-up, counselling, and referral services for PLHIV to strengthen treatment adherence and increase retention in care, and improve the overall quality of life for PLHIV.
**Description:** Vihaan was initiated on April 1, 2013. A total of 350 Care & Support Centres (CSCs) have been established, implemented by PLHIV networks (80%) and other civil society organisations (20%). CSCs promote treatment adherence, enhance positive living and create an enabling environment for an effective HIV response in India. CSCs are linked to all 520 ART Centres across India and foster PLHIV retention in HIV care, as well as educating, supporting and linking them with other health services and social welfare schemes.
**Lessons learned:** Effective coordination and active involvement of all stakeholders - including the National AIDS Control Organisation, State AIDS Control Societies, state and district PLHIV networks, NGOs, and Alliance India - throughout the project cycle (planning, implementation and monitoring) has enabled Vihaan to provide effective care and support services to 904,104 PLHIV, representing 77% of the PLHIV registered in the national ART programme. In addition, 146,361 Lost-to-Follow-Up PLHIV have been tracked and returned to ART services, and 306,955 PLHIV have been linked with various social protection schemes, through December 2015.
**Conclusions/Next steps:** Effective partnership between Government, NGOs and the PLHIV community takes commitment from all. It is imperative that such partnerships are actively supported to bridge existing gaps in care, support and treatment services and complement the important work done by each stakeholder to collectively enhance the national HIV response.

## THPEE601

### ADVOCATING FOR GOVERNMENT TO INTRODUCE HIV PREVENTION IN SCHOOLS AS A CORE SUBJECT

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**Background:** With an HIV prevalence rate of 28% among adults, Swaziland leads with the world's highest HIV rate. Devastatingly, 35-45% of the country's children are orphans. These are astounding statistics, yet, until recently, no national HIV education curricula existed to provide youth with the information needed for them to remain HIV-free. The Bantwana Initiative of World Education (WEI/B) identified this as a critical prevention gap, and, in 2011, began advocacy work with the Ministry of Education & Training (MoET) and UNICEF to formalize HIV education across all secondary school classrooms.
**Description:** With funding support from UNICEF, WEI/B worked closely with the National Curricula Committee to develop a national Guidance & Counseling Curricula and a Teacher's Handbook for levels 1-5, which includes core HIV education prevention lessons. The MoET recently endorsed and launched the new Guidance and Counseling curriculum nationally, and WEI/B is rolling out the program in all secondary school classrooms across the country, monitoring impact through a KAP study.
**Lessons learned:** The establishment of this HIV program on behalf of all secondary school students in Swaziland is a milestone achievement, and a testament to the underestimated role and paramount importance of advocacy, close engagement, and support of key interventions with government ministries. The success in the development and launching of this national program underscores the value of strong government partnerships, and the need for a long-term vision for addressing prevention gaps within national frameworks.
**Conclusions/Next steps:** Whereas in 2011 there was no HIV education in public schools amidst a devastating epidemic, today, WEI/B is supporting the MoET to reach approximately 80,000 young people with key information about how to prevent HIV infection. WEI/B has helped to shift outcomes for a generation of young people by helping the government to bridge a critical prevention gap, bringing critically-needed HIV prevention and life skills education to young people - a cornerstone of the aggressive attempts to curb the disease, and reach 90-90-90 goals.

# CROSS-BORDER COLLABORATION (BETWEEN COUNTRIES) TO SCALE UP ACCESS TO HIV TREATMENT AND SERVICES FOR MIGRANTS AND MOBILE POPULATIONS

## THPEE602

### HIV, MOBILITY AND CROSS BORDER AREA: STRATEGY FOR BETTER ACCESS TO HEALTH AND SERVICES FOR KP AND PLHA. THE EXAMPLE OF FEVE/SÉNÉGAL PROJECT (BORDERS AND VULNERABILITY)

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**Background:** The cross borders and mobility areas request specific strategies for an efficient response to HIV. Each country has his strategic plan to fight HIV based in his context and the nature of the epidemic as promoted by UNAIDS « know your epidemic,know your response ».
However, the border areas present generally a different context due to the lack of qualified health structures, the important mobility and difficulties to follow up the HIV patients specially key populations (KP) from one country to an other.
The FEVE project ( Borders and vulnerability to HIV) implemented in 8 countries in west Africa by Enda Sante in partnership with the Luxembourg cooperation and SAN access is the only regional project in west Africa targeting KP and PLHA for a better access to health services.
**Description:** The cross border activities are implemented between Senegal, Guinee Bissau, Guinee Conakry, Mali and the Gambia from 2011 to 2015.
The main interventions undertaken are

- Linking health providers and other actors in a cross border task force
- Elaboration and implementation of a multi language cross border referral tool.
- Elaboration of a directory of the main health centers and services available along the borders.
- Capacity building and experience exchange.
- Joined awareness / VCT campaigns in the mobility points

**Lessons learned:** A global strategy is necessary for a better response in cross border areas. Health providers must have a discussion framework to evaluate the actives together and familiarize.
The availability of the map of health structures along the borders and a referral tool facilitate the follow up of HIV patients from one country to an other.
Capacity building and reinforcement of cross border health structures are needed for a good quality of services delivered.
**Conclusions/Next steps:** The FEVE project is a relevant experience in managing HIV in the border areas. His achievements permitted the implementation of new project like KPCF ( key population challenge fund) and initiative like the link of the CNLS ( National Aids Services) of Senegal, the Gambia and Guinee Bissau to fight the HIV epidemic. It can be a base of building new joined strategies to end the epidemic in west Africa.

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## COMMUNITY COORDINATING MECHANISMS

### THPEE603

#### COMMUNITY ENGAGEMENT IN RESEARCH UNEARTHS COMMUNITY HEALTH NEEDS

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**Background:** Biomedical studies require active and rigorous community engagement (CE), especially if it is community based study. Researchers conduct CE to sensitize a community about an impending study, seek input from community members on the best methods of conducting a study within their community, obtain acceptance from the community of study, understand socio-cultural aspects of the community that may influence study conduct, and to educate community members on health-related aspects of the proposed study. However, often non-study-specific health-related questions are encountered during CE activities, identifying health care gaps or specific community needs that will not be addressed by the planned research.
**Description:** Botswana Harvard AIDS Institute (BHP) is collaboratively conducting a community-based study, the Botswana Combination Prevention Project (BCPP), investigating the impact of combination of HIV prevention services in reducing HIV incidence over 36 months in 16-64 year old residents of Botswana. Participants are enrolled from 30 communities throughout Botswana. The BCPP CE team held introductory meetings with the leadership in each of the 30 communities, followed by a community residents meeting. Community leadership included Kgosi (Chief), headmen, heads of church-based and non-governmental organizations, community development structures (i.e. Village Development Committees) and government departments. Audience comments and questions often included health or development issues outside the scope of the project (i.e. other diseases, drug/alcohol abuse, resources), some of which affect a subset of the community's population, such as youth.
**Lessons learned:** As much as BCPP communities have actively embraced BCPP, they have other health-related issues that they prioritise and wish to bring to the attention of those in leadership positions whenever the opportunity arises. CE forums, such as the meetings held for BCPP, offered them such opportunity.
**Conclusions/Next steps:** Understanding that communities may have health priorities beyond scope of BCPP, we established a practice of routine debriefings with key Botswana Ministry of Health personnel after CE campaign. However, when conducting CE for HIV-specific study, CE plans should include strategies to effectively respond to, and/or bring to the attention of relevant authorities, community health needs that are beyond the scope of the research, but for which, the community requires response.

## CREATING DEMAND FOR HIV-RELATED CARE AND SERVICES

### THPEE604

#### LESSONS LEARNED FROM LAUNCHING PLEASEPREPME.ORG, A CROWD-SOURCED, LOCATION-BASED, SEARCHABLE STATEWIDE CALIFORNIA PREP PROVIDER DIRECTORY TO CONNECT CONSUMERS INTERESTED IN PREP TO PREP-FRIENDLY PROVIDERS

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**Background:** According to the U.S. Centers of Disease Control and Prevention, one in three primary care doctors and nurses have not heard about pre-exposure prophylaxis (PrEP). While efforts are underway to train providers and develop policies to increase PrEP access, there is increasing demand by consumers to find PrEP-friendly providers.
**Description:** PleasePrEPMe.org, a crowd-sourced, location-based, searchable statewide California PrEP Provider Directory, launched November 2015 connecting consumers interested in PrEP to willing providers. The website was developed in collaboration with regional partners in the San Francisco Bay Area, Los Angeles and San Diego. From the homepage, users enter their location by city or zip code. The website scans the up-to-date directory of 200 clinics mapping the nearest within a customizable mile radius. Consumers can find a provider that fits their sexual health needs. For providers, PleasePrEPme.org offers a portal to promote their services. The website also offers resources to empower consumers and providers to better access PrEP.
**Lessons learned:** We solicited user input using heuristic reviews and surveys throughout the development process to ensure the website's look, feel and messaging were consumer-oriented. In doing so, we invested significant skill, time and resources for building the searchable database and website design to meet consumer desire for a simple search process and information structured in a user-friendly format. To date, more than 6,500 visitors have visited PleasePrEPMe.org with more than 17,000 page views. We credit much of the website's success to this consumer-driven approach.
Separately, willingness from providers to join PleasePrEPMe.org depended on PrEP awareness, which varied. Having readily available capacity building assistance tools for providers not aware and/or comfortable prescribing PrEP was helpful. For counties with rural populations, low HIV incidence and/or low HIV prevalence, we found partnering with major influencers, like the State Office of AIDS, along with targeted outreach was key in our recruitment efforts.
**Conclusions/Next steps:** PleasePrEPMe.org fills the demand of consumers seeking a willing PrEP provider and supports providers to become more PrEP-friendly. It is our intent to expand PleasePrEPMe.org into a multi-state or national effort. As PrEP uptake continues to increase, our lessons learned may be useful to others developing PrEP provider directories.

### THPEE605

#### COMMUNITY MOBILIZATION AS KEY TO THE SCALE UP OF VIRAL LOAD MONITORING IN RESOURCE-LIMITED SETTINGS: LESSONS FROM UGANDA

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**Background:** Viral load (VL) testing is increasingly recognized as an important tool for the management of ART in resource-limited settings. However, VL testing has been cost-prohibitive, lacking community demand in many countries, and not widely understood or discussed.
**Description:** Civil society (CS) in Uganda, led by HEPS, mobilized to improve access to VL monitoring. The campaign for prioritization and scale-up of VL testing engaged CSOs and constituencies of people living with HIV (PLHIV), the Ministry of Health and development partners such as PEPFAR. Advocates also conducted a baseline survey of VL monitoring services in four regions of Uganda, capacity building workshops with over 30 CS organizations and others including health journalists, radio and TV talk shows and print media.
**Lessons learned:** The survey found that out of the 56 public facilities visited, only five, and a handful of private facilities, offered VL services. It also found low levels of awareness of the importance of VL, confusion about the difference between CD4 count and VL and sporadic ARV stock outs in most facilities.
Largely as a result of HEPS' survey and community engagement, CS was able to inform and shape the VL rollout process supported by Uganda's HIV/AIDS National Priority Action Plan 2015-2018 and funded by PEPFAR. Specifically, HEPS raised awareness empowering PLHIV to increase demand for and uptake of VL services, helped foster robust community systems that follow up and support people with a high VL; used mass media to communicate the delicate shift from CD4 count as a monitoring tool to VL; ensured that the ART program works in harmony with the VL program and called for and enabled a stable and sustained supply of ARVs to achieve viral suppression.
**Conclusions/Next steps:** Universal access to VL monitoring is feasible however experience from HEPS' VL advocacy project shows that it is important to involve CS and PLHIV for successful rollout of the program. The project is currently identifying and recruiting community champions to monitor the rollout of the program guided by a VL quality checklist.

## COMMUNITY-LED PROGRAMMES AND ORGANIZATIONS, INCLUDING FOR KEY POPULATIONS

### THPEE606

#### ASSESSMENT OF PEER-LED, COMMUNITY-BASED-ORGANIZATIONS PROMOTING SAFE SEX AND EMPOWERMENT AMONG STREET SEX WORKERS IN VIETNAM

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**Background:** In Vietnam, prevalence of HIV is estimated at 0.3% among the general population, but at 16% to 23% among street-based sex workers (SWs) in some provinces. Sex work in Vietnam is illegal and sex workers are vulnerable to stigma, social exclusion, violence, harassment and detention.
**Description:** This paper examines the experiences of Vietnamese sex workers who participated in peer-led sex workers' community-based organizations (CBOs). Sex workers' CBOs were implemented by the Vietnamese NGO Supporting Community Development Initiative (SCDI) using a harm reduction intervention model designed and implemented within the framework of the Bridging the Gap program (Aidsfonds, Netherlands). The objective of the study is to assess the effectiveness of SWs' participation in the CBO organization. The study uses a participatory qualitative research method. Nine focus group discussions and 20 individual in-depth interviews were conducted between October 2014 and February 2015, reaching a total of 107 sex workers-CBO members (85 women and 22 men).
**Lessons learned:** The CBO was assessed very positively by study participants who felt the CBO yielded positive results with respect to the adoption of safe sex practices, including regular condom use and health testing, and, therefore, reduced sexual health risks. Participation in a CBO promoted feelings of empowerment, which enhanced the ability to negotiate safe sex with clients and to contest abusive and violent client or police behavior.
**Conclusions/Next steps:** We discuss the implications of our findings for planning a national intervention program that would maximize benefits for sex workers, clients and the general population.

### THPEE607

#### "NOTHING FOR US WITHOUT US". SCALING ACCESS TO SERVICES THROUGH COMMUNITY INVOLVEMENT IN RUNNING OF PROGRAMS: A REVIEW OF THE SEX WORKERS LEARNING SITE IN MOMBASA, KENYA

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**Background:** Sex Workers (SWs) are particularly vulnerable to HIV and STIs. The vulnerabilities faced by SWs relate not only to their individual risk behaviors but also to broader societal and community factors. National AIDS Control Council (NACC) and National AIDS and STI Control Programme (NASCOP) has prioritised SWs in the Kenya AIDS Strategic Framework (2014-2019) and has recommended a combination prevention strategy to scale up interventions. In 2013, NASCOP selected Mombasa to establish a model program to serve as demonstration site for building and disseminating knowledge about efficient and effective comprehensive programming with key populations. The outreach component was spearheaded by SWs.
**Description:** Mombasa County has an estimated number of 9,289 Female Sex Workers (FSW) and 682 Male Sex Workers (MSW) who operate mostly in venues. Through consultation with the SW community, it was agreed that the Learning Site (LS) would target SWs in two locations whose estimated number of FSW was 5,809 and MSW 600. The main objective of the LS was to implement a comprehensive SWs model program which focuses on reducing HIV transmission among SW by strengthening behavioral and structural interventions.
**Lessons learned:** At the end of the period July 2015, a total of 6,698 FSW and 1000 MSW were enrolled through the outreach program. Out of those enrolled, 60% of the FSW and 95% of the MSW were also enrolled at the clinic. SWs who reported consistent condom use increased from 84% to 92% and 49% to 52% for FSW and MSW respectively during the period 2014 to 2015.
Access to HIV testing and Counselling also increased from 62% to 89% for FSW and 71% to 74% from the period 2014 to 2015 with 92% of those positive enrolled into a HIV care and treatment program.
**Conclusions/Next steps:** The project is a community owned comprehensive project. SWs are in the centre of the project and are part of the decision making. Services are comprehensive and have expanded over time addressing the needs of the community such as flexi opening hours. Overall the project shows that even in a short period of time a community owned comprehensive programme can result in positive outcomes.

### THPEE608

#### CURRENT SITUATION AND CHALLENGES FOR NON-PROFIT ORGANIZATIONS INVOLVING IN HIV/AIDS RESPONSE IN CHINA

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**Background:** To analysis current situation for non-profit organization (NPO) participating in fighting HIV/AIDS in China, and to inform policy making in term of CBOs' participation in future HIV response in China.
**Methods:** We employed a mixed method including policy and literature review, cross-sectional questionnaire survey across 29 provinces, as well qualitative interview of the key informants. A total of more than 700 organizations enrolled in the survey. The institutional information and profile, services delivery over last 5 years, staffing and capacity and future development plan and challenges ahead et.al were collected and analyzed.
**Results:** In total, there were more than 1000 NPOs supported by international cooperation programs, such as the Global Fund and Gates Foundation in 2013, and more than 700 projects are supported by China AIDS Fund for NPOs, which is fund by Chinese central government, in 2015. Among them, more than 80 percent of surveyed NPOs are unregistered(without obtaining legal status in China). Staff member varied from 0 to 42 full-time staffs per organization and less than two persons on average. Around 60 percent of NPOs had leased office venue and more than 90 percent secure financial support from international organizations over the past two years. The NPOs fulfilled their role in targeted intervention, care and support for people living with HIV/AIDS, capacity building, and even participating in operational researches, etc. As a matter of fact, NPOs' participation in combating HIV arena was irreplaceable partnership, however, they still faced outstanding barriers and challenges for participation. Legal status obtained from Civil Affairs Department was one of most significant. The remaining challenges like financial support and capacity building only took time.
**Conclusions:** Registration certification, financial support and capacity building are needed to ensure NPOs' effective participating in fighting HIV/AIDS. Government at each level may use contracted service from NPOs and project-based management to ensure sustainable financial support to NPOs in terms of channeling their effort and monitoring performance efficiently.

### THPEE609

#### THE ISEAN-HIVOS EXPERIENCE: STRENGTHENING CAPACITIES OF COMMUNITY-BASED ORGANIZATIONS (CBOS) THROUGH ORGANIZATIONAL DEVELOPMENT (OD) APPROACH FOR SUSTAINABILITY OF COMMUNITY-LED HIV, SOGIE AND RIGHTS-BASED INTERVENTIONS IN THE PHILIPPINES

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**Background:** The ISEAN-Hivos Program (IHP) is a regional Global Fund AIDS grant focused on community systems strengthening (CSS) among males having sex with males (MSM) and transgender (TG) organizations in Indonesia, Malaysia, Philippines and Timor Leste. The program in the Philippines is implemented by the Philippine NGO Council on Population, Health and Welfare, Inc. since October 2011, providing various OD-focused capacity building trainings/mentoring to more than 40 MSM/TG CBOs. This includes program/financial management, monitoring/evaluation, research/documentation, leadership/governance, strategic planning, advocacy/networking, resource mobilization and proposal writing, among others.
**Description:** The capacity building series has contributed to strengthening the CBOs' organizational systems/procedures. This is more evident for more than 20 CBOs whose proposals on innovative HIV, SOGIE and rights-based interventions for MSM and TGs were granted by IHP through small fund grants ranging from Php

50,000 to Php 250,000. Interventions varied from conducting HIV and SOGIE-related awareness caravans and campaigns; using theatre as medium for LGBT awareness; establishing a male wellness center, mobile testing van and BCC-awareness mobile, that contributed to existing community-led peer education and HIV counselling and testing (HCT) services.
**Lessons learned:** Two of the most noteworthy CBO beneficiaries are LoveYouself in Metro Manila and Cebuplus Association in Cebu City. LoveYourself's IHP-funded proposal for an IEC video on HIV awareness ("Fly Love Yourself") and BCC-awareness mobile ("LoveCar") has contributed in promoting their testing services in their community clinics. For Cebuplus, their proposal for mobile testing vans and a male wellness center, has increased the number of MSM/TG clients reached by their HIV prevention services, and undergone HCT. Both have contributed to more than 50% of the total number of people who have undergone HCT in Metro Manila and Metro Cebu, respectively. This has also translated into sustainable partnerships with their local government units and private foundations.
**Conclusions/Next steps:** Given this model, such OD-approach on capacity building for CBOs should continuously be monitored, evaluated, and foster linkage with local government partners and/or private institutions. This kind of CSS intervention has a long-term perspective because it is geared towards the sustainable development of the CBOs to continuously advocate and implement community-led HIV, SOGIE and rights-based interventions in the Philippines.

## THPEE610

### DEMONSTRATING THE VALUE OF COMMUNITY-CONTROL IN AUSTRALIA'S RESPONSE TO HIV

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**Background:** Australia's gay communities mobilised early in response to HIV, establishing community-controlled, peer-based organisations which governments later funded for education, campaign, outreach and other programs. In recent years, Australian governments have been developing new models to fund health and other social services. This includes competitive tendering that is open a wider range of providers including other not-for-profit, for-profit and public sector providers.
**Methods:** Australia's community-controlled AIDS Councils and their national peak, the Australian Federation of AIDS Organisations (AFAO), commissioned research to demonstrate how community-controlled HIV organisations create, deliver and capture value and to analyse the costs of community-controlled HIV programs relative to other providers. The analysis was informed by financial and activity data and case studies contributed by Australian AIDS Councils and AFAO.
**Results:** Community-controlled HIV organisations have unique and valuable capacities and qualities that distinguish them from other potential providers of HIV programs. In Australian HIV community organisations, these qualities are historically derived, deeply embedded and continuously reproduced. They include community-control through democratic, open governance processes, as well as connectedness and accountability to and existence within gay communities. The participation of gay men, including those with HIV, is evident at all levels of the community HIV response. This provides for 'community knowing' that is trusted by and responsive to communities in the creation of effective HIV prevention and education programs. The essential, inherent nature of these qualities creates challenges for their full articulation and valuing in government procurement processes. In this analysis, community-controlled HIV programs - specifically, peer-led HIV and STI testing and community-level education programs - were delivered more cost-effectively when these qualities were included and costed, and greater target group reach and impact was achieved.
**Conclusions:** Governments and other program funders are increasingly seeking the best value for their investments in HIV and other programs through stringent evaluation of funding proposals. The value generated by HIV community-controlled organisations has historically lacked clear expression. This can result in funders failing to reflect these qualities and capabilities in their purchasing specifications. Likewise, community-controlled HIV organisations must better describe and cost this value in their representations and proposals to funders.

## THPEE611

### FROM SELF-EMPOWERMENT TO BUILDING COMMUNITY: EVIDENCE OF POSITIVE IMPACT OF A CROSS CULTURAL TREATMENT LITERACY AND PEER SUPPORT SKILL DEVELOPMENT PROGRAM IN CANADA

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**Background:** Racialized and newcomer communities living with HIV/AIDS in Canada face challenges in accessing treatment and support due to barriers in treatment literacy, service access, and social exclusion. To address these barriers several front-line ethno-specific AIDS service agencies in Toronto, Canada collaborated to develop a cross-cultural treatment support program - the Ethno-racial Treatment Support Network. (ETSN)
Since 2003, ETSN has trained over 150 PLHIV from five cultural communities including African, Caribbean, East Asian, South Asian and Hispanic communities. This program involves 3 levels of skill building program. Level 1 focuses on treatment literacy and health care access skills.Level 2 focuses on peer counselling and support skills. Level 3 provides mentored practice to supportETSN graduates to co-deliver training to new peer participants.
**Description:** In 2013 we undertook an evaluation study to capture the real-life impact of the ETSN training. The aim was to engage past participants to identify relevant and meaningful indicators of changes attributable to the training. Based on the study's findings, a questionnaire with validated scales was developed to measure domains of:
(1) self health management efficacy (SHME);
(2) health literacy (HL);
(3) social connection and support (SC);
(4) empowerment;
(5) community engagement (CE); and
(6) treatment adherence.
**Lessons learned:** 18 PLHIV from 5 ethno-racial communities in Toronto completed the ETSN level 1 training between 2014-2015. A self-administered questionnaire was completed by all participants before and immediately after the training. In addition, a one-year follow up survey was sent to participants to track their changes in the above areas.
Paired sample-test revealed significant improvements in the domains of SHME ($t = -3.88$, $p < 0.01$), CE ($t = -2.25$, $p < 0.05$), and HL ($t = -2.25$, $p < 0.05$). In addition, over 50% participants reported significant and sustained engagement with community service agencies and peer networks formed through their training experience a year later.
**Conclusions/Next steps:** Holistic peer-based learning that facilitates treatment literacy and mutual peer support are effective in enhancing self health management, treatment adherence and formation of lasting social support networks amongst PLHIV. This cross-cultural program model is transferrable to PLHIV communities from diverse backgrounds and internationally.

## THPEE612

### IMMIGRATION SYSTEM LITERACY AND SERVICE ACCESS TRAINING TO FACILITATE NEWCOMER PEOPLE LIVING WITH HIV (PLHIV) IN OBTAINING LEGAL STATUS AND SETTLEMENT IN CANADA

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**Background:** Immigrants and refugees living with HIV/AIDS (IR-PLHIV) have accounted for 12-18% of new HIV cases annually in Canada since 2002. The Canadian immigration and refugee system is very complex and has undergone multiple changes in recent years. This led to confusion, fear and access barriers for newcomers and their service providers.
The lack of legal status also directly limited access to health care, treatment and support. In response, the Committee for Accessible AIDS Treatment (CAAT) in Toronto developed a training module on HIV and Immigration issues to promote awareness of immigration policies and corresponding service eligibility amongst IR-PLHIV and service providers.
**Description:** Since 2008, 7 series of HIV and Immigration trainings have been conducted in Toronto attended by 148 participants, including 91 IR-PLHIV and 57 service providers. Amongst the PLHIV participants, 79(86.8%) have had successful immigration hearings with positive outcomes; 3 (3.3%) had negative immigration

outcome, while 6 (6.6%) people's immigration hearing dates are still pending. The outcome of 3 (3.3%) of the participants were unknown.
**Lessons learned:** The vast majority of participants found the training helpful with relevant and important information on how to access legal support and navigate the immigration system. They credited the training with assisting them in making informed decisions on their legal options on which immigration application stream to apply; how to prepare relevant supporting documentation for their application; and how to work effectively with their legal service providers. It also reduced fear of the unknown and gave the people confidence and tools to advocate for themselves. In addition, the training enabled participants' knowledge on the eligibility criteria for various health and social services along the immigration refugee status continuum. The co-learning environment also enabled direct contact and promoted connection between IR-PLHIV and service providers.
**Conclusions/Next steps:** Knowledge and skills in navigating the immigration system has direct impact on the access to legal status and access to health care coverage, treatment and support services for all newcomer PLHIV. Countries and regions with migrant PLHIV would benefit from similar training to improve immigration system literacy to ensure the health and well being of IR-PLHIV.

## THPEE613

### IMPROVING PROGRAM QUALITY FOR HIV PREVENTION AMONG MAN WHO HAVE SEX WITH MAN(MSM) IN CHALLENGING AND HOSTILE ENVIRONMENTS: PEER EDUCATOR PERSPECTIVES FROM KARACHI, PAKISTAN

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**Background:** Peer-education for HIV prevention increases HIV related knowledge and safer sex practices, however, peer-led HIV prevention, especially among MSMs, in hostile environments such as Pakistan is challenging and has implications for program quality and outputs.
**Description:** Parwaz Male Health Society (PMHS) provides voluntary counseling and testing (VCT) for HIV, referral for HIV management, and provision of condoms/lubricant to MSMs through peer educators and a service delivery center in Karachi, Pakistan. These field workers face particular challenges which exact a toll on their physical, mental and social well-being and affect overall program quality. To understand these challenges and improve program outreach quality and efficiency, written and verbal peer educator field reports were subjected to manual qualitative analysis.
Key challenges that were reported included harassment by police, local politically affiliated gangs and clients who mistake peer educators for commercial sex workers. Instances of rape by the police were also described. Peer educators reported emotional stress brought on by concealing the nature of their job from their families and wives, and break-ups due to suspicions regarding their HIV status resulting from negotiating condom use with their partners. In order to meet the pressure of program targets, they often had to pay for transport and refreshment while engaging with clients in local cafes. They are suspected of being foreign agents, trying to promote homosexuality, and spread HIV under the guise of HIV testing. They also reported deficiencies in their knowledge and skills for behavior change communication.
**Lessons learned:** PMHS needs to liaise with security agencies to ensure the safety of peer educators, position its peer educators as government endorsed lay health workers and provide them with regular psychosocial counseling. Improvements in health education skills and increased financial support for field work are also needed to improve program efficiency.
**Conclusions/Next steps:** Programs in challenging and hostile environments need stronger collaboration with the state, especially with the police and with state-owned lay health worker programs. Funding agencies need to take into account financial pressures on peer educators and increase investment in capacity building for behavior change communication skills around HIV prevention in MSMs.

## THPEE614

### EVALUATION OF THE WARD DOOR TO DOOR ADIS PROGRAM IN GAUTENG PROVINCE

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**Background:** The Ward door to door AIDS program reaches 8 million people (cumulative) with education through 4 million household visits (cumulative) with a quarter of a million referrals per year. It is implemented in over 70% of Wards (local area of government) by five Municipalities, prioritizing HIV prevention in informal settlements and other high risk settings. Ward educators provide peer education on safe sex, motivate HIV testing, make referrals and follow up TB and ART defaulters. Mobile health, social and poverty relief services are taken to high risk wards. A service guideline and monitoring system are in place.
**Methods:** The program evaluation was tendered by the secretariat of the Gauteng AIDS Council. Methods include a survey of 2 100 beneficiaries (a stratified random sample), focus groups of 50 implementers and interviews with 30 stakeholders across five Municipalities. The questionnaire addresses key indicators from the logical framework for HIV prevention.
**Results:** The program achieves high coverage of informal settlements and townships and includes taverns and sex workers.
The pilot of 10% of beneficiaries shows very high preference for and influence of ward educators at 90%. 97% liked the interactive nature of the education and over 75% of educators met the minimum standards for the educational method. 56% reported regular condom use (all partners) and 21% reported sex without condoms. 38% were referred, 89% of those referred followed through and 82% of referrals were followed up by ward educators. Referrals are made for the following services: social grants, poverty relief, social services, orphans and vulnerable children, housing and health care.
The program supports expansion of the Ntirhisano Service Delivery War Rooms on the Operation Sukhuma Sakhe model from Kwazulu Natal.
**Conclusions:**
· The program achieves high coverage of the higher risk areas in the province.
· High coverage and good quality education is necessary to achieve positive outcomes.
· Good local management of community workers is essential for their effectiveness.
· The monitoring and reporting system includes random back checks to verify reports plus observation of the quality of the service.
· Periodic evaluation is required to ensure the program achieves its objectives.

# HIV SERVICE DELIVERY IN CONFLICT AND POST-CONFLICT SETTINGS

## THPEE615

### ACCESS TO HIV TREATMENT AND CARE FOR SYRIAN REFUGEES IN LEBANON

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**Background:** Lebanon has experienced an unprecedented influx of nearly 1.1 million Syrian refugees since the onset of the Syrian crisis. Refugees are scattered throughout Lebanon, living mainly in urban settings. 70% are living below the poverty line and rely on aid to meet their basic needs including access to healthcare. Refugees often face stigma and discrimination due to their status as refugees and a common misconception that the prevalence of HIV is higher than in the host community. Both Lebanon and Syria are countries of low HIV prevalence. UNHCR sought to ensure access to comprehensive treatment and care for refugees whilst protecting their rights.
**Description:** Early in the crisis, UNHCR engaged with the National AIDS Programme (NAP) of Lebanon and civil society to ensure integration of Syrian refugees within the existing HIV programme. This included confidential access to VCT services, PMTCT and ART treatment provided free of charge by the NAP. However, UNHCR and partners are required to support physician consultation fees, laboratory investigations and hospitalisation costs when indicated, which are not covered by the NAP. To date, approximately 20 Syrian refugees registered with UNHCR are receiving ART with effective follow-up.
**Lessons learned:** Integration of Syrian refugees within the NAP in Lebanon has been possible through early constructive dialogue. However, HIV services are fragmented in this complex, mostly privatised and costly health system. Thus, additional support has been required to ensure access to comprehensive services.
**Conclusions/Next steps:** Lebanon adopted an early position of integration of refugees within the existing national HIV programme that has reduced the risk of further stigmatisation. This benefited refugees and was an important public health measure to reduce transmission of HIV in Lebanon. It is important to sustain this approach through ongoing advocacy to maintain non-discriminatory laws, policies and strategies related to HIV that are inclusive of refugees. In addition, the package of HIV prevention, treatment, care and support services should be further integrated and adequately funded to ensure access to an efficient and effective programme beyond VCT, PMTCT and ART.

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## THPEE617

### PMTCT ACTIVITIES IN HARD-TO-REACH AREAS WITH SECURITY CHALLENGES: A CASE STUDY FROM ZAMFARA STATE, NIGERIA

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**Background:** The Global Fund supports PMTCT services in five Primary Health Centres (PHCs) and one Secondary Health Centre (SHC) in Maru Local Government Area (LGA), Zamfara state, Nigeria with the aim of increasing uptake and quality of PMTCT services to support HIV-positive pregnant women and mothers, and to reduce mother-to-child-transmission of HIV (MTCT).
**Description:** In addition to poor quality, stigma, and other cultural factors that deter women from accessing PMTCT services, two of the focal PHCs—Dangulbi and Dankurmi—have faced serious security challenges, including armed bandit raids and sexual violence perpetrated against providers. In order to overcome these challenges and to simultaneously improve the quality of services for increased utilization of PMTCT services, we developed a case study synthesizing lessons learned and the model used to mitigate risk. The model comprised: sensitization visits to community leaders for increased vigilance against perpetrators; use of community leaders' residences as alternative 'ANC centers' for the first visit; organization of community policing; state deployment of troops and repair of roads for easier and safer access to PHCs; and utilizing male peer educators to encourage partners of HIV-positive women to support and accompany them to ANC.
**Lessons learned:** Through community involvement and mapping, identifying and addressing sociocultural factors influencing access to PMTCT at focal PHCs, and using the 'security model,' significantly higher numbers of HIV-positive pregnant women accessed PMTCT services.
**Conclusions/Next steps:** This model could be used by other implementers to increase uptake of PMTCT services by overcoming cultural and other serious barriers, including increasing security challenges prevalent in Nigeria and other countries.

## THPEE618

### ESTIMATES OF THE GLOBAL HIV BURDEN AND THE TREATMENT GAP IN EMERGENCIES

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**Background:** Ambitious global targets for HIV testing and treatment require concerted efforts to reach marginalised persons living in challenging environments. Emergencies often disrupt existing health and HIV services, creating circumstances that may cause interruption of HIV prevention, treatment and care programmes. The objective of this study was to quantify the proportion of PLHIV who were affected by emergencies in 2013 and the treatment gap.
**Methods:** Emergencies were defined as conflict, natural disaster and/or displacement. Country estimates for 2013 were based on eight public databases (EM-DAT, Reliefweb, IDP-db, HIIK, UNHCR, UNRWA, CE-DAT and CAP). We compiled a single dataset with differences among databases providing low and high estimates. Estimates were calculated based on aggregated low/high numbers multiplied against UNAIDS 2013 national prevalence and treatment coverage rates. Global population data were used to establish the proportion between 15-49 years and to calculate PLHIV numbers. Pregnant women were calculated using UNAIDS 2014 estimates.
**Results:** 314 million (295 million-333 million) people were affected by emergencies in 127 countries representing 4.3% of global population; 67 million (61 million-73 million; 21%) were displaced. Floods (75 countries), conflicts (57), and storms (36) were the most common types of emergencies. 1.7 million (1.4 million-2.1 million) PLHIV were affected by emergencies translating into 1 of 19 PLHIV (1 in 16 to 1 in 23); 174,000 (148,000 - 200,000) were children (0-14 years), 81,000 (77,000 - 85,000) were pregnant women, and 193,000 (169,000 - 217,000) were adolescents (10-19 years). 1.4 million (1.3 million-1.6 million) of 1.7 million PLHIV (82%) affected by emergencies lived in Sub-Saharan Africa. Globally, 1.3 million (934,000-1.4 million) PLHIV in emergencies did not have ART access.
**Conclusions:** Although these estimates are not static due to large variations of numbers and types of emergencies, hundreds of millions of people are affected by emergencies annually, and a significant proportion of these are PLHIV. As HIV testing, prevention and treatment is scaled-up, emergency-affected populations, often the most vulnerable, cannot be neglected. Flexible programmes and donors that can adapt to and respond to shocks are critical to ensure PLHIV affected by emergencies are not left behind and ambitious global targets are reached.

## THPEE619

### HIV SERVICES AND RISK IN AN EMERGENCY RESPONSE IN MALAWI

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**Background:** In January 2015 Malawi experienced devastating flooding, displacing 230,000 people. In the three most flood-affected districts, an estimated 52,137 people living with HIV were in need of ART, including 9,215 pregnant women and 842 children. Ensuring continued access to HIV services and reducing risk of HIV transmission required a coordinated, integrated response.
**Description:** Ensuring continuation on ART was the first priority. All health facilities in flood-affected districts had adequate stock of ARVs due to purposeful distribution prior to the rainy season. In most districts, treatment continuation rates showed little change during the emergency response period, however, in the district with the heaviest flooding, the percentage of PMTCT defaulters increased by 10%--from 24% to 34%. Data from the three most affected districts from the first quarter of 2015 showed similar uptake of HTC during the response period as compared to non-emergency periods. ART initiation decreased, though not a marked decline.
During the response, integrated services offered by mobile clinics improved the efficiency and effectiveness of services, and created opportunities for synergies, such as screening malnourished children for HIV. Between January - June 2015, 77% of 757 children admitted to nutrition rehabilitation units in the 3 most affected districts were tested for HIV; 26% (n=151) tested positive and 61% (n=92) were initiated on ART.
A post-disaster assessment of 192 adolescents (10-19 years) indicated high rates of sexual exploitation and transactional sex, particularly among girls, during the emergency response period, including in exchange for relief items.
**Lessons learned:**
· Proactive planning and flexible delivery ensured continued access to HIV services.
· Sufficient stocks of ARVs in facilities is not enough; additional efforts are required to support HIV-positive displaced persons to stay on treatment.
· Offering integrated services creates opportunities for better health outcomes.
· An emergency situation can increase vulnerability and put some key populations at increased risk of HIV.
**Conclusions/Next steps:** In 2016 Malawi has seen widespread drought and food insecurity; an estimated 28 million people require food assistance. Drawing upon the lessons learned, it is critical to implement multi-sectoral interventions based on integrated approaches that also consider the increased vulnerability of adolescent girls.

# ADAPTING HIV PROGRAMMES TO SYSTEMS WITH LIMITED HEALTH CARE PERSONNEL

## THPEE620

### THE EFFECT OF POINT-OF-CARE CD4 ANALYSIS, PILOTED IN AMAJUBA DISTRICT SOUTH AFRICA, ON THE MANAGEMENT OF CLIENTS BEING INITIATED ON ANTIRETROVIRAL THERAPY BY NIMART PRACTITIONERS

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**Background:** The launch of the recent 90-90-90 targets for HIV testing, initiation of ART and achieving viral suppression in HIV positive clients prompted the need to explore new ways to optimize ART provision. CD4 analyzers were introduced in Amajuba District as a pilot project to determine whether access to ART could be accelerated without compromising quality of care. The effect of point of care CD4 count testing on ART initiation was assessed in a rural primary care clinic in Kwazulu-Natal.
**Description:** A retrospective chart review was undertaken between November-December 2014 and November-December 2015 to compare numbers of eligible patients initiated on ART prior to the introduction of the POC CD4 analyzer. The duration from enrollment into HIV care to initiation of ART therapy was measured and the initiation of Isoniazid and Cotrimoxazole prophylaxis to prevent opportunistic infections was also evaluated.

**Lessons learned:** After the introduction of POC CD4 tests, the number of clients eligible for ART increased from 29 to 51(-51 0f 78 CD4< 500cells/mm³-). Twenty two of the 51 eligible clients enrolled received Cotrimoxazole prophylaxis (CD4< 200 and clinically stage 1), on the same day and initiated on ART within 5 days. The average number of clients initiated on ART per week increased from 13 in 2014 to 28 in 2015. The screening of clients for TB also improved. Twenty seven of 78 clients were enrolled on the preART and wellness programme and were initiated on Isoniazid therapy. POC CD4 used with the active tracing of patients follow up blood results resulted in a reduction in the number of clinic visits for a client in the run up to ART initiation from 10 days to 3-5 days.
**Conclusions/Next steps:** POC CD4 analysis enabled NIMART nurses to better manage clients accessing HIV services. This technology used in conjunction with active tracing of baseline results reduced the average time to initiating patients on ART. The introduction of POC also improved the nurses independence in the management of HIV positive clients. POC technology has the potential of accelerating management of clients without compromising quality of care.

## Innovative approaches to track patients, track pre-ART care and other programme data (including connectivity and other mHealth solutions)

### THPEE621

### Simplifying data management for household-level combination prevention research in resource-limited settings with reusable open-source software: developing and deploying an electronic research data system for the Botswana Combination Prevention Project

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**Background:** The Botswana Combination Prevention Project (BCPP) is ongoing in remote resource-limited locations in Botswana where ~25% of adult residents are HIV-infected. BCPP will allow for impact quantification of multiple programmatic interventions on HIV incidence. A baseline household survey (BHS) was conducted using a novel electronic research data system (EDC) in ~20% of households from 30 communities lacking reliable power or internet by two teams of 16-18 research assistants (RAs) with limited supervision. The EDC simplified household location, enumeration, contact management, subject eligibility determination, consent verification, enrollment, and questionnaire completion. RAs were guided through each step of the household survey by the EDC to securely gather auditable research-grade human subjects data, conduct HIV testing and counseling, and collect specimens at point-of-contact while maintaining protocol and regulatory compliance.
**Description:** Using the EDC, RAs located 11,582 households, targeted from satellite images, where 10,306 were regularly occupied and 7,696 enumerated. Of 28,174 residents enumerated, 15,475 were potentially eligible and 12,610 enrolled. The EDC validated responses and employed adaptive data-entry in real-time by referencing data-types, allowable ranges, participant criteria, previous responses, and protocol and regulatory requirements. Community-based staff accessed data within 4 hours of collection for specimen processing, consent verification, and operational planning. Centrally- and internationally-based project leaders, laboratory and data staff accessed and analyzed combined data from all communities within 1-3 days of collection.
**Lessons learned:** Developed by the Botswana-Harvard AIDS Institute Partnership (BHP), the EDC is a suite of open-sourced python modules adding clinical, laboratory, regulatory and survey research functionality to the *Django* framework. BHP local software developers were responsible for design, development and deployment resulting in solutions best suited for the local setting. Developers worked closely with research staff and followed a test-driven approach, included user-acceptance testing, maintained version control, and scripted deployments. In response to user issues and protocol changes, developers supported and upgraded remote EDC deployments reliably over inexpensive low-bandwidth connections without disruption to the ongoing surveys.
**Conclusions/Next steps:** The BCPP demonstrated how the collection of complex research-grade participant-level longitudinal data from households in multiple communities lacking reliable power and internet can be simplified through the use of locally developed electronic research data systems.

### THPEE622

### Stand-alone health data systems in remote ART clinics in Botswana can be centralized over inexpensive low-bandwidth connections: the example of the Botswana Combination Prevention Project research data network

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**Background:** The Botswana Combination Prevention Project (BCPP) is an ongoing community randomized trail operating in 30 remote resource-limited communities in Botswana designed to quantify the impact of multiple programmatic interventions on HIV incidence. BCPP leverages the success of Botswana's national program, MASA, started in 2001. MASA decentralized care where ~95% of HIV+ individuals are within 5km of one of 674 facilities, 44 have an online electronic medical record (EMR) with centrally available data and 314 are offline and use a stand-alone locally developed EMR, the Patient Information Management System (PIMS). PIMS data are centralized manually each quarter. Data quality and completeness issues are not retroactively addressed at source except through future training and software changes. A help-desk is available but the 314 off-line facilities are responsible for the quality and completeness of the EMR and its integration into clinical services.
**Description:** BCPP, requiring access to PIMS data and project specific data sources, built a research data network (RDN) connecting 30 MASA facilities. Connectivity enabled remote system support for data systems and nightly data updates from PIMS and project specific data sources. Centralized PIMS data and BCPP household survey data was used to confirm ART status and uniquely link patients across data sources. The RDN was established in three phases with connectivity verified in advance of each baseline household survey (BHS). Existing land-based networks and new network infrastructure were utilized to connect the facilities. The RDN construction cost was, on average, USD15500 per community, an annual maintenance cost of USD1170 per community, and recurring bandwidth cost of USD194/month per community for 1-2Mbps.
**Lessons learned:** Continuous network monitoring revealed connections at sites not purpose built often degraded during peak hours limiting usage options but nightly data transfers and system updates were conducted reliably. The RDN segregated traffic for multiple stakeholders and ensured simplicity of use at the network level.
**Conclusions/Next steps:** BCPP demonstrated how PIMS and project data was centralized routinely from 30 communities over inexpensive low-bandwidth connections. By following BCPP's model, other offline facilities using PIMS could also centralize data routinely to simplify clinic operational support and improve both patient care and program monitoring and evaluation.

### THPEE623

### Demonstrating regulatory compliance of a novel electronic data management system in large scale community-based HIV prevention trial in Botswana

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**Background:** Regulatory compliance in human research requires robust manual or electronic systems to enhance study credibility and protect research participants from harm. A mobile electronic research data system (EDC), developed by Botswana Harvard AIDS Institute Partnership (BHP), was utilized by the Botswana Combination Prevention Project (BCPP), a large community-randomized trial conducted in 30 remote communities. Guided by the EDC, well-trained, minimally supervised Research Assistants (RAs) were able to collect at point-of-contact complex and sensitive research-grade electronic data, conduct HIV counseling and testing, and collect specimens per IRB-approved protocol.
**Description:** Two survey teams of 16-18 RAs were deployed to two communities at a time conducting household surveys lasting 3-6 weeks per community. RAs enumerated 7,696 randomly selected households and identified 15,475 potentially eligible subjects, of which 12,610 were consented. Source data was captured asynchronously at point-of-contact and evaluated in real-time for regulatory and protocol compliance. The EDC tracked the authenticated user, date of record creation/

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modification, created a sequential computer-generated audit trail and encrypted personally identifiable information. The EDC guided RAs through subject eligibility processes. It also enforced additional protections for special populations, requiring guardians for minors and witnesses for illiterate participants. The signed consent, the only paper document, was verified against the electronic record daily at the community level.

**Lessons learned:** Conducting research in remote households can be unpredictable and is not amenable to constant oversight. The EDC effectively supported RAs through the household visit workflow and data collection with particular emphasis on eligibility screening and consent verification resulting in high regulatory compliance. The EDC complemented existing regulatory and protocol training, simplified data collection and eliminated common human errors that plague paper-based systems. The EDC protected data from access and modification by unauthorized users. RA's operated independently with little supervision and systems audits found no eligibility or consent violations.

**Conclusions/Next steps:** Robust electronic data systems designed with regulatory features can substantially reduce potential for human errors, ensuring optimal Good Clinical Practise and Human Subjects research practices.

## THPEE624

### USING BIG DATA TO LOCATE VULNERABLE HIV-INFECTED IINDIVIDUALS ACROSS THE HEALTHCARE SYSTEM: A ROADMAP TO IMPROVE ENGAGEMENT IN CARE

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**Background:** More than a quarter of HIV-infected individuals in the United States lack access to antiretroviral therapy (ART). Without engagement in care, people living with HIV (PLWH) are at risk of AIDS-related morbidity, mortality and forward transmission. An understanding of non-HIV medical service use among this vulnerable population could serve as the basis of jurisdiction-wide activities to return individuals who have been lost to care. We sought to identify locations from which previously diagnosed PLWH to HIV primary care can be re-engaged in care.

**Methods:** Administrative claims from the New York State Medicaid Program were used to examine health service utilization among beneficiaries with known HIV infection, who account for 70% of PLWH living in NYS. Individuals were designated as 'out of care' if they lacked evidence of both primary care (CPT codes 99211-99215) and ART during calendar year 2014. Encounters with health services were classified by location type using addresses and standardized fields.

**Results:** 6,971 HIV-infected Medicaid beneficiaries had no evidence of HIV care in 2014, yet 54.2% of them had an encounter with health services during the same year. Commonly visited services included emergency departments, hospital inpatient units, dental clinics, and mental health and addiction treatment centers. Individuals with evidence of a behavioral health disorder had elevated rates of utilization ($p < 0.05$).

**Conclusions:** The use of non-HIV medical services is common among unengaged PLWH in NYS. Linkage programs should target emergency rooms and outpatient locations including dental and mental health clinics. Health Information Exchange can play a vital role by notifying providers of patients who require interventions that feature enhanced personal contact to successfully reengage them in HIV care.

## THPEE625

### RETENTION OF MOTHER BABY PAIRS IN CARE AT PMTCT SITES IN ZIMBABWE, APRIL TO DECEMBER 2014

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**Background:** The Zimbabwe Ministry of Health and Child Care (MOHCC) and the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) jointly introduced an electronic patient-tracking database (EDB) for the prevention of mother-to-child transmission (PMTCT) program in 2011. The database was implemented in 36 sites from five districts purposively selected to represent women of different demographic characteristics in the country. Purpose of the database was to monitor retention of mother-baby pairs in PMTCT on sentinel surveillance basis.

**Methods:** We conducted a secondary analysis for a cohort of women in the EDB to determine retention of rural and urban mother-baby pairs on ART in PMTCT and proportion of HIV-exposed infants tested and received HIV results. A cohort of HIV positive mothers booked for ANC between April and June 2014 along with babies born to this cohort were longitudinally tracked through December 2014.

**Results:** A total of 457 HIV positive women and 36 babies born to them were included in the analysis. Median age at ANC booking was 29 years ($Q_1$=26yrs; $Q_3$=34yrs), median parity was 2 ($Q_1$ = 1; $Q_3$ = 3), and median gestational age at booking was 22 weeks ($Q_1$=17; $Q_3$=27weeks). Only 5.2% of the 457 HIV positive women booked before 12 weeks. Among the 457 women, antiretroviral treatment (ART) drug pick-up rate declined from 90% at three months after ART initiation to 55% at six months. Of the 457, 28.0% rural and 26.9% urban women were still on ART at 6 months. Dried blood spot (DBS) specimens were collected from 47% (n=36) of HIV exposed babies and 35% had received test results after 6 months, with one being HIV positive.

**Conclusions:** The PMTCT program has challenges with retention of mother-baby pairs. Retention of infants in PNC for DBS collection and retention of pregnant and lactating women on ART is low. We recommend strengthening systems for tracking and tracing mother-baby pairs to improve early diagnosis of HIV exposed infants and retention of pregnant and lactating women on ART.

## THPEE626

### FEASIBILITY AND ACCEPTABILITY OF A BIOMETRIC IDENTIFICATION SYSTEM USING IRIS RECOGNITION IN ROUTINE HIV SERVICES IN KENYA

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**Background:** Unique patient identification within health services can improve surveillance and follow-up within routine programs but may be challenging to operationalize. With biometric use expanding within and outside of healthcare settings, we assessed the feasibility and acceptability of integrating an iris recognition biometric identification system into routine HIV testing and counselling (HTC) at 4 sites in Kenya.

**Methods:** Patients who had recently or previously tested HIV-positive in two urban and two rural health facilities were enrolled. An electronic version of the national HTC intake form assessing patient risk factors and reasons for testing was administered. Images of the iris were captured using a dual-iris camera connected to a laptop. A pilot iris biometric identification system software networked across the sites, analysed the iris patterns; created a template from those patterns; and generated a 12-digit ID number based on the template, which was used as the unique patient identifier. During subsequent visits, patients' irises were rescanned and each pattern was matched to stored templates to retrieve the unique ID number.

**Results:** Over 35 weeks, 8,256 (89.5%) of 9,223 new patients were assigned a unique ID on their first visit. Among 5,236 return visits, the system correctly re-identified patients' IDs 4,177 times (79.7%). The false accept rate (a patient given the ID of another patient) was 1.2% while the false reject rate (re-scans assigned a new ID) was 17.5%. As the biometric software was tuned to the study population over the course of the study, false accept and reject rates declined and were 0.2% and 3.8% respectively during the last 6 weeks. Overall, 95 (1%) among 9,318 patients approached declined to enrol in the study and 15 (0.1%) agreed to enrol but declined to have an iris scan. The most common reasons cited for declining an iris scan were concerns about privacy and confidentiality.

**Conclusions:** Integration of an iris recognition biometric patient identification system into routine health information systems was feasible and highly acceptable in these Kenyan HIV programs. Scale-up could improve unique patient identification and tracking, and could enhance disease surveillance activities.

*Funding: NIH/NIAID # A1099974 S1*

## THPEE627

### AN ANALYSIS OF ATTRITION ALONG THE PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV (PMTCT) CASCADE IN KENYA: THE CASE OF 17,432 MISSED WOMEN

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**Background:** Kenya has made significant progress toward elimination of mother-to-child transmission of HIV (eMTCT). Over 90% of PMTCT facilities in Kenya were offering antiretroviral therapy (ART) for all pregnant and lactating women by July 2015 following the adaptation of the 2013 WHO ART Guidelines in June 2014. Maternal efficacious antiretroviral (ARV) coverage has increased from 52% in 2009 to 67% in 2014, and new HIV infections among children have reduced by 29% since 2009.[1]
[1] HIV/AIDS Estimates, NASCOP; 2015 Progress Report on the Global Plan
**Methods:** In April 2015, the Ministry of Health held a national eMTCT stocktaking meeting to identify best practices, challenges and opportunities for acceleration. The key challenge noted was high rates of attrition in 2014 due to 17,432 missed opportunities- (identified HIV positive pregnant woman who did not receive maternal ARVs).[1] From June to December 2015 a campaign called “Bring back the Women and Children” to audit and trace the missed opportunities was conducted. Facilities accounting for 75% of the 17,432 women were prioritized. The audit reviewed and compared data of the District Health Information System (DHIS2) with facility PMTCT service, summary and pharmacy records. Follow up by community outreach was initiated to trace and return missed women into care. Specific tools and Standard Operating Procedures (SOPs) for data verification, client tracking and reporting were developed and used. Verified data errors were corrected in DHIS2. Confidentiality was upheld. Findings from 21 counties accounting for 9752 (56%) of 17,432 missed opportunities were reviewed, validated and analysed.
[1] Kenya Draft 2015 eMTCT Stock Taking Report
**Results:** Of the 9752 missed opportunities, 6,935 (71%) were data transcription errors between primary tools and DHIS2. Of the remaining 2817, 1093 (39%) had received ART but were only documented in the pharmacy records. Out of the 9752, true missed opportunities were 1724 (17%). Of these, 681 (40%) were traced in the community and 449 (70%) of them were initiated on maternal ART.
**Conclusions:** Data errors considerably overestimated the numbers of women who missed ARVs for PMTCT. Kenya is currently focussing on investment in data triangulation, audit, validation and use - a critical component of eMTCT.

# INNOVATIVE APPROACHES TO SHARING/DISSEMINATING PROGRAMME DATA AT NATIONAL, REGIONAL, DISTRICT, SITE AND COMMUNITY LEVELS

## THPEE628

### EFFECTIVENESS OF AN ELECTRONIC DASHBOARD FOR SUPERVISING AND MONITORING COMMUNITY HEALTH WORKERS (CHWS) TO SCALE UP VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC) IN ZAMBIA

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**Background:** The use of CHWs is a proven method for creating demand and promoting best practices for health services [1]; however while effective, supervision of CHWs has also proven to be the most challenging program element to implement [2].To address this gap, Society for Family Health (SFH) designed and implemented an electronic dashboard tool with the aim to better evaluate, monitor and provide feedback on the performance of CHWs at health facilities under the Gates VMMC Project.
**Description:** Between February and December 2015, 232 CHWs were deployed to 107 health facilities in three provinces. Key indicators were defined in order to measure the monthly performance of each CHW as well as inform effective program decisions. Tableau® reader software was used to import Excel spreadsheets containing CHW performance, segregated the information by creating a dashboard and presented data in graphical form. Reports generated provide information on CHWs and clients. Based on the data captured, we were able to determine the proportion of men who successfully came for VMMC services.
**Lessons learned:** During the first half of the year 11,732 clients were booked by 65 CHWs, 6,111 (52%) of whom came for MC services; whilst in the later months when the dashboard was fully operational, 43,835 clients were booked by 232 CHWs and 20,555 (47%) came for MC services. Each CWH worked an average of 19 days in each month, and made an average of 53 bookings per month. An average of 25 clients turned up per CHW per month.
**Conclusions/Next steps:** The electronic dashboard is an efficient tool for supervising CHW performance, assuring adherence to quality standards and promoting fluid information sharing between community and organization. The application of robust M&E systems for monitoring demand creation activities should be in place at genesis of programs, particularly for improving supervision and feedback to CHWs. Based on our observations, improvements are underway to employ a more sophisticated data validation system on the backend in order allow for real time data collection and more accurate analysis of program data.

# GENDER ISSUES AND GENDERED RELATIONSHIPS

## THPED629

### STRATEGIES FOR IMPROVING SERVICES AND PROGRAMS TO ADDRESS GENDER BASED VIOLENCE AGAINST MEN WHO HAVE SEX WITH MEN AND TRANSGENDER PEOPLE IN DHAKA, BANGLADESH

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**Background:** Gender based violence (GBV) is a public health problem linked to HIV and human rights violations. Although data on GBV against men who have sex with men (MSM), and transgender persons (TG) in Bangladesh is limited, existing data indicate high levels of GBV towards MSM and TGs. A better understanding of GBV and relatedservices and programs is needed to develop recommendations for future interventions to improve health in MSM and TG populations.
**Description:** A qualitative study was conducted with nine focus groups (five MSM and four TG) and 14 in-depth interviews with key informants including stakeholders from the community, government and donors. Participants were asked to describe GBV experiences, current and past interventions and recommendations for future interventions. Study findings were disseminated at a workshop comprising 29 stakeholders from government and non-governmental organizations to develop strategies on addressing GBV. Discussions were documented in reports.
**Lessons learned:** MSM and TG face a variety of physical, sexual and verbal abuses ranging from being teased by people on the streets to rape and murder. Two key sources of violence were police officers and healthcare providers, thus creating barriers to accessing legal and healthcare services.Participants reported current programs do not address their needs. Recommendations for future interventions included: a national GBV committee; improved coordination between CBOs and government; monitoring system for GBV; safe havens for victims; sensitizing providers to reduce stigma and discrimination; and better policies/laws.
**Conclusions/Next steps:** Our findings will allow program planners to make appropriately-informed decisions on programs to address GBV.

# OTHER VULNERABLE SOCIAL GROUPS, INCLUDING IN SPECIFIC CONTEXTS

## THPED630

### EVALUATING LIFTING BARRIERS TO UNIVERSAL ACCESS PROJECT: A STEP-BY-STEP TRANSFORMATIVE PROCESS FOR INCREASED ACCESS TO HIV PREVENTION AND TREATMENT SERVICES FOR SEXUAL MINORITIES IN 2 COMMUNITIES IN ZIMBABWE

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**Background:** In partnership with GALZ, Simbarashe network of PLHIV and ZWAAPV, SAfAIDS implemented Lifting Barriers to Universal Access Project: A Step By Step Transformative Process for Increased Access to HIV Prevention and Treatment Services for the Sexual Minorities in 2 Communities in Zimbabwe. The purpose was to increase access to HIV prevention, treatment, care and support services for key populations.

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**Methods:** Data was collected from the two intervention sites and one control site through focus group discussions with 12 key population representatives, 24 community leaders, and 26 community volunteers. In-depth key informant interviews were done with 24 service providers. Review of project reports and key documents was done.
**Results:** The project strengthened the capacity of implementing partners, traditional leaders and community volunteers to engage communities in addressing homophobia. GALZ capacity to work with non LGBTI communities was enhanced. Community leaders from Mhondoro-Ngezi were knowledgeable on the matter pointing out the need to embrace people irrespective of their sexuality diversity. There was improvement in knowledge levels in the communities on sexual and reproductive health rights. Through breaking the barrier of homophobia, the project realised increased access to HIV prevention, treatment and care services by general community members and LGBTI individuals.
**Conclusions:** It was learnt that it is possible to engage communities in discussions on sexual diversity. With appropriate skills and approaches, it is possible to conduct dialogues on sensitive topics in the communities. Advocacy for sexual rights of key population groups cannot be a stand-alone agenda, but should rather be embedded into aspect of HIV prevention strategies especially at community level. The project can be replicated and scaled up. There is need for assessment of other organizations whose core business is not LGBTI on their willingness to partake in advocacy for access to services by LGBTI individuals. Finally there is need to have a protection plan for the champions and service providers who actively advocate for LGBTI issues in view of the hostile environment they operate in.

## GENDER ISSUES AND GENDERED RELATIONSHIPS

### THPED631

### IMPROVING MATERNAL HEALTH IN NORTH-CENTRAL NIGERIA THROUGH PLHIV DRIVEN GENDER NORMS INTERVENTIONS: LESSONS FROM THE DENGI COMMUNITY PRESENTED BY UGBA A. EDWARD

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**Background:** Cultural, religious and socio-economic factors are known barriers to health care access amongst women in North-central Nigeria. Culture requires a woman obtains permission from her husband before accessing healthcare services including HIV counselling and testing services. Furthermore women are economically dependent on their husbands and not empowered to either demand safe sex nor allowed to question an unfaithful partner.
Pro-Health International (PHI) through the USG/CDC IPSAN project promotes Gender Norms that encourage good sexual decision-making for women and girls, while discouraging norms that limit health seeking behaviours as well as access to education and economic resources among females. We sought to evaluate the effect of these interventions on the PLHIV community in Dengi community of North central Nigeria.
**Methods:** In 2014, PHI identified and trained PLHIV/ Community volunteers to provide Gender norms education through contact sessions for up to ten hours per group before graduation in Dengi community. Traditional social structures were then used in carrying out community sensitization campaign on male involvement in women' access to health care services and understanding the influence of gender norms on HIV transmission. The number of women who accessed HIV counselling and testing in the one year period prior to and post intervention were compared.
**Results:** Between October, 2013 and September, 2014, 1,948 (28%) out of 6,852 women had opportunity of knowing their HIV status among who 231 tested positive (11.8%). Following the intervention between October, 2014 to September,2015, 5325 (72.7%) of 7,321 women knew their HIV status with 190 testing positive (3.6%). The post intervention yield demonstrated a 3,377 increase in number of women accessing HIV service representing a 73% increase in yield.
**Conclusions:** The use of PLHIV and other community volunteers in providing Gender norms education services targeting men and other traditional leaders to allow women access to Health services proved to be very effective in increasing the number of women reached with HTC services thereby reducing risk of HIV infection.

## SPECIFIC PRACTICES, IMPACTS AND RESPONSES FOR DISTINCT SUBSTANCES AND MODES OF ADMINISTRATION (INCLUDING ALCOHOL USE, INJECTING DRUG USE AND NON-INJECTING DRUG USE)

### THPED632

### A QUALITATIVE STUDY ON PERCEIVED BARRIERS AND FACILITATORS TO REDUCE ALCOHOL USE AND IMPROVE ANTIRETROVIRAL TREATMENT (ART) ADHERENCE AMONG HAZARDOUS ALCOHOL USERS LIVING WITH HIV IN THAI NGUYEN, VIETNAM

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**Background:** The Vietnam Administration for AIDS Control has made significant progress in controlling the HIV epidemic by focusing its attention on risk behaviors, including injection drug use and unprotected sex. However, alcohol use, a highly normative behavior in Vietnam that is associated with high rates of HIV infection and lower antiretroviral treatment (ART) adherence, has been overlooked. To develop effective alcohol reduction programs for HIV-infected clients, research is needed to understand the clinical and sociocultural experience of hazardous alcohol users living with HIV in Vietnam.
**Methods:** We conducted in-depth interviews with 30 HIV-infected hazardous drinkers in northern Vietnam to explore perceived barriers and facilitators to reduce alcohol use and improve ART adherence. Eighteen men and 12 women with scores of >=8 on the Alcohol Use Disorders Identification Test (AUDIT) were recruited from an outpatient ART clinic. Semi-structured interviews were transcribed, translated, and analyzed to identify themes.
**Results:** The mean AUDIT score was 11.5 (10.8=women; 11.9=men), indicating a strong likelihood of hazardous or harmful alcohol consumption. The majority of participants reported a spike in alcohol consumption at the time of HIV diagnosis. While about half reported gradually reducing their alcohol use over the course of a year post-diagnosis, the other half reported maintaining or increasing their alcohol consumption after their initial spike. The main barriers to reducing alcohol use were: availability of inexpensive alcohol; perceived inability to refuse alcohol in context of social norms; alcohol use to cope with depressive symptoms often related to being HIV-infected; compensatory behaviors when attempting to reduce injection drug use; lack of alcohol treatment programs. Family and HIV provider support played a major role for those who reported reducing their alcohol use and maintaining good ART adherence.
**Conclusions:** Findings demonstrate that hazardous alcohol users who are HIV-infected are faced with trying to avoid a highly normative behavior with few resources. Programs started at initial HIV diagnosis to create or enhance social support may help reduce hazardous drinking among HIV-infected clients. However, this may not be sufficient for some hazardous drinkers who need more intensive mental health counseling. Trials to assess effective counseling interventions are needed.

## VIOLENCE, WELLBEING AND SEX WORK

### THPED633

### FAILURES OF JUSTICE: STATE AND NON-STATE VIOLENCE AGAINST SEX WORKERS AND SEARCH FOR SAFETY AND REDRESS COMMUNITY RESEARCH PROJECT OF SWAN IN CENTRAL/EASTERN EUROPE AND CENTRAL ASIA

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**Background:** In 2007, SWAN undertook regional, sex worker-led research on police raids, detention, and the level of physical, sexual, psychological violence against sex workers. In 2015 SWAN decided to follow up with another community based research, focusing on how police violence alters the working conditions of sex workers, what blocks redress and access to justice, what are the dynamics between state and non-state violence and HIV implications.

**Methods:** The research was undertaken in 16 countries from Central and Eastern Europe and Central Asia. The research team included main author and research coordinator, both sex workers, a sex worker advisory group who reviewed the whole process, and local research teams of sex workers and allies, who conducted the interviews. 320 semi-structured and 9 in-depth qualitative interviews were held with women, men and trans sex workers.
**Results:** Forty percent of respondents have been arrested in the last twelve months, one in five experienced physical violence and one in seven experienced sexual violence by police. Twenty percent reported extortion. Many experienced more than two incidents of physical and sexual violence by non-state actors.
The survey showed that condoms and syringes are routinely confiscated, destroyed or used by police as "evidence of crime", and sex workers are displaced from their work location as a consequence of arrests, extortion and fines. Social and racial profiling for repression based on gender, drug use or Roma ethnicity is identified, and cases of forced HIV/STI testing are documented.
**Conclusions:** Police repression of sex workers and clients create HIV risks for sex workers by displacing them to dangerous environments, reducing ability to screen and negotiate with clients and reducing ability of protection by confiscation or destruction of condoms and syringes.
Police repression fracture the longer-term ties of sex workers, services and access to drug, HIV or HCV treatment and care. Arrests and detention lead to treatment interruptions, fines and extortion make it difficult to have sufficient money for transportation, access to care or securing adequate nutrition. Fears that one's drug use or sex work might be reported to police or child welfare authorities discourage sex workers from seeking testing, treatment and care.

## FEMALE, MALE AND TRANSGENDER SEX WORKERS

### THPED634

### ENABLING FINANCIAL SECURITY THROUGH LITERACY, ACCESS AND SERVICES FOR HIV VULNERABLE COMMUNITIES IN 5 STATES OF INDIA

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**Background:** One of the key situations that forces communities to resort to unsafe behaviors and make them vulnerable to HIV is the constant financial needs and inadequate levels of fall back mechanisms at individual and family levels. There are a number of community experiences that have demonstrated that having a secured financial status helps them to negotiate and adopt safe behaviours.
**Methods:** Catalyst Group (Swasti, Vrutti and CMS) manages the Avahan Phase III initiative (2014-2017), funded by BMGF, supports 84 Community Organizations (COs) on reducing economic vulnerabilities of key populations (KPs) to enable practice safe behaviours among the communities vulnerable to HIV infection. The project covers a total of about 161,000 key populations (FSW, MSM, TG) across 5 states of India. The project aims at reducing the financial vulnerabilities of KPs by helping them to acquire adequate financial literacy and capability, plan her their short and long-term financial needs based on her/his vulnerability and key needs, and ensure access critical financial services through a variety of community institutional mechanisms like SHGs, state-specific co-operatives, business correspondent/ facilitator and multi state co-operative.
**Results:** A financially secure KP, with access and control over her/his financial resources will be able to negotiate for safe sex behaviours and safe coping mechanisms. Financial security becomes a fall back mechanism for her/him when faced with a crisis (illness, violence, death of a member and other shocks), ensuring that she/he does not resort to any risky behaviour.
**Conclusions:** Between April 2014 and December 2015 ,
- 1,02,000 KPs obtained high level of financial literacy
- 30,900 bank accounts and 12,910 deposit accounts opened
- 3,062 KPs have been facilitated access to life insurance, 4,190 KPs to accident insurance; 3,400 KPs to health insurance
- Additionally, 223 members have also enrolled themselves for pension. 867 loans have also been facilitated to the members during the period
- The trend of HIV prevalence and the number of new infections detected continues its downward trend during the reporting period

By March 2017, at least 1,31,000 community members will improve their financial behaviours by learning about the role of financial security in reducing HIV vulnerability, the financial products available and learning to access them.

### THPEC635

### NEEDLE SHARING AND RISKY SEXUAL BEHAVIOR AMONGST INJECTING DRUG USERS (IDU) IN LAGOS, NIGERIA

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*Center for the Right to Health, Lagos, Nigeria*

**Background:** Needle sharing and risky sexual behavior amongst IDUs have been reported to be related to high incidence of HIV and other STIs (IBBSS 2010). About 10% of new HIV infections are as a result of injecting drug use (UNAIDS 2007). This situation is further worsened by social discrimination and poverty in many developing countries, leading to increase in prevalence of both STI and HIV. This study is aimed at describing the burden and key factors associated with high rate of needle sharing and risky sexual practices among IDU in Lagos State.
**Description:** A multistage stratified random sampling method was used to recruit 125 IDU respondents in five selected Local Government Areas (LGAs) of Lagos State. Information on socio-demographic characteristics, risk perception and needle sharing was collected using a semi-structured questionnaire. Analysis was done using Statistical Package for Social Sciences (SPSS) version 16. Description analysis was done for categorical variables to identify prevalence while chi-square tests were used to test for association between variables. A binary logistic regression analysis was also done to identify factors associated with needle sharing and high sexual risk activities by IDU.
**Lessons learned:** About 92% of respondents have lived in the drug community for more than 12 months. 88.8% injected drugs daily, 50% of IDU shared needles in 5 Local government Areas (LGAs). These 5 LGAs combined contributed. 71.7% of total number of IDU that reported needle sharing in Lagos. Majority (92.4%) said they 'hustle' including commercial sex work (78.0%), to get money daily for drug purchase. Condom use was 70.1% and 48.3% among IDU who engage in commercial sex work and multiple sex partnering. Needle sharing was higher among respondents who inject drugs daily (72.6%), compared to those who injected drugs once weekly (33.3%) P 0.045. IDUs who are bunk based are 0.029 times more likely to share needle than those who dwell in their own house. IDUs whose risk perception was low is 0.246 times more likely to engage in sexual risk activities than those with high risk perception.
**Conclusions/Next steps:** .There is need for more innovative IDU targeted intervention to address high prevalence of needle sharing among IDUs.

Friday 22 July

# ORAL ABSTRACT SESSIONS

## FRAB01 LATE BREAKER SESSION TRACK B

### FRAB0101LB

### ENHANCED INFECTION PROPHYLAXIS REDUCES MORTALITY IN SEVERELY IMMUNOSUPPRESSED HIV-INFECTED ADULTS AND OLDER CHILDREN INITIATING ANTIRETROVIRAL THERAPY IN KENYA, MALAWI, UGANDA AND ZIMBABWE: THE REALITY TRIAL

J. Hakim[1], V. Musiime[2], A.J. Szubert[3], A. Siika[4], J. Mallewa[5], C. Agutu[6], S.L. Pett[3], M. Bwakura-Dangarembizi[1], A. Lugemwa[7], S. Kaunda[5], M. Karoney[4], K. Maitland[6], A. Griffiths[3], C. Kityo[2], P. Mugyenyi[2], A.J. Prendergast[3,8], A.S. Walker[3], D.M. Gibb[3], REALITY Trial Team

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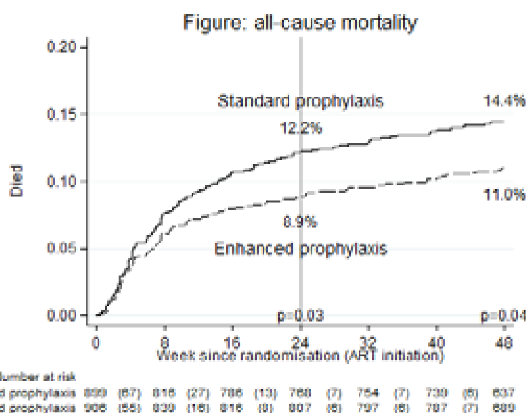
**Background:** Mortality from infections is high in the first 6 months of antiretroviral therapy (ART) among HIV-infected adults and children with advanced disease in sub-Saharan Africa. Whether an enhanced package of infection prophylaxis at ART initiation would reduce mortality is unknown.

**Methods:** The REALITY 2x2x2 factorial open-label trial (ISRCTN43622374) randomised ART-naïve HIV-infected adults and children >5 years with CD4< 100 cells/mm³. This randomisation compared initiating ART with enhanced prophylaxis (continuous cotrimoxazole plus 12 weeks isoniazid/pyridoxine (anti-tuberculosis) and fluconazole (anti-cryptococcal/candida), 5 days azithromycin (anti-bacterial/protozoal) and single-dose albendazole (anti-helminth)), versus standard-of-care cotrimoxazole. Isoniazid/pyridoxine/cotrimoxazole was formulated as a scored fixed-dose-combination. Two other randomisations investigated 12-week adjunctive raltegravir or supplementary food. The primary endpoint was 24-week mortality.

**Results:** 1805 eligible adults (n=1733;96.0%) and children/adolescents (n=72;4.0%) (median 36 years; 53.2% male) were randomised to enhanced (n=906) or standard prophylaxis (n=899) and followed for 48 weeks (3.8% loss-to-follow-up). Median baseline CD4 was 36 cells/mm³ (IQR 16-62) but 47.3% were WHO stage 1/2. 80(8.9%) enhanced versus 108(12.2%) standard prophylaxis died before 24 weeks (adjusted hazard ratio[aHR]=0.73 (95% CI 0.54-0.97) p=0.03; Figure) and 98(11.0%) versus 127(14.4%) respectively died before 48 weeks (aHR=0.75 (0.58-0.98) p=0.04), with no evidence of interaction with the two other randomisations (p>0.8). Enhanced prophylaxis significantly reduced incidence of tuberculosis (p=0.02), cryptococcal disease (p=0.01), oral/oesophageal candidiasis (p=0.02), deaths of unknown cause (p=0.02), and (marginally) hospitalisations (p=0.06) but not presumed severe bacterial infections (p=0.38). Serious and grade 4 adverse events were marginally less common with enhanced prophylaxis (p=0.06). CD4 increases and VL suppression were similar between groups (p>0.2).




*[All-cause mortality]*

**Conclusions:** Enhanced infection prophylaxis at ART initiation reduces early mortality by 25% among HIV-infected adults and children with advanced disease. The pill burden did not adversely affect VL suppression. Policy-makers should consider adopting and implementing this low-cost broad infection prevention package which could save 3.3 lives for every 100 individuals treated.

### FRAB0102LB

### 12-WEEK RALTEGRAVIR-INTENSIFIED QUADRUPLE THERAPY VERSUS TRIPLE FIRST-LINE ART REDUCES VIRAL LOAD MORE RAPIDLY BUT DOES NOT REDUCE MORTALITY IN SEVERELY IMMUNOSUPPRESSED AFRICAN HIV-INFECTED ADULTS AND OLDER CHILDREN: THE REALITY TRIAL

C. Kityo[1], A. Siika[2], A.J. Szubert[3], J. Mallewa[4], M. Bwakura-Dangarembizi[5], S. Kabahenda[6], S. Mwaringa[7], S.L. Pett[3], A. Griffiths[3], A. Lugemwa[8], S. Wachira[2], G. Musoro[5], C. Rajapakse[3], T. Etyang[7], J. Abach[9], P. Wavamunno[1], L. Nyondo-Mipando[4], A. Reid[5], K. Nathoo[5], J. Hakim[5], D.M. Gibb[3], A.S. Walker[3], REALITY trial team

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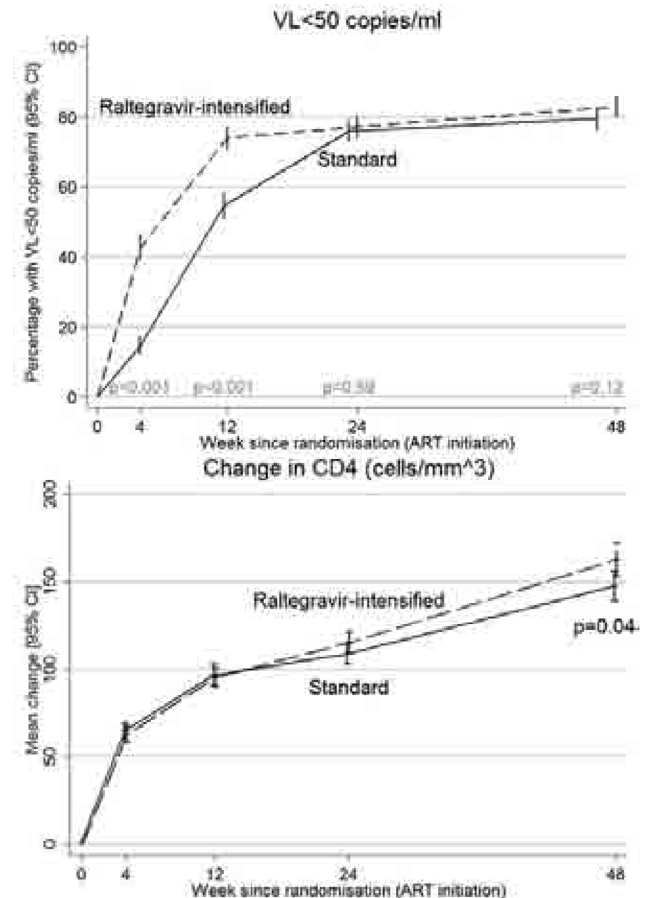
**Background:** Early mortality after initiating antiretroviral therapy (ART) is high among HIV-infected adults and children with advanced disease in Sub-Saharan Africa. Intensifying ART with an integrase inhibitor should reduce viral load (VL) faster, but whether this reduces early mortality is unknown.

**Methods:** The REALITY 2x2x2 factorial open-label trial (ISRCTN43622374) randomised ART-naïve HIV-infected adults and children >5 years with CD4 <100 cells/mm³ from Kenya, Malawi, Uganda and Zimbabwe. This randomisation compared initiating ART with 2NRTI+NNRTI with or without 12-week raltegravir intensification. Two other randomisations investigated 12-week enhanced infection prophylaxis or supplementary food. The primary endpoint was 24-week mortality.

**Results:** 1805 eligible adults (n=1733;96.0%) and children/adolescents (n=72;4.0%) (median 36 years; 53.2% male) were randomised to raltegravir-intensified (n=903) or standard (n=902) ART and followed for 48 weeks (3.8% loss-to-follow-up). Median baseline CD4 was 36 cells/mm³ (IQR 16-62) and VL 230,000 c/ml (72.5%≥100,000 c/ml). At 4, 12, 24 and 48 weeks, VL was <50 c/ml in 42.8%, 74.1%, 77.2% and 82.9% in 12-week raltegravir-intensified versus 14.5%, 54.6%, 76.0% and 79.5% standard ART (p<0.001, <0.001, 0.59, 0.12, respectively) (Figure).




*[VL and CD4]*

CD4 increases through 24 weeks were similar (p=0.82), although a small difference became apparent at 48 weeks (+163 cells/mm³ intensified versus +148 cells/mm³ standard, p=0.04). 97(10.9%) intensified versus 91(10.2%) standard ART died

before 24 weeks (adjusted hazard-ratio[aHR]=1.09 (95% CI 0.82-1.46) p=0.54); 110(12.4%) versus 115(13.0%) respectively died before 48 weeks (aHR=0.98 (0.75-1.27) p=0.86), with no evidence of interaction with the two other randomisations (p>0.7). There was no difference in time to first WHO 3/4 event or death (p=0.31). Serious adverse events (AEs), grade 3/4 AEs and drug-related AEs (adjudicated blind to randomisation) were similar in both groups (p>0.3).
**Conclusions:** 12-week raltegravir-intensified ART was well tolerated, resulted in faster VL reduction through 24 weeks and increased CD4 at 48 weeks, but did not reduce mortality or WHO 3/4 events.

## FRAB0103LB

### RALTEGRAVIR (RAL) 1200 MG ONCE DAILY (QD) IS NON-INFERIOR TO RAL 400 MG TWICE DAILY (BID), IN COMBINATION WITH TENOFOVIR/EMTRICITABINE, IN TREATMENT-NAÏVE HIV-1-INFECTED SUBJECTS: WEEK 48 RESULTS

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**Background:** The investigational reformulated RAL 600mg tablet for QD use at 1200mg dose could provide a more convenient option for treatment of HIV-1 infection.
**Methods:** ONCEMRK is a phase 3, multicenter, double-blind, randomized, controlled trial to evaluate if reformulated RAL 1200mg QD is non-inferior to RAL 400mg BID. Treatment-naïve HIV-1-infected subjects were assigned (2:1) to reformulated RAL 2x600mg QD or RAL 400mg BID, both with tenofovir/emtricitabine, for up to 96 weeks. Randomization was stratified by screening HIV-1 RNA (vRNA) and chronic hepatitis B/C status. The primary efficacy endpoint was the proportion of subjects with vRNA < 40 copies/mL at Week 48 (Non-Completer=Failure).
**Results:** Of 802 subjects randomized, 797 received study therapy and were included in the analyses; 732 (92%) completed 48 weeks of treatment. The study population was 85% male, 59% white, mean age 35.9 years, mean CD4 count 415/mm$^3$, mean plasma vRNA 4.6 $\log_{10}$ copies/mL, 28.4% had baseline vRNA >100,000 copies/mL, 2.9% had hepatitis B and/or C co-infection. Subjects in both groups achieved a rapid decline in vRNA (>50% reaching vRNA < 40 copies/mL by Week 4). At Week 48, RAL 1200mg QD was non-inferior to RAL 400mg BID (vRNA < 40 copies/mL in 88.9% and 88.3%, respectively, Δ(QD-BID)=0.5%, 95% CI [-4.2,5.2]). Study results did not differ significantly by baseline vRNA or hepatitis co-infection status. RAL 1200mg QD also had comparable immunologic efficacy, as measured by change from baseline in CD4 cell counts. Both treatment regimens were well-tolerated with comparable incidence of clinical adverse events (table) and laboratory values exceeding predefined limits of change (based on DAIDS toxicity criteria).
**Conclusions:** In HIV-1-infected treatment-naïve subjects receiving tenofovir/emtricitabine, reformulated RAL 1200mg QD demonstrated potent and non-inferior efficacy compared to RAL 400mg BID at Week 48. RAL 1200mg QD was safe and well tolerated with a safety profile similar to RAL 400mg BID.

| Endpoint | RAL 1200mg QD (N=531) | RAL 400mg BID (N=266) | Δ QD-BID (95% CI) |
|---|---|---|---|
| HIV RNA <40 copies/mL | | | |
| All subjects (NC=F) | 88.9 % | 88.3 % | 0.5 (-4.2, 5.2) |
| Baseline vRNA >100,000 copies/mL (OF) | 86.7 % | 83.8 % | 2.9 (-6.5, 14.1) |
| Baseline CD4 ≤200 cells/mm$^3$ (OF)[†] | 85.1 % | 87.9 % | -2.8 (-16.0, 14.0) |
| Hepatitis B and/or C co-infection (OF) | 100 % | 85.7 % | 14.3 (-11.7, 52.2) |
| HIV RNA <200 copies/mL (NC=F) | 91.1 % | 91.4 % | -0.2 (-4.4, 4.0) |
| Mean CD4 Change (95% CI), cells/mm$^3$ (OF) | 232 (215, 249) | 234 (213, 255) | -2.1 (-31, 27) |
| One or more clinical adverse events | 82.7 % | 86.8 % | -4.2 (-9.2, 1.3) |
| Drug-related[‡] adverse events | 24.5 % | 25.6 % | -1.1 (-7.6, 5.1) |
| Serious adverse events | 5.8 % | 9.4 % | -3.6 (-8.0, 0.2) |
| Serious drug-related adverse events | 0.2 % | 0.8 % | -0.6 (-2.5, 0.4) |
| Discontinued[§] due to adverse event | 0.8 % | 2.3 % | -1.5 (-4.1, 0.1) |

All subjects also received tenofovir/emtricitabine.
[†]Combination of two pre-specified groups (≤50 and >50 to ≤200 cells/mm$^3$).
[‡]Determined by the investigator to be related to study drug.
[§]Study medication withdrawn.
NC=F: Non-Completer=Failure, as defined by FDA snapshot approach (all missing data treated as failures); OF: Observed Failure approach.

*[Table 1]*

## FRAB0104LB

### DOLUTEGRAVIR-LAMIVUDINE AS INITIAL THERAPY IN HIV-INFECTED, ARV NAIVE PATIENTS: 48 WEEK RESULTS OF THE PADDLE TRIAL

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**Background:** Based on the results of the GARDEL trial, we designed a proof of concept study to evaluate the antiviral efficacy, safety and tolerability of a dual therapy regimen with Dolutegravir (DTG) 50m mg QD plus Lamivudine (3TC) 300 mg QD as initial HAART among ARV-naïve patients.
**Methods:** Pilot study including 20 HIV-infected ARV-naïve adults. Eligible participants had no IAS-USA defined NRTI resistance, HIV-1 RNA < 100.000 copies/mL at screening and negative HBsAg. Viral load (pVL) was measured at baseline, on days 2, 4, 7, 10, 14, 21, 28 and on weeks 6, 8, 12, and thereafter every 12 months up to 96 weeks. Primary endpoint was the proportion of patients with HIV-1 RNA< 50 copies/mL in an ITT-exposed analysis at 48 weeks. (FDA-snapshot algorithm). Week 24 interim analysis was already presented at EACS 2015. Week 48 results are reported here.
**Results:** Median HIV-1 RNA at baseline was 24,128 copies/mL (IQR: 11,686-36,794). Albeit as per protocol, all patients had pVL< 100,000 copies/mL at screening, four patients had ≥100,000 copies/mL at baseline. Median CD4+ T-cell count was 507 per cubic millimeter (IQR 296-517). A rapid antiviral response was observed. (Median VL decay baseline-to week 12 was 2.74 logs) All participants had pVL < 50 copies from week 8 onwards up to week 24. At week 48, 90% (18/20) reached the primary end point of a pVL < 50 copies/mL. No major tolerability/toxicity issues were observed. Eighteen patients completed 48 weeks of the study, one patient (with undetectable viral load at last visit) committed suicide, in the context of a severe stress and emotional trauma deemed unrelated to study medication. One patient presented a low level protocol-defined confirmed virological failure at week 36., being the only observed failure. This patient resuppressed to pVL < 50 copies/mL prior to treatment intensification. Resistance tests revealed: RT:no emergent substitutions; Integrase: Not amplified.
**Conclusions:** Dual therapy with DTG/lamivudine produced rapid virologic suppression with a favorable safety/tolerability profile in HIV-infected, treatment-naive individuals. Observed failure rate was 5%. This is the first report of a successful InSTI/lamivudine-based dual therapy in ARV-naïve patients after 48 weeks of treatment.

# FRAC01 TESTING TIMES-INTERVENTIONS TO IMPROVE RATES OF HIV TESTING

## FRAC0101

### CHALO! A SOCIAL MEDIA BASED PEER-DELIVERED INTERVENTION INCREASES HIV TESTING IN MEN WHO HAVE SEX WITH MEN IN MUMBAI, INDIA: A RANDOMIZED TRIAL

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**Background:** Social media can provide effective delivery of HIV prevention messages to men who have sex with men (MSM). This study is the first to engage MSM in India in an online intervention to investigate the efficacy of two types of HIV prevention message framing: Approach (i.e., a good outcome to be achieved) versus Avoidance (a bad outcome to be avoided).
**Methods:** Using participatory processes, we developed messages targeting HIV testing to fit either approach- or avoidance frames. Using social media, we recruited MSM ages 18 or older living in Mumbai. After completing a screener and baseline survey online, participants were randomized to receive either 16 approach- or 16 avoidance-framed messages via their preferred modality: private Facebook group, individual Whatsapp messaging, or email. Peers delivered messages 2/week for 12 weeks (February-May 2015), and participants completed a post-intervention survey. Primary outcomes were
1) recent HIV test (past 6 months) and
2) intention to test in the next month.
**Results:** Over 82% of participants (n=200) were retained, and 53% (n=130) completed follow-up ; there were no baseline differences by messaging arm or follow-up completion. Participants were primarily between 18-29 years old (64%), identified as gay (67%) or bisexual (26%), had an average of 4 male partners in the past 3 months, and 39% reported inconsistent condom use. There was a significant in-

crease in recent HIV testing from baseline to follow-up (32% to 44%; $p < 0.05$). Among those who did not report recent HIV testing (n=50), intentions to test increased significantly as well (32% to 56%; p=.01). Participants reported liking approach messages more, but believing that avoidance messages were more effective. A significantly higher proportion of participants in the avoidance condition reported recent testing or intention to test (82%), compared to those in the approach condition (65%), p =.03.
**Conclusions:** This first study of a social media-based HIV intervention in India demonstrates preliminary evidence for increasing HIV testing in an urban online sample of MSM, with potential for wide national reach. Further work is needed to better understand how message-framing impacts HIV testing and risk behaviors in Indian MSM for future tailored online interventions.

## FRAC0102

### ACCESS TO HIV SELF-TESTING DOUBLES THE FREQUENCY OF HIV TESTING AMONG GAY AND BISEXUAL MEN AT HIGHER RISK OF INFECTION: A RANDOMISED CONTROLLED TRIAL

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**Background:** Frequent testing of gay and bisexual men (GBM) at higher-risk of HIV is central to current prevention strategies. We conducted the first randomised trial to determine if access to HIV self-testing would increase testing frequency in two groups of higher-risk GBM; those who had tested within the past two years and those who had not.
**Methods:** In this wait-list control randomised trial, HIV-negative higher-risk GBM reporting condomless anal intercourse or >5 male sexual partners in the past 3 months were recruited at three clinical and two community-based sites in Australia. Enrolled participants were randomly assigned (1:1) via computer-generated randomisation codes to have free access to HIV self-testing (intervention) or not (standard-care). Participants completed 3-monthly online questionnaires. The primary outcome was the number of HIV tests over 12 months, analysed by intention-to-treat. The study was designed to evaluate the primary outcome overall and in two strata: frequent (last HIV test ≤2 years ago) and infrequent (>2 years ago or never tested) testers.
**Results:** Between Dec-2013, and Nov-2014, 180 men were randomised to self-testing and 179 to standard-care. The intention-to-treat analysis included men who completed any follow-up questionnaire: 179 (98%) in self-testing; and 164 (92%) in standard-care. The mean number of HIV tests over 12 months in the self-testing and standard-care arms was 3.9 and 1.6 per-person overall (rate ratio (RR):2.39, 95% CI: 2.08-2.76,$p< 0.001$), 4.0 and 1.8 among frequent testers (RR:2.23, 1.93-2.59,$p< 0.001$), and 3.2 and 0.6 among infrequent testers (RR:5.54, 3.15-9.74,$p< 0.001$), respectively. There was no statistical difference between the two arms in the mean number of facility-based HIV tests (1.4 vs 1.6, RR:0.89, 0.75-1.06) and any STI test (1.6 vs 1.7, RR:0.93, 0.79-1.10).

| Type of test | Overall | | | Frequent testers | | | Infrequent testers | | |
|---|---|---|---|---|---|---|---|---|---|
| | Self-testing (n=177) | Standard-care (n=164) | Rate-ratio (95%CI) | Self-testing (n=147) | Standard-care (n=140) | Rate-ratio (95%CI) | Self-testing (n=30) | Standard-care (n=24) | Rate-ratio (95%CI) |
| **Self/ facility-based HIV** | 3.9 (0.2) | 1.6 (0.1) | **2.39 (2.08-2.76)** | 4.0 (0.2) | 1.8 (0.1) | **2.23 (1.93-2.59)** | 3.2 (0.5) | 0.6 (0.2) | **5.54 (3.15-9.74)** |
| **Facility-based HIV** | 1.4 (0.1) | 1.6 (0.1) | 0.89 (0.75-1.06) | 1.6 (0.1) | 1.8 (0.2) | 0.88 (0.73-1.05) | 0.8 (0.3) | 0.6 (0.2) | 1.41 (0.73-2.73) |
| **Any STI** | 1.6 (0.1) | 1.7 (0.2) | 0.93 (0.79-1.10) | 1.8 (0.1) | 1.9 (0.2) | 0.92 (0.77-1.09) | 0.9 (0.3) | 0.7 (0.2) | 1.35 (0.73-2.49) |
| **Chlamydia/ Gonorrhoea** | 1.5 (0.1) | 1.6 (0.1) | 0.94 (0.80-1.12) | 1.6 (0.1) | 1.8 (0.2) | 0.93 (0.78-1.11) | 0.9 (0.3) | 0.6 (0.2) | 1.33 (0.71-2.50) |
| **Syphilis** | 1.4 (0.1) | 1.5 (0.1) | 0.90 (0.76-1.08) | 1.5 (0.1) | 1.7 (0.1) | 0.89 (0.74-1.07) | 0.8 (0.3) | 0.6 (0.2) | 1.41 (0.72-2.76) |

*[Mean number of HIV and sexually transmitted infection (STI) tests over 12 months in intention-to-treat population. Mean(SD) unless otherwise specified]*

**Conclusions:** HIV self-testing among higher-risk GBM increased HIV testing frequency by more than two-fold overall, and more than five-fold among infrequent testers, without reducing facility-based HIV/STI testing frequency. Self-testing should be provided more widely to achieve public health goals of increasing HIV testing frequency.

## FRAC0103

### COMMUNITY-BASED VOLUNTARY COUNSELLING AND TESTING SUCCESSFULLY IDENTIFIES HIV-POSITIVE ART ELIGIBLE INDIVIDUALS IN RURAL SOUTH AFRICA

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**Background:** Community-based voluntary counseling and testing (CBVCT) is a validated strategy to increase HIV awareness and testing. South Africa has the largest global epidemic of HIV, and a substantial proportion is unaware of being infected. New testing strategies are needed. We describe a successful CBVCT strategy in rural South Africa.
**Methods:** A team of nurses and community health workers provided health education, rapid HIV testing and concurrent TB screening in congregate community settings in rural KwaZulu Natal from 2010-2015. Those identified with HIV were offered confirmatory testing, CD4 staging, individual counseling based on CD4 count and referral to care and antiretroviral treatment (ART) according to national guidelines.
**Results:** CBVCT was performed at 849 community sites including municipality events, pension pay points, and taxi ranks. Among 13,278 screened, the median age was 41(IQR 23-57), 8099 (70.8%) were women, and 11,435 (86.1%) accepted HIV testing. Twelve hundred and forty-four (9.4%) individuals were identified as HIV-infected. Among 720 (57.9%) accepting phlebotomy, the median CD4 count was 424 (IQR 270-583); 447 (62%) qualified for antiretroviral therapy (ART).
A substantial proportion of participants (4510, 39.4%) reported first-time HIV testing. Preliminary analysis identifies correlates of HIV-positive test result including young age ($p< 0.001$), contact with a TB patient ($p< 0.001$), chronic diarrhea ($p< 0.001$), recurrent pneumonia ($p< 0.001$), and type of community site of HIV testing ($p< 0.001$). Taxi ranks yielded the greatest proportion of community members (176/1123, 15.7%) with HIV-positive test result. Among all HIV-positive men, the greatest proportion (74, 25%) was identified at municipality events.
**Conclusions:** Community members accept HIV testing outside of health care facilities and by non-clinical personnel. Utilizing a variety of community testing sites reaches different demographic groups, including high-priority young men and women. CBVCT can detect a large number of HIV infected individuals, the majority of whom are eligible for ART. Scale-up of CBVCT may provide needed increase in levels of HIV awareness, testing and diagnoses in rural areas.

## FRAC0104

### PROMOTING MALE PARTNER AND COUPLES HIV TESTING THROUGH SECONDARY DISTRIBUTION HIV SELF-TESTS: A RANDOMIZED TRIAL

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**Background:** There is a vital need to achieve higher uptake of HIV testing among men and couples in sub-Saharan Africa. Providing multiple HIV self-tests to individuals for distribution to their sexual partners, i.e. 'secondary distribution', is a promising strategy with potential to increase awareness of HIV status. This strategy may be particularly useful for promoting male partner testing and couples testing in antenatal and postpartum settings.
**Methods:** We conducted a randomized trial at 3 clinics in Kisumu, Kenya (NCT02386215). Women seeking antenatal and postpartum care, aged 18-39 years, and reporting their primary partner was not known to be HIV-infected, were randomized to an HIV self-testing (HIVST) group or a comparison group. In the HIVST group, women were provided 2 OraQuick self-tests, a demonstration and instructions on how to use the self-tests, and encouragement to distribute a self-test to

their partner. In the comparison group, women were provided invitation cards for their partner to seek counselor-administered HIV testing at the clinics. Follow-up interviews were conducted with women after they reported their partner had tested, and all women were interviewed at 3 months. The primary outcome was HIV testing by the male partner within 3 months and the secondary outcome was couples testing within 3 months. Chi-squared tests were used to compare outcomes in the intervention and comparison group.
**Results:** Between June 11, 2015 and October 16, 2015, 600 women were randomly assigned to the HIVST group (n=297) or the control group (n=303). Follow-up was completed for 570 (95.0%) women. Male partner testing uptake was 90.5% (257/284) in the HIVST group and 51.7% (148/286) in the comparison group (difference=38.7%, 95% CI 31.9%-45.5%, $P < 0.001$). Couples testing was also significantly higher in the HIVST group than the comparison group (75.0% vs. 33.2%, difference=41.7%, 95% CI 34.3%-49.2%, $P < 0.001$). One adverse event was reported in the HIVST group and none were reported in the comparison group.
**Conclusions:** Secondary distribution of HIV self-tests by pregnant and postpartum women was highly effective in promoting male partner and couples testing. As countries scale-up HIVST, further implementation of secondary distribution interventions can help increase HIV testing uptake among hard-to-reach populations.

## FRAC0105LB

### The impact of universal test and treat on HIV incidence in a rural South African population: ANRS 12249 TasP trial, 2012-2016

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**Background:** The population impact of universal test and treat (UTT) on HIV transmission has not yet been evaluated.
**Methods:** A cluster-randomized trial was implemented in 2x11 rural communities in KwaZulu-Natal, South Africa. All residents ≥16 years were offered rapid HIV testing and provided dried blood spots (DBS) during 6-monthly home-based survey rounds. HIV-positive participants were referred to cluster-based trial clinics to receive ART regardless of CD4 count (intervention arm) or according to national guidelines (control arm). Standard of care ART was also available in the Department of Health clinics. HIV incidence was estimated on repeat DBS using cluster-adjusted Poisson regression.
**Results:** Between 03/2012 and 04/2016, 13,239 and 14,916 individuals (63% women, median age 30 years) were registered in the intervention and control arms. Contact frequency per round among registered individuals ranged from 64% to 83%, HIV ascertainment from 74% to 85%. Baseline HIV prevalence was 29.4%(95%CI 28.8-30.0), with 7,578 individuals identified as HIV-positive. 1,513(36%) of 4,172 HIV-positive individuals not previously in care linked to trial clinics within 6 months of referral. ART initiation in trial clinics at 3 months was 90.9%(576/634) and 52.3%(332/635) in the intervention and control arms; viral suppression (< 400 copies/mL) 12 months after ART initiation was 94.9%(300/316) and 94.2%(194/206), respectively. Overall ART coverage at entry was 31% and 36% in the intervention and control arms, reaching 41% in both arms by closing date. Repeat DBS tests were available for 13,693 individuals HIV-negative at baseline, yielding 461 seroconversions in 20,833 person-years (PY). HIV incidence was 2.16 per 100 PY (1.88-2.45) in the intervention arm and 2.26 (1.98-2.54) in the control arm (adjusted relative risk: 0.95 [0.82-1.10]). Severe adverse events rates were 3.4%(45/1,323) and 3.5%(57/1,604) in the intervention and control arms. Follow-up will be completed by 06/2016.
**Conclusions:** Our trial shows high acceptance of home-based HIV testing and high levels of viral suppression among individuals on ART. However overall linkage to care remains poor. No reduction in HIV incidence was demonstrated. Several factors are being investigated, including determinants of poor linkage, change in national ART guidelines, migration and geography of sexual networks.
(Funded by ANRS, GiZ and 3ie; Clinical Trials registration NCT00332878).

# FRAD01 Policies, policing and public morality

## FRAD0101

### "One shouldn't convict people for hypothetical risks": frustratingly slow incorporation of the prevention impact of antiretroviral therapy into criminal law and policy

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**Background:** The prevention impact of antiretroviral therapy (ART) is now established as a key component of the HIV response. But despite this remarkable scientific advancement, many people living with HIV around the world remain vulnerable to the risk of unjust prosecutions for alleged HIV non-disclosure, potential or perceived exposure or non-intentional transmission because up-to-date science on HIV risk has not been recognised in criminal law and policy.
**Description:** We undertook a desk review of criminal proceedings, policy documents and newspaper reports collated on the HIV Justice Network website to better understand the implications of increased knowledge and awareness of the prevention benefit of ART as they relate to HIV non-disclosure, exposure and/or transmission laws, policies and prosecutions.
**Lessons learned:** Despite recognition by WHO and other normative agencies of the impact of ART on the risks of HIV transmission, criminal justice actors and lawmakers have been frustratingly slow to incorporate up-to-date HIV science into criminal law and policy. The key component of recognising the prevention impact of ART on HIV risk has been collaboration between scientists, clinicians, lawyers and advocates. This is as true in the Netherlands, the first country to consider low viral load as a factor in assessing HIV risk in 2005, as it has been in, for example, the US Court of Appeals for the Armed Forces (2015) and the Czech Republic (2015). Without this co-ordinated effort higher courts and lawmakers generally ignore up-to-date science even if lower courts occasionally make more rational, informed decisions, for example, in Austria, Canada and Germany.
**Conclusions/Next steps:** It is vitally important that criminal justice system actors and law- and policymakers are educated so that HIV-related criminal laws and policies are applied rationally and fairly. Scientists and clinicians must, therefore, work more closely with HIV and human rights activists, advocates and lawyers in jurisdictions where the prevention impact of ART is not currently legally recognised, in order to prevent miscarriages of justice and to ensure that the prevention benefit of ART is correctly understood by criminal justice actors, policymakers, and the media as well people living with HIV and people likely to make a criminal complaint.

## FRAD0102

### Inconsistencies in legal frameworks on adolescent HIV and sexual and reproductive health services in five Southern African countries

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**Background:** While specific disaggregated HIV prevalence data for adolescents (aged 12 to 18) does not exist, young people (aged 15-24) account for 39% of all HIV infections globally, most of which occur in Sub-Saharan Africa (SSA). Conflicting laws surrounding the age of consent, sexual activity between adolescents and mandatory reporting - which in some instances criminalise certain sexual activities between adolescents - have a deleterious impact on the extent to which adolescents can access and, by extension, receive HIV counselling and testing and other sexual and reproductive health (HCT/SRH) services. The legal frameworks around HCT/SRH service provision in Malawi, Mozambique, Namibia, Zambia and Zimbabwe, five SSA countries with high adolescent HIV prevalence rates, were analysed for their impact on adolescents' access to HCT/SRH services.
**Methods:** Following desktop-based analyses of legal and policy frameworks, we conducted in-depth interviews with representatives of organisations providing adolescent HCT/SRH services, as well as academics, advocates, and policy makers, in the five countries. Interview data were analysed thematically and compared across specific issues and countries.
**Results:** Laws regulating adolescent HCT, SRH and sexual activity are inconsistent and differentially interpreted within and across the five countries analysed. Conflicts exist between laws regulating age of consent to HCT and other SRH services, with the effect that adolescents have more barriers to preventative than diagnostic and curative services. Where consent to sex is regulated at a higher age than consent to HCT/SRH services, adolescents in effect need to disclose illegal sexual activ-

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ity when accessing HCT/SRH services. Laws that criminalise homosexuality (in Malawi, Zambia and Zimbabwe) put lesbian, gay, bisexual and transgender adolescents at risk when attempting to openly access services. As a result, reporting obligations for healthcare providers with regards to teenage sexuality impede confidential service provision, and providers often use their discretion in deciding to whom and how to provide services.
**Conclusions:** Laws and policies regulating HCT/SRH are often in conflict with HCT policies and create additional barriers for adolescents. National law and policy reforms need to be harmonised and aligned to the principles of adolescent-friendly HCT/ SRH services. Healthcare providers need to receive training on the legal frameworks and their obligations.

## FRAD0103

### SENSITISING JUDGES ON HIV, HUMAN RIGHTS AND THE LAW: THE REGIONAL JUDGES' FORUM IN AFRICA

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**Background:** Sub-Saharan Africa accounts for 69% of people living with HIV. In many African jurisdictions, people living with or affected by HIV encounter stigma, discrimination and violations of rights that increase the impact of HIV on their lives and create barriers to services. Protecting human rights is essential for access to services. The judiciary can play a critical role in upholding the rights of people infected and affected by HIV. In 2014, African judges requested support to form a regional judges' forum to learn about new developments in HIV-related jurisprudence and to share challenges they face.
**Description:** UNDP supported two meetings of the Africa Regional Judges' Forum in 2014 and 2015. Judges chaired sessions on HIV science, key populations, HIV laws, human rights, case law related to PLHIV, MSM, sex workers, access to medicines, etc. Expert resource people, including HIV science and legal experts, and key population experts provided up to date information for the judges' deliberations in these sessions.
**Lessons learned:** The Forum was based on issues raised by Judges, and provided a collegial space for them to identify participants, themes, and the agenda. Judges who have made ground-breaking rulings acted as resource persons, complemented by thematic and key population experts. Twenty-six judges from 16 African countries participated in these two meetings and discussed HIV science, human rights of key populations (sex workers, transgender people, MSM and prisoners) and access to anti-retroviral therapy. Mock trials and case law discussions focused on issues like forced sterilisation of women with HIV, discrimination against PLHIV in workplace, HIV treatment for prisoners and registration of LGBTI organisations. An online database on HIV laws/bills, case law, regional and international treaties and covenants, was launched.
**Conclusions/Next steps:** Results (2014-2015): Participants of the Forum were resource persons at a training of court users in Kenya. Kenya High Court ruled criminalising HIV transmission in law as unconstitutional; Botswana HC ruled that foreign prisoners were entitled to ART - a ruling that was upheld by the Court of Appeals; the South African Chapter of International Association of Women Judges developed a Strategic Plan that incorporated HIV, Law, Gender and Human Rights, and Transgender issues.

## FRAD0104

### ENFORCING THE LAWS ON PUBLIC MORALITY AGAINST KEY POPULATIONS: THE DILEMMA OF THE GHANA POLICE SERVICE

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**Background:** Ghana has recorded significant progress in the fight against HIV over the last decade with current infection rates plateauing around the prevalence of 1.47% among the general population aged 15-49 years.
However, significant challenges exist amongst Key Populations (KPs) with prevalence of 11% (FSW) and 17% (MSM), which plays a key role in the HIV transmission dynamics. Laws criminalizing KP activities stand in the way of progress in addressing HIV. Application of the law is often based on prejudice, and not science/evidence. Lack of enforcement of protective laws is problematic, with increased intolerance and rights violations of sex workers.
**Description:** To promote rights-based policing approaches towards KPs, the Ghana Police Service AIDS Control Program with support from UNFPA implemented orientation sessions in 6 Police Regions. The program targeted 611 police personnel from senior officer (SPO), inspectorate/middle and the operational levels. Sessions were organized through focus group discussions (FGD) to a) solicit information on how the police would identify a Sexual Minority, b) define laws that classify KPs, and c) understand what constitutes causation of sexual offences against public morals. Sensitization sessions immediately followed to address issues arising from the FGDs.
**Lessons learned:** FDGs revealed respondents' appropriate interpretation of the laws ranged from 77% (SPO) to 70% (Inspectorate/Middle) and 38% (operational). Participants could not state key aspects of the law in the Criminal Offences Act. Discussants dwelt on perceptions (including the way of dressing) rather than facts regarding the causation of sexual offence; with appropriateness of responses ranging from 63% (Inspectorate/middle) to 59% (SPO) and 41% (operational). After sensitization sessions, participants accepted the need for reform and observed:
a) senior officers who protect rights of KPs are compelled to arrest them due to political/societal pressure,
b) morality should be decoupled from law enforcement,
c) police must constantly dialogue with the judiciary to protect KP rights.
**Conclusions/Next steps:** Acceptance of misconduct is a major breakthrough to reform. This program, with approval of the Police hierarchy is taking steps to punish subsequent perpetrators of abuse of KPs. Consensus building among the police and efficient use of available resources will help to sustain the program.

## FRAD0105

### NOTHING ABOUT US WITHOUT US: COMMUNITY-BASED ACTION RESEARCH TO ENSURE HIV POLICY IN THE U.S. REFLECTS THE EXPERIENCES AND NEEDS OF SEX WORKERS

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**Background:** The project includes advocacy and organizing efforts led by US sex workers and the production of a series of reports to reveal how current HIV policies impact sex workers. An overarching goal of the project is to ensure that sex workers are acknowledged in the National AIDS Strategy as essential partners in ending HIV and to consider the impact of US policy on sex work worldwide.
**Description:** The project is multi-pronged involving community building, documentation and advocacy. In 2015 a community based research team was established with key partner organization of sex worker lead groups. A survey was implemented with 25 US respondents about transgender people's experiences related to HIV. The emerging issues were explored with 40 respondents in open-ended interviews in person, phone, or email, ranging from 30 minutes to two hours. The team used statistical and thematic analysis of the qualitative data. Throughout 2015 team members built their capacity to engage in policy and media advocacy, developing a letter to the Office of National AIDS Strategy in partnership with other groups and created statement that were distributed widely in the media and the HIV sector.
**Lessons learned:** The project findings include:
- that sex workers are not mentioned in the National AIDS Strategy of the United States, a silence that has contributed to a profound health and rights crisis for sex workers and people profiled as sex workers (such as transgender people)
- the criminalization of the lives of sex workers is the central barrier to health and rights
- the movement for sex worker rights in the United States is incrementally developing its capacity to effectively shift policy discourse and to publicize best practice initiatives via media interventions
- ongoing resources are required to begin to establish employment opportunities in sex worker-led organizations in the United States for sex workers and transgender people to build for change in the HIV sector

**Conclusions/Next steps:** This project is a milestone releasing the first US national report ever created by sex workers to confront the impact of outmoded and restrictive HIV policies. The project continues documenting the experiences of sex workers to guide our future work.

## FRAD0106LB

### INTERIM OUTCOMES OF THE NEW YORK PLAN TO END THE AIDS EPIDEMIC BY THE END OF 2020: ASSESSING A FAST TRACK MODEL

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**Background:** In 2014 a coalition of government and civil society representatives secured a commitment by New York State's (NYS) Governor to end AIDS as an epidemic by the end of 2020. NYS has defined the end of the epidemic as reducing the number of new HIV infections to just 750 [from an estimated 3,000] by the end of 2020. Once the number of new infections has fallen below all-cause mortality among people with HIV, NYS will achieve the first ever decrease in HIV prevalence in New York State.
**Methods:** A state-appointed Task Force of government and community stakeholders developed a detailed Ending the Epidemic (ETE) Blueprint to: identify persons who remain undiagnosed; link and retain diagnosed persons in care to maximize viral suppression; and broaden access to Pre-Exposure Prophylaxis (PrEP). The Blueprint builds upon a unique NYS HIV response that includes housing and nutrition supports, harm reduction programming, and social marketing to address stigma and promote testing, treatment and prevention. Public health agencies work closely with civil society to implement this Fast Track agenda, and an online "ETE Dashboard" tracks key metrics for accountability and planning.
**Results:** In NYC, which represents 80% of new diagnoses and persons living with HIV in NYS, HIV surveillance data indicate that 72% of an estimated 87,000 persons infected with HIV are virally suppressed (≤200 copies/ml), and findings from a multi-year survey of men who have sex with men (MSM) show PrEP awareness at 86% in 2015 (up from 34% in 2012) and PrEP use among MSM at 16% (up from 1.6% in 2012 and 2.8% in 2014). NYS has documented a 40% reduction in new HIV infections over the last decade, and preliminary data shows NYS recently went 17-months with no new cases of mother to child transmission for the first time since the outbreak of the disease.
**Conclusions:** Recent analyses indicate significant ongoing improvements in HIV treatment effectiveness and in comprehensive prevention awareness and use, putting New York on a path to end its HIV epidemic by the end of 2020 via replicable strategies to dramatically reduce new HIV infections and end AIDS deaths.

# FRAD02 CHALLENGING INTELLECTUAL PROPERTY REGIMES IN HIV AND HCV

## FRAD0201

### EMPIRICAL IMPACT OF CONSTITUTIONAL RIGHTS PROTECTIONS ON HIV-RELATED HEALTH SYSTEMS AND AVAILABILITY OF ESSENTIAL MEDICINES

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**Background:** While there is much support among ethicists for a "rights based" approach to HIV treatment, care and prevention, there is also significant social science debate about the real-world effects of enshrining health as a right within national legal frameworks. Rights protection might empower populations to demand quality access to critical HIV services. Or, as critics argue, engaging law and courts might have no real impact or, at worst, distort policy away from public health goals toward individual club-goods for those with access to lawyers. This research empirically tests the hypothesis that protecting health as a right improves access to HIV treatment and quality of service provision in the public health setting.
**Methods:** This study uses a mixed-methods political economy approach with two nested stages based on a large-N dataset and 125 in-depth interviews conducted in South Africa, India, and Thailand. A dataset coding all written constitutions in the world from 1970-2010 for an enforceable right to health was analyzed as a variable in a multi-level regression (OLS, FGLS, and ADL models) against variables capturing the common social, economic, and political explanations for cross-national variation in mortality and public goods provision. The results of this analysis were then tested against data gathered in "process tracing" interviews and archival research to identify causal mechanisms for the impact of rights on health services.
**Results:** This study finds an empirically visible, significant, positive impact of protecting health as a constitutional right on the level, quality, and accessibility of HIV-related health services including access to antiretroviral therapy. A small, but statistically significant impact can be quantified on the availability of HIV- and non-HIV-related essential medicines, out of pocket expenses, and health workforce. Qualitative evidence shows that constitutionalizing health shifts the political economy of HIV by providing an avenue to challenge failures in health governance at the national and local level and, contrary to worries of upper/middle-class capture, has been largely utilized to improve quality and accessibility of public services.
**Conclusions:** Protecting health as a right and building the institutional capacity to enforce that right should be understood as an important HIV and health-system strengthening intervention.

## FRAD0202

### THE FREE TRADE AGREEMENT THAT WILL ADVERSELY IMPACT ACCESS TO GENERIC MEDICINES IN THE ASIA-PACIFIC...AND NO, IT'S NOT THE TPP!

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**Background:** Regional Comprehensive Partnership (RCEP) Agreement is between 16 countries in Asia-Pacific: developed countries (Japan,Australia,NewZealand,Singapore,South Korea), developing countries (China,India,Malaysia,Indonesia,Philippines,Thailand,Vietnam,BruneiDarussalam) & LDCs (Myanmar,Cambodia,Laos). Scale-up of HIV treatment was only possible due to affordable generic medicines which have been adversely impacted by the WTO-mandated patent-regime. Developing&leastdeveloped countries are advised to use TRIPS flexibilities to ensure continued generic production/import. TRIPS-plus measures that are included in FTA negotiations require patent protection far in excess of that required by the WTO regime.
**Methods:** The study examined 4 leaked texts of the IP proposals of Japan, South Korea, India &ASEAN to identify TRIPS-plus demands. It also compiled the use of TRIPS flexibilities by countries in the region &analysed the changes that would be required as a result of TRIPS-plus demands and their potential impact on access to generic medicines in the region and beyond.
**Results:** The Study found multiple TRIPS-plus demands in the RCEP negotiations including: (a)Substantive demands requiring governments patent news uses/forms of old medicines (evergreening); (b)Enforcement demands that would impact the export and transit of generic medicines; (c)Demands limiting the ability of patent offices to require crucial information from patent holders; (d)Demands impacting LDCs. TRIPS-plus demands prevent countries from using TRIPS flexibilities. In the region, Malaysia(2003), Indonesia(2004,2007,2012),Thailand(2006,2008), India(2012) have issued compulsory licenses for HIV, heart disease, cancer medicines. India, Philippines &Thailand restrict evergreening patents. RCEP countries feature some of the most important generic producers that the world relies on like China(API) &India(API, finished formulations) while Thailand has government production of medicines. If TRIPS-plus in RCEP is accepted, repercussions will be felt far beyond Asia-Pacific.
**Conclusions:** 1-in-3 PLHIV have access to treatment in Asia-Pacific. HIV-positive pregnant women in South Asia have the world's lowest rate of access to ARVs needed for PMTCT. In several countries (China,Indonesia,Philippines) rates of new infections & AIDS-related deaths are increasing. As middle-income, developing countries are facing severe funding cuts from Global Fund, MNC pharma is withdrawing lower prices/excluding from voluntary licenses. RCEP will make a bad situation worse and TRIPS-plus demands should be rejected outright &countries should pro-actively make greater use of TRIPS-flexibilities to ensure access to generic HIV, hepatitisC and TB treatment.

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## FRAD0203

### ACCESS TO ARVS AND SOUTH AFRICAN PATENT LAW REFORM: REFLECTION AND WAYS FORWARD FOR THE FIX THE PATENT LAW CAMPAIGN

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**Background:** Over the past 15 years, South Africa has been a pioneer of expanding generic medicine access, with constant battles led by civil society advocates to challenge patent monopolies of pharmaceutical companies that block sustainable access to affordable ARVs. Yet, in South Africa, many access challenges for newer ARVs and other medicines needed by people living with HIV remain, while ongoing patent law reform has triggered intensive debates and advocacy.
**Description:** This research will examine strategies pursued by civil society organisations in South Africa over the past 15 years, their impact on medicines access and lessons learned. It will further review the ongoing reform of South Africa's intellectual property (IP) system, and the opportunities and challenges to adopting pro-public health patent laws.
**Lessons learned:** Over the past 15 years, significant victories have been won through strategies employed by civil society organisations to secure access to generic ARVs in South Africa, including filing competition commission cases and calling for the granting of compulsory licenses. Today, a first line ARV regimen is 96% cheaper than in 2000, supporting the scale-up of treatment.
However, fighting access battles drug-by-drug on an *ad hoc* basis has not changed systemic problems, such as current patent law lacking accommodation of public health needs. Seeking to adopt a more systemic approach to improve accessibility of medicine for all, the Fix the Patent Laws Coalition was founded in 2011, with 18 patient groups joining to date. During 2013, the South African government released a draft policy committing to pro-public health reform of the country's intellectual property laws. Pharmaceutical companies have responded with various attempts to derail such reform.
**Conclusions/Next steps:** South Africa is at a critical stage in the ongoing battle for access to medicine versus expanding intellectual property protection. While there is opportunity for broad legislative reform to facilitate access to newer ARVs and all medicines there is significant push back from pharmaceutical companies. Fix the Patent Laws Coalition's experience demonstrates the need for greater international solidary and coordination with adequate technical and political support in reforming the national patent laws for public health and pushing back on pharmaceutical companies' effort to thwart reform.

## FRAD0204

### REMOVING GLOBAL PATENT BARRIERS TO THE NEW GENERATION OF HEPATITIS C DRUGS

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**Background:** Globally, at least 4-5 million people living with HIV (PLHIV) are co-infected with the hepatitis C virus (HCV). As other AIDS-related deaths decrease with increased ART use, the burden of HCV-related morbidity and mortality in PLHIV has become the leading cause of death. HCV can be cured in 12 weeks or less by combinations of highly effective direct-acting antivirals (DAAs), but access to these drugs is virtually non-existent in low- and middle-income countries (LMICs).
Non-sub Saharan African (non-SSA) MICs are excluded from discount programs and voluntary licenses, resulting in prices significantly higher than generics. Patent laws often do not have sufficient safeguards to enable generic access. DAA/ARV voluntary licenses restrict generic suppliers from providing treatment to over 40 MICs, including those with the highest number of people living with HCV. With the branded company as the only option, lack of competition keeps DAA prices out of reach for non-SSA MICs, whose governments are unable to fund treatment at the high branded prices.
**Description:** This presentation will discuss the coordinated global legal effort to challenge patents on key DAAs, with a special focus on Sovaldi, known by its generic name sofosbuvir. This case study will share the scientific and legal basis for patent challenges, raise important questions about innovation and access, explain civil society's rationale and process for challenging patents, showcase new impact analysis and conclude with recommendations for the way forward.
**Lessons learned:**
1) Utilizing patent challenges as strategy to address treatment gap has proven successful
2) Community networks have significant capacity to take patent work forward
3) Government intervention is a necessary parallel strategy to curtailing the problem of drug pricing in developed and developing countries
**Conclusions/Next steps:**
1) Simultaneous coordinated patent challenges is the most effective strategy to combat the exclusion of MICs from access programs and voluntary licenses, which increases pressure on pharmaceutical companies, but also strengthens the position of country patent offices and governments in addressing patents and public health.
2) Only by challenging these patents, through stronger patent examination and patent challenges, can there be real change in addressing the challenges facing the current patent system and public health.

## FRAD0205

### ACCESS TO ANTIVIRAL DRUGS FOR TREATING HCV FOR HIV-POSITIVE PATIENTS IN RUSSIA: RESULTS AND RECOMMENDATIONS OF THE REGISTRATION, POLICY AND PROCUREMENT ANALYSIS

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**Background:** The number of people with HCV in Russia is 5 million based on expert estimates. At least 200,000 people are co-infected with HIV and HCV. Treatment of chronic hepatitis C should be provided free of charge for the HIV/HCV co-infected patients within the framework of the national programme for HIV, HCV and HBV. "Treatment Preparedness Coalition" analyzed the regulatory framework and data on the procurement of HCV drugs to understand the scope and nature of HCV treatment provided for HIV/HCV coinfected people.
**Methods:** We used the data of the website grls.rosminzdrav.ru to identify HCV drugs registered in Russia (December 2015). Then, we compared the results with the list of drugs in the decree on financing the procurement of HIV/HCV/HBV drugs (Decree No 1438). Then, we analyzed 850 contracts for HCV drugs concluded in 2015. The analysis included 3 non-proprietary names of pegylated interferon (PEG-IFN) and 4 non-proprietary names of antiviral drugs (DAAs).The number of patients was calculated by diving the total amount of items purchased by the recommended daily dose and treatment duration.
**Results:** In 2015, the following DAAs were registered in Russia: simeprevir; daclatasvir; asunaprevir; paritaprevir/ritonavir, dasabuvir, ombitasvir; telaprevir; and boceprevir. 3 international non-proprietary names of PEG-IFN were registered (December 2015): PEG-IFN alpha-2a, PEG-IFN alpha-2b and Ce-PEG-IFN alpha-2b. The list of drugs in Decree No 1438 included only the three pegylated interferons. The other drugs were purchased using funds allocated for other groups of patients, including monoinfected patients.
In total, approximately 600 patients could receive interferon-free therapy. The total number of patients who could receive DAA-based therapy with interferon, including interferon-free therapy, is approximately 1000. The price for the treatment course of DAAs is in the range of 10,000 - 12,000 USD. The number of patients receiving pegylated interferon is in the range of 4500-9000 (depending on the treatment duration).
**Conclusions:** the majority of HIV/HCV coinfected patients still receive PEG-IFN-based therapy. In our opinion, this is mostly due to high price of DAAs. Some preferred options for treating HCV are still not registered in Russia, including sofosbuvir and sofosbuvir/ledipasvir. None of the DAAs are included in Decree No 1438.

## FRAD0206

### COMPULSORY LICENSING AS AN ONGOING ALTERNATIVE: COMPARING PRICE NEGOTIATIONS FOR LOPINAVIR/RITONAVIR (LOP/R) AND EFAVIRENZ (EFV) IN BRAZIL

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**Background:** Brazil's AIDS response has been cited as the developing world's largest and most innovative AIDS treatment program, but has been facing challenges due to budget cuts and political instability in recent years. In the 2000s, Brazil took controversial decisions to reduce the cost of providing free access to ARVs, such as price negotiations of patented drugs with multinational pharmaceutical companies and, for the first time in Latin America, launched compulsory licensing (CL). This study compares the price negotiations of LOP/r and EFV, as well as the underlying mechanisms that may explain the decision to grant CL for EFV but not for LOP/r.
**Methods:** We used a chronological policy-analysis narrative. This study profits from first-hand empirical data collected in 2012/15, including governmental documents (e.g. legislation, congressional speeches and debates, etc.), newspaper articles, and 20 interviews with key informants.
**Results:** In 2003, LOP/r and EFV, represented 37% of total ARVs expenditure in Brazil. Between 2001 and 2005, procurement of LOP/r surpassed EFV in terms of costs and purchase volume. LOP/r was crucial for 2nd line treatment as it reduces the number of pills/per day and side effects. Given the costs associated with LOP/r and EFV and the failed negotiations with their producers, the MoH declared both medicines "of public interest" in 2005 and 2007, respectively. However, CL was issued just for EFV. The negotiations of LOP/r were conducted with little participation of civil society and public laboratories, and in a context of institutional transition in the MoH. On the other hand, the negotiation of EFV was coordinated by MoH industrial policy experts, by the then newly created Secretary of Science, Technology and Strategic Health Inputs, in close collaboration with civil society and local producers. After importing generic copies of EFV, Brazil developed an innovative public-private partnership to produce EFV domestically.
**Conclusions:** The generalizability of these findings depend on other countries' intellectual property regimes and differing capacities for local drug production. Lessons from Brazil's experience shows that civil society support has been key in price negotiations and that cooperation between local manufactures may foster new opportunities for generic ARVs development.

## FRAE01 PREPPED FOR PREP

## FRAE0101

### AN EXPLORATORY ASSESSMENT OF THE FEASIBILITY AND ACCEPTABILITY OF HOME-BASED SUPPORT TO STREAMLINE HIV PRE-EXPOSURE PROPHYLAXIS (PREP) DELIVERY

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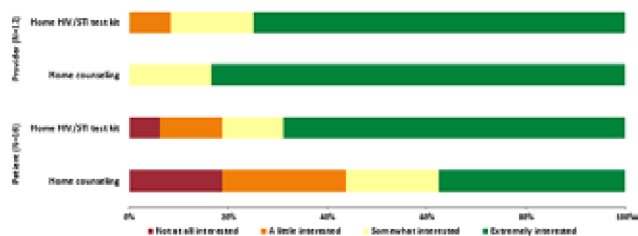
**Background:** PrEP is highly efficacious in preventing HIV transmission. The US Centers for Disease Control and Prevention, the Southern African HIV Clinicians Society, and the European AIDS Clinical Society recommend quarterly HIV and periodic STI screening for those on PrEP. The burden of indefinite PrEP follow-up visits is high for providers, patients, and the healthcare system. A home-based testing system could greatly streamline PrEP delivery and facilitate rapid scale-up.
**Methods:** We conducted in-depth interviews and exit surveys in San Francisco, Boston, and Atlanta with 12 medical providers and 16 participants, exploring the acceptability of a PrEP home care system that would be used in lieu of 1-3 of the quarterly provider visits per year. Participants were shown kit mock-ups and self-collected all specimens. Providers were shown laboratory and behavioral results from mock-ups. We discussed with all their interest in, willingness to use, and concerns regarding a home care kit for PrEP. We also conducted a brief exit survey.
**Results:** Participants and providers had favorable reactions to the kit, with some participants less enthusiastic about home counseling because they felt it unnecessary (Figure). 15/16 participants were able to self-collect all specimens necessary to conduct standard tests for HIV, STI, and renal function. Across specimen collection methods, only 2/16 participants rated any as "difficult" or "very difficult." One representative participant noted, "I would highly encourage this to be out in the world" and a provider noted, "I think it's great ... we have to decentralize (care)."
**Conclusions:** There is strong interest in a PrEP home care system from both MSM on PrEP and providers prescribing PrEP. With a mocked-up kit, specimen collection was feasible and largely acceptable. Future research is needed to pilot test the home care kit in an unsupervised setting to determine adequacy of sample collection and acceptability of the overall home care system.




*[Provider and patient interest in a PrEP home testing system and home counseling system]*

## FRAE0102

### GOOD ADHERENCE IN TRIAL OF TOPICAL PRE-EXPOSURE PROPHYLAXIS INTEGRATED INTO FAMILY PLANNING SERVICES

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**Background:** Evidence guiding scale-up of pre-exposure prophylaxis (PrEP) in African women is required for implementation of new WHO guidelines. The CAPRISA 008 trial, which provided participants from CAPRISA 004 with post-trial access to tenofovir gel, assessed adherence and effectiveness of PrEP provision integrated into family planning (FP) services.
**Methods:** CAPRISA 008 was a 36-month, two-arm, open-label, randomized controlled, non-inferiority trial. Eligible women (n=372) were randomly assigned to receive tenofovir gel at clinical trial clinics (n=183) or at FP clinics (n=189). Adherence, retention, HIV incidence and service preference were assessed.
**Results:** At baseline, women assigned to trial and FP clinics were similar and study retention rates were 92.3% and 92.1% respectively. Adherence (% reported sex acts covered by 2 gel doses) was 73.9% (95% confidence interval (CI): 70.7-77.1) in trial clinics and 79.9% (CI: 76.7-83.2) in FP clinics. Higher adherence (mean difference=6.0% [CI: 1.5-10.6]) in FP clinics met the pre-defined non-inferiority criteria. Mean monthly sex acts and returned empty applicators were 4.5 (CI: 4.0-5.0) and 6.0 (CI: 5.5-6.5) in trial clinics compared to 3.6 (CI: 3.2-4.1) and 5.2 (CI: 4.7-5.7) in FP clinics respectively. Genital tenofovir was detected at one year in 68/156 women (43.6%; CI: 36.1-51.4) at trial clinics and 62/157 women (39.5%; CI: 32.2-47.3) at FP clinics (p=0.492). Adjusting for peri-coital gel use, genital tenofovir was detected in 58.3% of 139 women reporting sex within 7 days but only in 28.2% of 174 women reporting no recent sex. HIV incidence was 3.6 per 100 women years (wy) (CI: 1.9-6.3) in trial clinics and 3.5 per 100 wy (CI: 1.8-6.0) in FP clinics (p=0.928). Overall HIV incidence rate was 44% lower than in an age-comparable historical CAPRISA 004 placebo control group (3.5 vs 6.2 per 100 wy). At study exit 75.1% and 80.3% of women from trial and FP clinics expressed preference for receiving PrEP from FP clinics.
**Conclusions:** Integration of topical PrEP into FP services for African women is feasible, acceptable and achieves adherence equivalent to a clinical trial setting, providing evidence for PrEP scale-up using this strategy for this challenging high-priority population.

## FRAE0103

### EXPERIENCES OF PREP DISCONTINUATION IN AFRICAN HIV SERODISCORDANT COUPLES: QUALITATIVE RESULTS FROM THE PARTNERS DEMONSTRATION PROJECT

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**Background:** Public health programs worldwide are considering new WHO guidelines recommending antiretrovirals (ART) as pre-exposure prophylaxis (PrEP) for all individuals at substantial risk for HIV. Unlike ART, PrEP is taken by uninfected individuals during limited periods of high risk exposure, and discontinued when transmission risk is reduced. Understanding user experiences of PrEP uptake and discontinuation will inform future implementation efforts. Using qualitative data from the Kampala, Uganda site of the Partners Demonstration Project, we describe user preferences for PrEP use and discontinuation.
**Methods:** The Partners Demonstration Project was a prospective implementation study that evaluated an integrated strategy for delivering PrEP and ART to HIV serodiscordant couples. HIV-uninfected partners discontinued PrEP when ART had been taken by infected partners for six months. In-depth interviews were conducted with 48 serodiscordant couples from the Project. Interview topics included understandings of PrEP, adherence, and experiences of PrEP use and discontinuation. Interviews were inductively analyzed to identify themes reflecting PrEP use and discontinuation. Categories representing themes were developed and organized sequentially to describe user preferences for discontinuing PrEP.
**Results:** Initially, participants expressed doubts about taking PrEP. However, as PrEP use became routine, users gained confidence in PrEP's capacity to protect them against HIV infection. PrEP gave uninfected individuals a newfound sense of control over their prevention methods, and ultimately, their health. When PrEP was discontinued, some users felt once again vulnerable to HIV acquisition. Reasons for this heightened sense of risk included lack of confidence in ART to prevent transmission, doubts about partners' adherence to ART and fear of risk through unprotected sex outside the partnered relationship. Most users preferred to remain on PrEP or be given the opportunity to reinitiate PrEP in the future.
**Conclusions:** Uninfected partners in HIV serodiscordant relationships offered PrEP as part of an integrated PrEP and ART delivery strategy preferred to exercise control over their prevention choices. Resistance to discontinuing PrEP may present a challenge to efficient and effective implementation of PrEP in public health settings of resource scarcity. Messaging about PrEP discontinuation should include explanations of how ART prevents HIV transmission after PrEP is discontinued, while also addressing user concerns about risk.

## FRAE0104

### ELIMINATING BARRIERS TO INCREASE UPTAKE OF PREP IN A COMMUNITY-BASED CLINIC IN SAN FRANCISCO

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**Background:** The US Food and Drug Administration approved Pre-Exposure Prophylaxis (PrEP) for HIV prevention in July 2012. As demand for PrEP increased in San Francisco, barriers to access surfaced: lack of provider knowledge of PrEP, finding a culturally competent provider, issuance of same-day prescriptions, and coverage of laboratory and medication costs. San Francisco AIDS Foundation (SFAF) launched a PrEP program in 2014 to address barriers, increase access, and reduce new HIV infections among MSM.
**Description:** The program, led by Nurse Practitioners, leverages Registered Nurses and volunteer HIV test counselors (HTC) trained to provide culturally competent care. Clients self-refer or are referred by HTC. NPs perform a full medical evaluation and PrEP counseling, addressing adherence and stigma. Utilizing point-of-care HIV and chemistry testing, clients initiate PrEP the same-day. Follow-up visits are conducted by RNs, providing ongoing PrEP and adherence counseling. Abnormal lab results are referred to the NP for evaluation. MDs are available for consultation as needed.
Benefits Navigators work with medically eligible clients to access PrEP through applying for full-assistance programs, activating copay cards, and initiating health insurance. Navigators interface with insurance companies when clients are met with barriers. There is no cost for the lab work and evaluation services. With the available benefit programs, most clients obtain PrEP at no or very low cost.
**Lessons learned:** Between November 2014 and January 2016, 797 participants enrolled in the program and 95% received a prescription for Truvada. 89% reported condomless anal sex in the past 12-months. 69% were Caucasian, 22% Latino/Hispanic, 6% African-American, and 11% Asian/Pacific Islander. Mean age was 34.4 years. 25% were treated for an STI at enrollment.
There were no new HIV infections among participants in the PrEP program. Comparatively, the clinic diagnosed 54 new HIV infections among men not enrolled in the program during the same time period.
**Conclusions/Next steps:** A community-based organization, led by NPs, RNs, benefits navigators, and HTCs can determine if clients are medically eligible to begin PrEP, assist with identifying and addressing barriers to accessing PrEP so clients can safely initiate medication the same-day, contributing to fewer HIV diagnoses among MSM in San Francisco.

## FRAE0105

### EXPANDED PREP IMPLEMENTATION IN COMMUNITIES IN NSW, AUSTRALIA (EPIC-NSW): EVIDENCE-BASED IMPLEMENTATION STUDY

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**Background:** In New South Wales (NSW) Australia, the new HIV Strategy 2016-20 aims to virtually eliminate HIV transmission by 2020 and HIV pre-exposure prophylaxis (PrEP) is identified as a key tool. A partnership of key NSW government, community, medical and research organisations has taken an innovative approach to rapid scale-out of PrEP implementation and evaluating the strategy. We describe PrEP implementation issues, innovative solutions and evidence-based design of the NSW PrEP implementation study.
**Description:** The number of people meeting the PrEP-eligibility risk criteria, defined in the existing NSW PrEP guidelines, was estimated using data from previous Australian studies to be 3700. Calculations of HIV transmission probability by behavioural risk factor estimated that new HIV diagnoses in NSW would be reduced by ~50% in 12 months by preventing infection in these people with PrEP. The NSW partnership designed the Expanded PrEP Implementation in Communities in NSW (EPIC-NSW) study which aims to provide PrEP to all 3700 people and evaluate PrEP implementation within the new HIV strategy. The study features:
1) large-scale, rapid roll-out (March-September 2016);
2) real-life implementation (service procedures per guidelines);
3) innovative data collection with minimal burden on health services (extraction and ongoing linkage of data from clinical data collection systems);
4) cumulative follow-up of 7400 person-years, and
5) assessment of the trial impact on HIV incidence in the cohort and the general population.
We will report on EPIC-NSW design features and roll-out and estimated impact on HIV incidence.
**Lessons learned:** Mobilisation and partnership of the entire HIV sector is crucial for rapid PrEP roll-out and beneficial for establishing access to PrEP. An evidence-based approach, community mobilisation and creative use of available data sources enable efficient and effective implementation and evaluation of public health strategies.
**Conclusions/Next steps:** EPIC-NSW is the only PrEP implementation trial internationally aimed at monitoring PrEP impact at the population level. Data from this study will evaluate the state HIV prevention strategy and PrEP contribution in reaching the goal of virtually eliminating HIV by 2020. The design and results of this trial will inform policy, investment, community education and interventions in other similar settings internationally.

## FRAE0106LB

### OPTIMIZING THE FREQUENCY OF KIDNEY SAFETY MONITORING IN HIV-UNINFECTED PERSONS USING DAILY ORAL TENOFOVIR DISOPROXIL FUMARATE PRE-EXPOSURE PROPHYLAXIS

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**Background:** Optimal kidney safety monitoring is a key knowledge gap for wide-scale implementation of tenofovir-based pre-exposure prophylaxis (PrEP) for HIV prevention. We compared 6-monthly to 3-monthly kidney monitoring for the occurrence of clinically relevant decline in creatinine clearance (CrCl; < 60 mL/minute).
**Methods:** Data were from two prospective PrEP studies in Kenya and Uganda: the Partners Demonstration Project (n=955), a recently completed open-label study that used 6-monthly serum creatinine monitoring to estimate creatinine clearance, and the Partners PrEP Study, a placebo-controlled trial that used 3-monthly monitoring (n=4404 receiving PrEP, n=1573 receiving placebo). CrCl ≥60 mL/minute was required for enrollment in both studies.
**Results:** With 6-monthly monitoring, the cumulative proportion of participants with unconfirmed CrCl < 60 mL/minute was 0.7% at Month 6 and 1.1% at Month 12, affecting 10 (1%) participants; 2 of these (0.2% overall) had CrCl < 60 mL/minute confirmed on repeat testing, both at Month 6. With quarterly monitoring, the cumulative proportion of participants with unconfirmed CrCl < 60 mL/minute was 1.4% at Month 3, 2.0% at Month 6, and 2.7% at Month 12, affecting 120 (2.7%) participants; 29 of these (0.7%, overall) had CrCl < 60 mL/minute confirmed on repeat testing [cumulative proportion: 16 (0.4%), 21 (0.5%), and (0.7%) at Months 3, 6, and 12, respectively]. The corresponding cumulative frequency of confirmed CrCl < 60 mL/minute in the placebo group was 0.3% at Month 3 and 0.3% at Month 6. Of the 29 participants experiencing confirmed declines in the Partners PrEP Study, 28 (97%) had baseline CrCl 60-90 mL/minute, 19 (66%) were aged ≥45-years, and 16(55%) had baseline weight ≤55 kg (adjusted p< 0.05).
**Conclusions:** In these two large cohorts of HIV-uninfected persons using PrEP, the occurrence and pattern of clinically relevant decline in CrCl were not qualitatively different based on quarterly or 6-monthly CrCl monitoring. Most measurements of CrCl < 60 mL/minute did not confirm on repeat testing. These data suggest that 6-monthly CrCl monitoring could be equally safe and require fewer resources for a majority of persons receiving PrEP, with more frequent monitoring potentially indicated for those with specific risk factors (older age, lower baseline CrCl, lower weight).

## FRAE02 DIFFERENTIATED CARE: FINDING THE BEST FIT

## FRAE0201

### SIX-MONTHLY APPOINTMENTS AS A STRATEGY FOR STABLE ANTIRETROVIRAL THERAPY PATIENTS: EVIDENCE OF ITS EFFECTIVENESS FROM SEVEN YEARS OF EXPERIENCE IN A MÉDECINS SANS FRONTIÈRES SUPPORTED PROGRAMME IN CHIRADZULU DISTRICT, MALAWI

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**Background:** HIV clinics are struggling to absorb new patients in Malawi, and over-burdened health-workers and long waiting times can be detrimental to adherence. We evaluated a strategy of six-monthly appointments (SMA) for stable ART patients in Chiradzulu District, Malawi, where Medecins sans Frontieres is supporting the Ministry of Health's HIV programme.
**Methods:** Stable patients (aged ≥15, on first-line ART ≥12 months, CD4 count ≥300 and without opportunistic infections or ART intolerance, not pregnant or breast-feeding) were eligible for clinical assessments every 6 months instead of 1-2 months at 11 HIV clinics. Early SMA enrolees were defined as patients who started SMA within 6 months of eligibility, late SMA enrolees were those starting >6 months after eligibility.
Kaplan-Meier methods were used to calculate cumulative probabilities of death and loss to follow-up (LTFU) among those eligible for SMA, stratifying by SMA enrolment status and baseline characteristics. Cox regression, using SMA enrolment as a time-dependent variable, was used to estimate crude and adjusted hazard ratios for the association between SMA and death or LTFU.
**Results:** Between 2008 and 2015, 18,957 individuals were eligible for SMA (contributing 43,888 person-years of observation), of whom 15,308 (80.8%) ever enrolled. Median time from SMA eligibility to enrolment was 6 months (interquartile range 0-17 months). The cumulative probability of death or loss to follow-up five years after first SMA eligibility was 56.3% (95% CI: 52.4-60.2%) among those never SMA enrolled; 13.9% (95% CI: 12.5-15.6%) among early SMA enrolees and 8.1% (95% CI 7.2-9.0%) among late SMA enrolees.
After adjusting for age, gender, year of first SMA eligibility, and other baseline variables (CD4 count, months on ART and in cohort), a significantly higher rate of death or LTFU was observed among patients during non-SMA periods compared to those during SMA periods (adjusted rate ratio: 1.87, 95% CI 1.68-2.08, p< 0.001).
**Conclusions:** SMA represents a promising strategy for managing stable ART patients and should be rolled out, particularly with "test and treat" on the horizon, which will further stretch HIV clinics. However, further implementation research is needed, and selection biases which may explain poor retention among those eligible but never SMA-enrolled should be investigated.

## FRAE0202

### IMPROVED SURVIVAL AND RETENTION IN HIV TREATMENT AND CARE: THE VALUE OF COMMUNITY ART GROUPS FOR HIV PATIENTS ON ART IN RURAL NORTHERN MOZAMBIQUE

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**Background:** Community ART Groups (CAG) allow patients to pick up medication on a rotational basis and have been implemented as a strategy to improve adherence of HIV-positive patients on combination antiretroviral therapy (ART) in Mozambique. Participation in a CAG is voluntary but guided by inclusion criteria. The purpose of this analysis was to review the association between baseline characteristics and joining a CAG, and to examine the benefit of CAGs on mortality and lost to follow-up (LTFU).
**Methods:** This observational study was conducted in Ancuabe, Mozambique. We included all HIV-positive adults (≥15 years) starting ART 2010-2015, that met the CAG eligibility criteria (non-pregnant, follow-up ≥6 months). Multivariable logistic regression was used to examine associations between joining a CAG and the baseline characteristics sex, age, WHO stage and CD4 cell count at baseline as well as the total days late for appointments within the first six months before being eligible for CAG-participation. Mortality rates and the risk of being LTFU between CAG-participants and non-participants were examined using cox proportional hazards regression, adjusted for all baseline covariates.
**Results:** 1306 patients were included (62.9% female) with a median CD4 cell count of 257 cells/µL (interquartile range [IQR] 149-352), a median age of 33.1 years (IQR 26.2-41.3) and a median of 23 days late within first six months (IQR 6-49). During 2866 person-years, 10.5% of patients died, 22.6% were LTFU and 13.8% joined a CAG. The odds of joining a CAG were increased by female sex (odds ratio [OR] 1.73, 95%-confidence interval [CI] 1.21-2.46) and an older age (OR 1.02 95%CI 1.01-1.03); no other baseline covariate showed a significant association with CAG-participation. CAG-participation reduced the mortality rate by 55.1% (adjusted hazard ratio [aHR] 0.449, 95%CI 0.264-0.762), and the risk of being LTFU by 84.3% (aHR 0.157, 95%CI 0.086-0.288).
**Conclusions:** Patients that were in a CAG did not have significantly different baseline CD4 cell count or adherence to appointments in the first 6 months of treatment than those not entering a CAG, however despite this CAG-participation remarkably lowered the risk of both being LTFU and dying. These results support the implementation of CAGs in rural settings.

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## FRAE0203

### SEARCH STREAMLINED HIV CARE IS ASSOCIATED WITH SHORTER WAIT TIMES BEFORE AND DURING PATIENT VISITS IN UGANDAN AND KENYAN HIV CLINICS

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**Background:** Long patient wait time is reported as an operational barrier to retention in HIV care in resource limited settings. Patients may perceive waiting several hours to see a clinician for only a few minutes as an unacceptable opportunity cost. The SEARCH HIV test-and-treat cluster randomized trial (NCT:01864603) in 32 rural Ugandan and Kenyan communities is implementing a “streamlined” HIV care delivery model in government supported clinics that aims to reduce wait times to address this problem.

**Methods:** We examined differences in patient wait time before and during clinical visits conducted under “streamlined” and standard government HIV clinic care. Components of streamlined HIV care aimed at reducing wait time included:
(1) nurse-driven triage for patient evaluation;
(2) 3-month ART refills (vs. 1 or 2 month) for stable patients; and
(3) consolidation of services at encounter (ART, phlebotomy, medication dispensing).
We conducted a time-and-motion study of patient clinical visits. We compared mean patient wait time before and during clinical visits among SEARCH study patients with CD4 >500 cells/uL (n=119), SEARCH patients with CD4 < 500 cells/uL (n=234) and other government clinic patients (n=745).

**Results:** Mean visit length was over one hour shorter among SEARCH patients with CD4 >500 cells/uL and SEARCH patients with CD4 < 500 cells/ uL compared to other government clinic patients, even though mean time with providers was similar between groups (see Table). This difference was due to wait times that were >30 minutes shorter both before and during visits. Time spent receiving health education, HIV care, laboratory services, medication dispensing and other services did not differ between patient groups.

| | SEARCH Patients CD4>=500 (hours: minutes) mean (SD) | SEARCH Patients CD4<500 (hours: minutes) mean (SD) | Other government clinic patients (hours: minutes) mean (SD) |
|---|---|---|---|
| Total visit length | 1:08 (1:02) | 1:13 (1:03) | 2:35 (1:33) |
| **Wait time before visit** | **0:21 (0:36)** | **0:28 (0:43)** | **1:13 (1:13)** |
| **Wait time during visit** | **0:19 (0:30)** | **0:23 (0:35)** | **0:58 (1:00)** |
| **Time receiving services** | **0:27 (0:24)** | **0:22 (0:20)** | **0:24 (0:29)** |
| --Health education | <0:01 (0:03) | 0:01 (0:07) | 0:08 (0:21) |
| --HIV care | 0:18 (0:18) | 0:12 (0:11) | 0:08 (0:13) |
| --Laboratory services | 0:03 (0:09) | 0:01 (0:08) | 0:01 (0:08) |
| --Medication dispensing | 0:01 (0:02) | 0:03 (0:07) | 0:04 (0:10) |
| --Other | 0:03 (0:09) | 0:03 (0:09) | <0:01 (0:05) |

*[Mean wait time and time receiving services by patient types]*

**Conclusions:** Streamlined HIV care delivery led to shortened wait times both before and during HIV clinic visits. These efficiency improvements may contribute towards improved retention in HIV care.

## FRAE0204

### IMPLEMENTATION OF COMBINATION ART REFILLS MODELS IN RURAL SWAZILAND

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**Background:** The WHO advocates for differentiated HIV care and considers a broad range of community-based care models for patients stable on anti-retroviral therapy (ART). These care models aim to better respond to patient needs and to alleviate pressure on health systems caused by rapidly growing patient numbers. Most settings, however, utilized a single community-based care model only. We operationalize a combination of community ART care models in public health sector and assessed early outcomes.

**Methods:** Three community ART delivery care models were deployed in the rural Shiselweni region (Swaziland), from 02/2015 to 12/2015. First, Treatment Clubs (TC) are groups of 30 patients stable on ART who meet every 3 months at a secondary health facility for patient education and drug-refills. Second, Community ART Groups (CAG) comprise a maximum of 6 patients who alternate to attend the primary health clinic for consultation and pick up drugs for the other group members. Third, Comprehensive Outreach Care (COC) integrates drug refills into existing mobile clinic outreach activities for geographically isolated communities. We described baseline factors at enrolment,and 6 month retention in community care models and proportion of patients transferred back to routine clinical care.

**Results:** On average, 47 patients enrolled into community-ART care each month: 51.1% into TC
(242 patients in 8 groups), 34.0% in CAG (164 patients in 38 groups) and 14.9% in COC (65 patients in 2 remote communities). All patients had a VL< 1,000 copies/ml, the median CD4 was 512 (TC), 528 (CAG) and 657 (COC) cells/µl (p=0.27), the median age was 40, 40 and 45 years (p=0.11), and 74.8%, 66.5% and 64.6% were females (p=0.03). Retention in care after 6 months was highest in TC (97.5%) when compared to CAG (79.2%) and COC (78.4%) (p< 0.01). 53/471 patients (11.3%) returned back to and were retained in routine clinic care and one (0.21%) was recorded as death in COC.

**Conclusions:** Concurrent implementation of three community ART care models was feasible. Although a proportion of patients returned back to clinic care, overall ART retention was high and should encourage program managers to apply differentiated care models adapted to their specific setting.

## FRAE0205

### PROVISION OF STREAMLINED HIV CARE ASSOCIATED WITH REDUCED ECONOMIC BURDEN OF CARE-SEEKING AMONG HIV-INFECTED ADULTS

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**Background:** HIV-infected adults and their households often face a large economic burden stemming from out-of-pocket health expenditures, clinic transportation costs, and lost from work or usual household activities. In Kenyan and Ugandan communities that began receiving streamlined HIV care (appointment reminders, quarterly visits with patient-centered care providing reduced waiting and overall visit duration) as part of the SEARCH test-and-treat trial, we examined changes in costs incurred by HIV-infected adults over a one year period.

**Methods:** Data were obtained through household surveys administered to a random sample of HIV-infected adults in 32 communities participating in the SEARCH trial (NCT01864603). In the 16 SEARCH intervention communities employing streamlined HIV care, we compared out-of-pocket costs (in US$) and time costs incurred by HIV-infected patients receiving antiretroviral therapy (ART) under standard HIV care at baseline (n=1,230) to costs incurred by a larger sample of patients receiving ART, including those with high CD4 cell counts, under streamlined HIV care one year later (n=1,589). We also examined changes in these costs separately in the three regions of Kenya and Uganda where the SEARCH trial is occurring. Comparison of means was performed using two-sided *t*-tests.

**Results:** Patients receiving ART under streamlined care spent less than half the time seeking and receiving healthcare than adults receiving ART under standard care (4.40 hours per month at baseline vs. 1.78 hours per month at follow-up, p< 0.001). Time spent away from employment or usual activities was also significantly reduced, from 13.0 hours per month at baseline to 8.17 hours at follow-up (p< 0.01). The reductions in time costs were largest in SEARCH intervention communities in Uganda compared to Kenya. Out-of-pocket healthcare and transportation costs incurred by patients did not differ significantly between baseline and one year later ($2.98 and $2.46 in past month at baseline and one year, respectively).
**Conclusions:** Following the introduction of streamlined care for HIV-infected individuals, there was a significant reduction in time spent seeking healthcare and being away from employment and other usual activities. Streamlined care provision may partially reduce the economic burden faced by individuals receiving HIV care and contribute to improvements in patients' employment outcomes and economic well-being.

## FRAE0206LB

### DISCONTINUATION FROM COMMUNITY-BASED ANTIRETROVIRAL ADHERENCE CLUBS IN GUGULETHU, CAPE TOWN, SOUTH AFRICA

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**Background:** Community-based adherence clubs are an attractive model of care for the growing number of stable patients on antiretroviral therapy (ART) in high-burden settings, but little is known about the reasons patients exit these clubs over time.
**Methods:** We used routinely-collected club data linked to a large primary health-care (PHC) clinic. These clubs enrol stable ART patients (>6-12 months on ART with viral suppression and CD4>200) into a lay-counsellor-led programme of 2-4 monthly ART collection, with adherence support, at a community venue. Viral load (VL) monitoring is conducted annually. In analysis, we examined reasons for discontinuation from clubs over time, while proportional hazards models were used to examine risk factors for lost to follow-up (LTF), defined as >6 months without a club visit before the end of November 2015 without an alternate outcome.
**Results:** Between June 2012 and October 2015, 3359 patients entered a club (median age, 37 years; 71% female; median duration of ART use, 3.5 years). 4% of all club visits resulted in a referral of patients by counsellors back to the PHC for review by a nurse or doctor; these were usually due to a clinical comorbidity (primarily TB, diabetes or hypertension), defaulting ART, or elevated VL. Rates of death, transfer out, and LTF from the clubs were 0.3, 0.9, and 9.4 per 100 person-years in the clubs, respectively. After three years of club operations, 26% of patients were LTF; independent of gender, LTF was increased in patients < 25 years of age (hazard ratio, 1.7; 95% CI: 1.2-2.5). In the subset of patients who had VL monitoring, prior raised VL in the clubs was strongly predictive of subsequent LTF (HR, 4.4; 95% CI: 2.9-6.7). There was no association between time on ART before entry into clubs and either referral back to clinic or LTF (p=0.921).
**Conclusions:** Referrals of stable ART patients from counsellor-led, community-based adherence clubs back to PHC are an important feature of community-based care, and expanding this model of care to include common co-morbidities may reduce these referrals. While the majority of patients are retained effectively in clubs, LTF is an ongoing concern.

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# LATE BREAKER POSTERS

## LBPE001

### WHOLE-BODY SPECT IN VIVO IMAGING REVEALS DELAYED RECONSTITUTION OF LYMPH-NODES, BUT NOT SPLEEN, CD4 POOLS IN LONG-TERM CART TREATED ANIMALS

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**Background:** Fewer than 2% of the total-body-pool of CD4+ T lymphocytes reside in the peripheral-blood (PB) highlighting the need for techniques that provide a more comprehensive evaluation of the immune system. In previous work we demonstrated the feasibility of imaging the total-body-CD4-pool in nonhuman-primates and noted that the CD4-pool of splenic lymphocytes may increase or decrease by up to 30% within 4 weeks of initiation or interruption of cART, respectively. The present study was designed to more carefully delineate the relationships between viremia, PB CD4-count and total-body-CD4+ pool.
**Methods:** A group of 30 rhesus macaques (uninfected and SIV/SHIV infected with PB-CD4 count range (7-1718) cells/µl) were subjected to a total of 59 SPECT imaging studies, using the F(ab')2 fragment of anti-CD4 labeled with Tc-99m. Six of the SIV-infected animals had been treated with cART for more than 5 months with SIV RNA levels < 30 copies/ml in 5 animals and 950 copies in the other. Linear mixed-effect models with random intercepts were used for longitudinal analyses.
**Results:** A repeated measurements univariate analysis of all animals revealed that both PB-CD4-count and plasma-viral-load were significantly associated with the size of the splenic CD4 pool (P< 0.001). The PB-CD4-count was also univariately associated with the size of the CD4-pool of the axillary, inguinal and sub-mandibular lymph-nodes (all P< 0.01). Only the size of the sub-mandibular pool was also associated with plasma-viral-load (P=0.046). In a multivariate analysis, adjusting for the PB-CD4-count, only the size of the splenic CD4-pool remained associated with the plasma-viral-load (P=0.01).
Compared to healthy controls (n=11, mean PB-CD4 count 962 95%C.I. (773-1151) cells/µl), long-term cART-treated animals (n=6, 691 95%C.I. (235-1147) cells/µl) had smaller axillary (P< 0.05) and inguinal (P< 0.05) lymph-nodes CD4-pools but similar levels of sub-mandibular and splenic CD4-pools. Of note the anti-CD4 radiotracer uptakes of the axillary and inguinal lymph-nodes of an animal with a long-term non-progressor phenotype were observed to be two-fold higher than the average of healthy-controls.
**Conclusions:** Despite similar sizes of splenic CD4 pools, the sizes of the pools of CD4 cells in the peripheral lymph nodes of treated animals were smaller than those in healthy controls

## LBPE002

### A NONHUMAN PRIMATE MODEL OF FULLY MHC-MATCHED ALLOGENEIC STEM CELL TRANSPLANTATION TO STUDY HIV RESERVOIR CLEARANCE

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**Background:** Timothy Brown remains in full HIV remission following an allogeneic hematopoietic stem cell transplant (HSCT). Three potential reservoir-clearing mechanisms exist which may explain this remission:
1) myeloablative immune-conditioning chemotherapy
2) graft-versus-host immunity, or;
3) the *ccr5*$^{\Delta32/\Delta32}$ stem cell graft.
Attempts to repeat Mr. Brown's HSCT-mediated cure in the clinic have failed, necessitating a clinically relevant animal model to understand the mechanisms of his cure. The complex immunogenetics of rhesus macaques (*Macaca mulatta*) precludes their use as a fully MHC-matched HSCT model. Here, we present a nonhuman primate model of fully MHC-matched allogeneic HSCT to define the mechanisms of Timothy Brown's functional HIV cure.
**Methods:** Fully MHC-matched Mauritian cynomolgus macaques (MCM - *Macaca fascicularis*) donor-recipient pairs were used to perform HSCT. Mobilized peripheral stem cells were collected from donors by leukopheresis and transplanted into recipients following chemotherapy and total body irradiation. Donor engraftment was monitored by Illumina deep sequencing across 12 single nucleotide polymorphisms to distinguish donor cells. Immune subset reconstitution was assessed longitudinally using multiple flow cytometric phenotyping panels.
**Results:** We performed seven HSCT between MCM with four distinct outcomes (listed in chronological order): 1) engraftment failure (N=1), 2) graft rejection (N=2), 3) lethal acute GVHD (N=2), and 4) long-term stable chimerism (N=2). We observed strong engraftment in all immune subsets, including T cells, in our long-term stable chimeras. Importantly, with our improved GVHD prophylaxis we have observed no evidence of pathologic acute GVHD despite full donor engraftment for over 100 days.
**Conclusions:** We have built a physiologically relevant model of fully MHC-matched allogeneic HSCT to elucidate the mechanisms contributing to the full HIV remission seen in Timothy Brown. We have achieved high frequencies of CD3+ T cell donor chimerism using this model, which will be a crucial component of any studies looking at SIV reservoir clearance. We are generating CCR5-null transgenic MCM for use as donors, and allogeneic HSCT are now underway in fully combination antiretroviral therapy-suppressed MCM.

## LBPE003

### NON-HUMAN TRIM5 VARIANTS ENHANCE RECOGNITION OF HIV-1-INFECTED CELLS BY CD8+ T CELLS

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**Background:** TRIM5 restricts Human Immunodeficiency Virus type-1 (HIV-1) in a species-specific manner by uncoating viral particles while activating innate responses. The interactions of TRIM5 with the incoming viral capsid and the cellular proteasome led us to hypothesize a role for TRIM5 in the modulation of CD8+ T-cell recognition of HIV-1 infected cells. In this study, we analyse whether the expression of non-human TRIM5 orthologs, Rhesus TRIM5a (RhT5) and TRIM-Cyclophilin A (TCyp), potent restrictors of HIV-1, could enhance immune recognition of infected cells by CD8+ T cells.
**Methods:** We developed a model of RhT5 and TCyp expressing cells in the U937-B*2705 cell line. We co-culture RhT5, TCyp expressing cells infected with HIV-1 with HLA-matched virus specific-CD8+ T-cells. After 20h of co-culture, we measured CD8+ T-cell mediated inhibition and killing of HIV-1 infected cells. We performed similar co-culture experiments in the presence or absence of a TRIM5 antagonist and quantified CD107a/MIP1B secretion in CD8+ T-cells a marker of antigen recognition of HIV-1 infected cells. In addition, we determine viral uptake by p24 intracellular staining and virus-proteasome contacts by immunofluorescence in RhT5 and TCyp expressing cells infected with HIV-1.
**Results:** Our data reveal that TRIM5 enhance CD8+ T-cell antiviral activity (TCyp; p=0.003 and RhT5; p=0.003) and killing (TCyp; p=0.013 and RhT5; p=0.0007) of HIV-1 infected cells. In addition, TRIM5 blocking experiments show a reduction of HIV-1 specific CD8+ T-cell activation (RhT5; p=0.002 and TCyp; p=0.018) that indicates the direct effect of TRIM5 expression in HIV-1 infected cells on CD8+ T-cell activation. Moreover, the induction of CD8+ T-cell responses in HIV-1 infected cells was stronger for the RhT5 variants and those CD8+ T-cells recognizing the viral capsid. RhT5 and TCyp expressing cells infected with HIV-1 increase viral uptake and the frequency of virus in contact with the proteasome.
**Conclusions:** These data show that RhT5 and TCyp orthologs can couple viral restriction and CD8+ T-cell activation to improve immune recognition of HIV-1 infected cells, favouring capture of the incoming virus and increasing HIV-1 contacts with the cellular proteasome. This novel mechanism could be exploited to implement future therapeutics to control HIV-1 infection.

## LBPE004

### REVERSAL OF HIV-1 LATENCY WITH MARAVIROC ALONE OR IN COMBINATION WITH BRYOSTATIN-1

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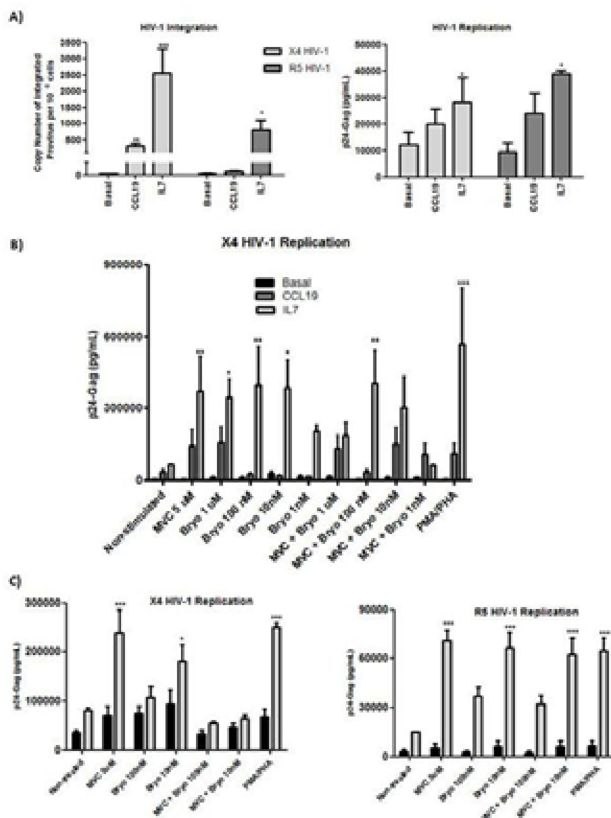
**Background:** A potential strategy to cure HIV-1 infection is to use latency-reversing agents (LRAs) to eliminate latent reservoirs established in memory resting CD4+ T cells (TCM). As no LRA is completely effective so far, LRA combinations are of increasing importance. Our objective is to study Maraviroc (MVC), a CCR5 inhibitor that activates the expression of NF-kB related genes, as a potential LRA in vitro and to evaluate the combination with Bryostatin-1 (Bryo), a PKC agonist known to be a potent LRA.
**Methods:** Latently models are based on CCL19 (29nM) or IL7 (1nM) treatment before HIV-1 infection with X4-NL4.3 or R5-BaL strains. Resting primary CD4+ T cell or central memory T cells were used. Integrated HIV-1 DNA was quantified by ALU-gag PCR. Cells were then stimulated with MVC alone (0.25-100uM) or with MVC (5uM) together with Bryo (1uM-1nM). HIV-1 replication was assessed by quantifying p24 antigen in the culture supernatant 18h post-stimulation.
**Results:** Latency models fulfil the criterion of increasing HIV-1 integration with minimal viral replication in the absence of stimulation (Figure 1A). Stimulation with several concentrations of MVC increased HIV-1 replication from latency and 5uM was chosen for further studies. Cells were then stimulated with MVC and/or increasing concentrations of Bryo (Figure 1B). MVC was as efficient as Bryo (100nM or 10 nM) in reactivating HIV-1 although synergy could not be. Finally, MVC re-activated X4 and R5-HIV-1 latency in TCM with a potency similar to Bryo (Figure 1C). The combination of MVC and Bryo was antagonistic rather than synergetic in X4 infected TCM. HIV-1 reactivation reached statistical significance in IL7 but not in CCL19-based model.




*[Maraviroc as latency reversing drug]*

**Conclusions:** MVC significantly activates HIV-1 replication from in vitro latently infected TCM. MVC should be regarded as a new LRA with similar efficacy to other described agents such as Bryo but a synergetic action was not found.

## LBPE005

### CENTRAL NERVOUS SYSTEM IMPACT OF VORINOSTAT, HYDROXYCHLOROQUINE AND MARAVIROC COMBINATION THERAPY FOLLOWED BY TREATMENT INTERRUPTION IN INDIVIDUALS TREATED DURING ACUTE HIV INFECTION

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**Background:** Strategies to reactivate the HIV reservoir and analytic treatment interruption (ATI) could each have adverse consequences on the central nervous system (CNS) through induction of neuroinflammation or viral escape. We performed a CNS study in parallel with a systemic study of vorinostat/hydroxychloroquine/maraviroc (VHM) followed by ATI.
**Methods:** Acutely treated participants with >48 weeks viral suppression and CD4 ≥450 cells/mm$^3$ were randomized to 10 weeks of oral VHM (400mg/day hydroxychloroquine + 1200mg/day maraviroc + three 14 day cycles on and off of 400mg/day vorinostat) + ART vs. ART, followed by ATI after wk10 with ART resumption at plasma VL>1,000 copies/ml. CNS measures included cerebrospinal fluid (CSF) sampling at baseline prior to intervention, at wk10, and during ATI at first plasma VL>20 copies/ml; neuropsychological testing at baseline, wk10, during ATI, and after resuming ART; and 3T brain magnetic resonance spectroscopy(MRS) at baseline and 6-8 weeks after ART resumption.
**Results:** Ten participants who had started ART in Fiebig III/IV enrolled (VHM+ART=8, ART=2, 8 men, median age 30 and ART duration 4 years); one withdrew due to adverse VHM effects. In all participants, CSF VLs were < 20 copies/ml at baseline and wk10. Two VHM participants had detectable CSF VL (25 and 42 copies/ml) at plasma rebound (corresponding plasma 35,796 and 329 copies/ml) 3-4 weeks after ATI. CSF protein, a blood-brain-barrier disruption biomarker, rose above the upper limit of normal (45 mg/dL) in one participant during VHM (baseline: 34 mg/dL, wk10: 52 mg/dL, after ATI: 33 mg/dL). IP-10/CXCL10, a lymphocyte chemokine, rose in CSF after ATI (p=0.017). Global neuropsychological performance improved with repeated testing in all but one VHM participant whose z scores declined from -0.53 at baseline to -1.04 at wk10. Brain MRS in 6 participants at baseline and after ART resumption revealed no significant changes in neuronal or inflammatory measures.
**Conclusions:** VHM, a latency reactivating intervention, did not lead to detectable CSF HIV RNA by standard assays nor evidence of persistent adverse outcomes based on CSF protein, neuropsychological testing performance, and brain MRS. Monitored ATI was associated with CNS immune activation; CSF HIV rebound occurred in 2 participants, at levels lower than in blood.

## LBPE006

### DISTINCTIVE GENITAL MUCOSAL IMMUNE MILIEU IN HESN NAIROBI COMMERCIAL SEX WORKERS

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**Background:** Women makeup roughly half of the current global HIV-1 infected population. Most human HIV infections are acquired through heterosexual transmission across female genital mucosal surfaces. Given the strategic anatomical location of genital mucosal epithelial cells (GEC) immune milieu orchestrated by TLR mediated activation of GECs can be a critical determinant of HIV-1 resistance or susceptibility. HIV-1-exposed seronegative (HESN) women have been shown to have a distinct pattern of cytokines, chemokines and antiproteases as measured in CVL samples. In this study we investigated the role that genital mucosal inflammation might be playing in imparting HIV resistance and/or susceptibility in HESN and HIV infected women.
**Methods:** Endoervical cytobrsuh samples were obtained from Pumwani CSWs cohort in Nairobi, Kenya. HESN (n=22), HIV- (n=24) and HIV+ (n=23).Cervical epithelial cells (CECs) were purified through a series of nylon membrane filtrations. Purity and viability of CECs was assessed by Ber-EP4 expression and MTS assay, respectively. CECs were cultured with or without Pan TLR ligands for 24 h. Cytokine and chemokine levels in the supernatants were determined using the Milliplex MAP multiplex kits and analyzed on the BioPlex-200 according to manufacturer's protocol.

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Antiprotease measurements were carried out using commercially available human Alpha 1-Antitrypsin and Alpha 1-Antichymotrypsin ELISA kits. Toll-like receptor expression was determined by real time RT-PCR.

**Results:** We tested 22 cytokines and chemokines (EGF, GM-CSF, IFNa2, IFNgamma, IL-1b, IL-2, IL-6, IL-7, IL-8, IL-10, IL-12 (p40), IL-12(p70), IL-15, IL-17, IP-10, MCP-1, MCP-3, MDC, MIP-1a, MIP-1b, RANTES, and TNFa). GEC from HESN women expressed significantly lower levels of proinflammatory and immune activating cytokines and chemokines upon pan TLR stimulation compared to HIV infected women. Conversely, HESN genital epithelial cells expressed significantly higher amounts of HIV-1 inhibiting chemokines (RANTES and MDC) and antiproteases. Toll-like receptor expression levels were found to be significantly lower in HESN mucosa.

**Conclusions:** These results highlight the role of genital inflammation in imparting HIV resistance and/or susceptibility. Data presented here support the immune quiescence model of HIV-1 protection, whereby lower target and inflammatory cell recruitment at the genital mucosal compartment reduces HIV-1 target cell numbers.

## LBPE007

### THE EFFECT OF TYPE OF PROGESTIN-ONLY CONTRACEPTION (DMPA VERSUS LEVONORGESTREL IMPLANT) ON HIV VIRAL SHEDDING IN THE GENITAL TRACT OF HIV-INFECTED WOMEN ON ANTIRETROVIRAL THERAPY

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**Background:** Hormonal contraception, particularly injectable, has been linked in some studies to higher genital HIV shedding and risk of HIV transmission to partners. There is very limited information about this association in the context of antiretroviral therapy (ART). We assessed the effect and compared the impact of two progestin-containing contraceptives, the Depot Medroxyprogesterone Acetate (DMPA) injectable and the 5-year Levonorgestrel (LNG) implant, on HIV shedding in the genital tract of HIV-infected women.

**Methods:** This analysis is from a randomized clinical trial evaluating the effects of progestin-based contraception in the genital tract of HIV-infected and uninfected women. Women aged 18-45 years were randomly assigned to DMPA or LNG Implant from May 2014-April 2015 in Lilongwe, Malawi, and followed until 6 months post-randomization. HIV-1 RNA viral load was measured in cervicovaginal lavage using the Abbott RealTime assay. We compared the frequency and magnitude of genital HIV shedding at multiple study visits before and after initiation of progestin contraception and between study arms using repeated measurements models fit by generalized estimating equations.

**Results:** We randomized 73 HIV-infected women; 37 to DMPA and 36 to LNG implant. 89% (n=33) of DMPA users and 97% (n=35) of LNG implant users were on ART during the study period. Among women on ART, there was no difference in the frequency of genital HIV shedding or the genital HIV viral load before and after contraceptive initiation [RR = 1.01 (95% CI = 0.98-1.04); mean difference = -0.03 (95% CI = -0.12-0.06); respectively)] or between the two study arms [RR = 1.01 (95% CI = 0.98-1.04); mean difference = -0.01 (95% CI = -0.08-0.07); respectively]. Genital HIV shedding was uncommon (less than 10% at any time point) and of low magnitude (maximum = 3,478 copies/ml).

**Conclusions:** Neither DMPA nor the LNG implant were associated with increased genital HIV shedding during the first 6 months of use in women on ART. These findings are consistent with growing evidence that progestin-only contraception is not associated with increased HIV transmission risk to partners in the context of ART.

## LBPE008

### FIELD PERFORMANCE OF POINT-OF-CARE HIV TESTING FOR EARLY INFANT DIAGNOSIS: POOLED ANALYSIS FROM SIX COUNTRIES FROM THE EID CONSORTIUM

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**Background:** The expansion of prevention of mother-to-child transmission programmes has resulted in a reduction in paediatric HIV infections. However, HIV transmissions still occur requiring accurate early infant diagnosis (EID) and early treatment initiation. Evaluations of new technologies for EID are essential to inform national regulatory approval and implementation, but the low HIV incidence in infants limits timely, adequately sized evaluation studies. The EID Consortium is helping to accelerate the evaluation and subsequent implementation of EID point-of-care (POC) diagnostics across Africa; here we report on field performance of HIV qualitative assays from Alere and Cepheid in exposed infants < 18 months of age.

**Methods:** Data from 9 independent field evaluations of Alere q HIV-1/2 Detect and Cepheid Xpert HIV-1 qual assays were pooled from on-going studies in Kenya, Malawi, Mozambique, Tanzania, South Africa and Zimbabwe. A range of health professionals from nurses, laboratory technicians to medical doctors operated the devices.

**Results:** Specimens from HIV-exposed infants < 18 months old, were analysed on Alere q HIV-1/2 Detect (n=1884) or Cepheid Xpert HIV-1 qual (n=2598) and compared to Roche HIV CAPCTM at all sites with the exception of Malawi which compared to Abbott HIV m2000. Alere q achieved a sensitivity of 99,07% (95% CI, 95,48-99,95%) and specificity of 99,94% (95% CI, 99,72-100,00%) with an overall error rate of 6,4%. Cepheid yielded a sensitivity of 96,88% (95% CI, 91,73-99,20%) and specificity of 99,92% (95% CI, 99,74-99,99%) with an overall error rate of 4,3% **(table 1)**

**Conclusions:** The EID Consortium has been able to aggregate data from multiple centres quickly and thus accelerating notable progress in the field evaluations of POC testing for EID. The analysis shows good performance of both the Alere q HIV-1/2 Detect and Cepheid Xpert HIV-1 qual assays, suggesting that POC devices have the potential to complement the expansion of EID in the region.

**Alere q HIV-1/2 Detect**

| | Reference Assay | | |
|---|---|---|---|
| **Alere q** | Positive | Negative | Sum (n=) |
| Positive | 106 | 1 | 107 |
| Negative | 1 | 1776 | 1777 |
| Sum (n=) | 107 | 1777 | 1884 |

| | Point Estimate | Lower CI | Upper CI |
|---|---|---|---|
| **Sensitivity** | 99,07% | 95,48% | 99,95% |
| **Specificity** | 99,94% | 99,72% | 100,00% |

| | total # | Rate |
|---|---|---|
| **Device Errors** | 128 | 6,36% |

**Cepheid Xper HIV-1 qual**

| | Reference Assay | | |
|---|---|---|---|
| **Xpert** | Positive | Negative | Sum (n=) |
| Positive | 93 | 2 | 95 |
| Negative | 3 | 2500 | 2503 |
| Sum (n=) | 96 | 2502 | 2598 |

| | Point Estimate | Lower CI | Upper CI |
|---|---|---|---|
| **Sensitivity** | 96,88% | 91,73% | 99,20% |
| **Specificity** | 99,92% | 99,74% | 99,99% |

| | total # | Rate |
|---|---|---|
| **Device Errors** | 118 | 4,28% |

*[Table 1. Performance of Alere q HIV-1/2 Detect and Cephied Xpert HIV-1 qual]*

## LBPE009

### SOCIAL AND EMOTIONAL IMPAIRMENT IN PERINATALLY HIV-INFECTED ADOLESCENTS IN CAPE TOWN, SOUTH AFRICA

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**Background:** There are growing numbers of perinatally HIV-infected (PHIV+) adolescents across Africa and widespread concern regarding their psychosocial well-being. Few studies have investigated mental health and social/emotional impairment in African PHIV+ adolescents, and fewer studies have included local HIV-uninfected comparator groups. We examined these constructs in the Cape Town Adolescent Antiretroviral Cohort (CTAAC).
**Methods:** This cross-sectional analysis included 474 PHIV+ adolescents (eligibility: ages 9-14 years, on ART for >6 months) and 103 HIV- controls. The Beck Youth Inventory (BYI-II), assessing Depression, Anxiety, Anger, Disruptive Behavior, and Self-Concept was administered. Scores were standardized using age- and sex-adjusted norms. Wilcoxon rank sum tests were used to compare scores between PHIV+ and HIV- adolescents; linear regression was used to investigate variables associated with higher scores on each subscale.
**Results:** The mean age was 12.5 and 12.3 years in PHIV+ and HIV- adolescents, with 50% and 46% being male, respectively. The median age at ART initiation was 4.4 years [IQR, 2.0-7.6]. The reliability of the BYI-II was high across subscales (Cronbach's alphas, 0.86-0.91). Mean scores for PHIV+ vs HIV- groups were 40.6 vs 42.5 for depression (p=0.039); 42.3 vs 45.6 for anxiety (p=0.003); and 37.1 vs 38.4 for anger (p=0.107); no differences were observed for disruptive behavior and self-concept. After adjusting for demographic factors, PHIV+ adolescents scored lower, on average, on subscales for depression (β: -2.27; 95%CI: -4.11, -0.44), anxiety (β: -4.05; 95%CI: -6.29, -1.82), and anger (β: -1.87; 95%CI: -3.52, -0.22), compared with HIV- controls; the associations with depression and anxiety persisted when restricted to older children (ages 12-15). There was little variation in scores by age at ART initiation or current use of protease inhibitors; however, current use of efavirenz was weakly associated with disruptive behavior scores after adjustment for demographic and clinical factors. Higher current grade in school was strongly predictive of poorer disruptive behavior scores
**Conclusions:** Overall, PHIV+ adolescents do not appear to have poorer social/emotional functioning than their HIV- counterparts in this setting. The absence of associations with clinical factors suggests that social/emotional outcomes may be more influenced by contextual factors. The implications and consistency of these findings into adulthood require ongoing attention.

## LBPE010

### QUALITY OF LIFE AMONG INDIVIDUALS FAILING FIRST-LINE ANTIRETROVIRAL THERAPY (ART) IN RESOURCE-LIMITED SETTINGS (RLS)

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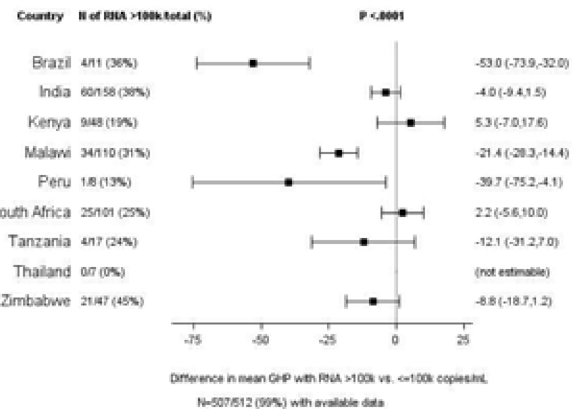
**Background:** Health-related quality of life (QoL) is poor among HIV-infected people with lower CD4 counts and higher HIV-1 RNA viral loads (VLs), though this topic is understudied in RLS, where individuals may start or switch ART later than in resource rich settings. This study evaluated QoL in people experiencing virologic failure (VF) on first-line ART in RLS.
**Methods:** ACTG A5273 was a prospective clinical trial of second-line ART in participants failing (two consecutive measurements of VL≥1,000 copies/mL) a NNRTI-containing regimen at 15 sites in 9 RLS. Participants completed the ACTG SF-21 at study entry which has 8 domains: general health perceptions (GHP), physical functioning (PF), role functioning (RF), social functioning (SF), cognitive functioning (CF), pain (P), mental health (MH), and energy/fatigue (E/F), with a standard score ranging from 0 (worst) to 100 (best). Multivariable linear regression models were used to evaluate associations of QoL domains with country, CD4 count and VL.
**Results:** 512 participants were enrolled; 51% female and 64% black. Median CD4 count was 135cells/mm³ and VL33,360copies/mL. Mean QoL score for each domain was: GHP(67), PF(91), RF(80), SF(91), CF(91), P(83), MH(85), E/F(80). Multivariable modeling showed that participants with higher VL and lower CD4 had lower QoL.

| | General Health Perceptions (GHP) | Physical Functioning (PF) | Role Functioning (RF) | Social Functioning (SF) | Cognitive Functioning (CF) | Pain (P) | Mental Health (MH) | Energy / Fatigue (E/F) |
|---|---|---|---|---|---|---|---|---|
| VL (copies/mL) >100K vs. ≤100K | -7.9 (-11.5; -4.4) p<.0001 | -5.4 (-8.7; -2.0) p=0.002 | -7.4 (-12.3; -2.4) p=0.004 | -2.6 (-5.6; 0.3) p=0.081 | -2.7 (-5.7; 0.3) p=0.080 | -5.5 (-9.6; -1.4) p=0.009 | -2.9 (-5.8; -0.0) p=0.047 | -5.6 (-9.3; -1.9) p=0.003 |
| CD4 (cells/mm3) <50 vs. ≥50 | -9.4 (-5.4; -13.3) p<.0001 | -5.5 (-1.7; -9.2) p=0.004 | -3.6 (1.8; -9.1) p=0.193 | -7.0 (-3.8; -10.3) p<.0001 | -2.7 (0.6; -6.1) p=0.111 | -4.5 (0.0; -9.1) p=0.050 | -5.7 (-2.5; -8.9) p=0.001 | -6.4 (-2.4; -10.5) p=0.002 |

*[Adjusted differences in mean QoL scores by VL or CD4 categories (95% Confidence Interval)]*

Country was associated with QoL in all domains(p< .0001); lower QoL was observed for Malawi and India in most domains. Relationships between QoL and VL varied among countries for GHP(p< .0001), PF(p=0.001), SF(p< .0001), P(p=0.009) and E/F(p=0.014).




*[Difference in mean GHP with RNA >100k vs. <=100k copies/mL]*

**Conclusions:** Worse QoL scores at VF on first-line ART are associated with worse disease status as measured by higher VL and lower CD4. This might reflect low QoL when ART was initiated and/or its deterioration during VF. Differences in VL monitoring availability may explain why VL was important for some QoL domains in certain countries.

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## LBPE011

### ESTABLISHING A TREATMENT DOSE OF NEVIRAPINE (NVP) FOR FULL-TERM NEONATES WITH PERINATAL HIV INFECTION: IMPAACT P1115

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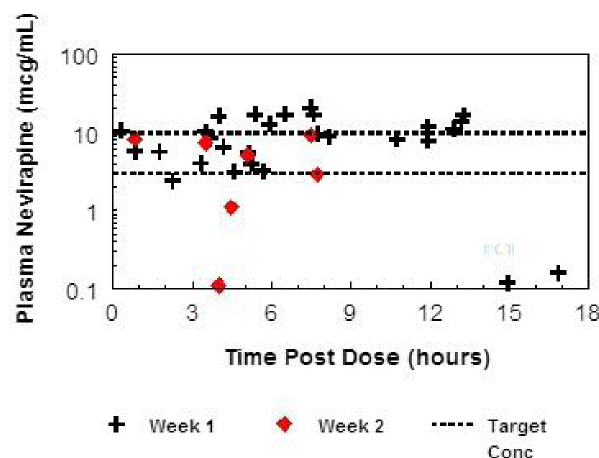
**Background:** Very early treatment of HIV-infected neonates may sufficiently limit HIV reservoirs to enable HIV remission after cessation of combination antiretroviral therapy (cART). However, there are limited data on therapeutic concentrations of antiretroviral drugs approved for neonatal use.

**Methods:** IMPAACT P1115 is an ongoing multinational trial investigating very early cART and HIV remission in infected neonates. Pharmacokinetic (PK) modeling from prior neonatal NVP prophylaxis data suggested that NVP dosing of 6 mg/kg/dose twice daily (BID) would maintain concentrations between 3-10 mcg/mL, the established therapeutic range. Zidovudine+lamivudine+NVP were initiated at < 48 hours of age in neonates of HIV-infected mothers untreated during pregnancy, before determination of infant infection status. Single PK samples from 1 +/- 2 weeks on study were assayed for NVP concentrations using high performance liquid chromatography. Plasma NVP exposures and safety were examined among enrolled neonates ≥37 weeks gestational age.

**Results:** 30 neonates (median gestation 38 weeks) were studied; 20 boys/10 girls from Africa(n=24), South America(3), North America(2) and Asia(1). cART started on the day of birth in 19, and 2/30 were HIV-infected. Four participants had toxicities ≥Grade 2 at least possibly related to cART: 1 Grade 2 ANC; 1 Grade 2 and 1 Grade 4 hemoglobin; 1 Grade 2 ANC + hemoglobin. No rashes or elevated transaminases occurred. Mean (SD) plasma NVP concentration was 9.2 (5.6) mcg/mL at Week 1 (n=28) and 4.9 (3.6) at Week 2 (n=7). (Figure) Overall, 83% of samples were >3.0 mcg/ml; while 43% of Week 1 NVP levels were >10mcg/mL, most were ≤15 mcg/mL.




*[Figure. NVP PK P1115]*

**Conclusions:** Therapeutic NVP dosing of 6 mg/kg/dose BID in full-term newborns appears to be safe and maintains NVP concentrations >3 mcg/ml during the first 2 weeks of life in the majority of infants. These data support the continued study of this NVP dosing regimen to treat neonates.

## LBPE012

### EXTENDED-RELEASE NALTREXONE IS ASSOCIATED WITH SUSTAINED VIROLOGIC SUPPRESSION AMONG HIV+ PRISONERS WITH ALCOHOL USE DISORDERS AFTER RELEASE TO THE COMMUNITY

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**Background:** For people living with HIV (PLH), alcohol use disorders (AUDs) are associated with poor immunologic and virologic outcomes. Prisoners with HIV lose HIV VL suppression they gained while incarcerated within 3 months post-release. We aimed to see if the use of extended-release naltrexone (XR-NTX), an effective treatment for AUDs, could maintain and/ or improve rates of VLS for PLH with AUDs after they are released from prison.

**Methods:** This is a double-blind placebo-controlled randomized trial of XR-NTX (randomized 2:1, XR-NTX: placebo) conducted among HIV+ prisoners with AUDs who were released to the community in Connecticut, U.S.A. Participants were administered 6 monthly injections given 1-2 weeks prior to release and monthly thereafter for 5 months post-release. The primary outcome was sustained virologic suppression at 6 months at < 400 copies/mL with additional secondary outcomes of proportion with VLS at < 200 and < 50.

**Results:** A total of 100 participants were randomized 2:1 (N=67 XR-NTX; N=33 Placebo). Baseline demographics were: 21% women, 37% homeless, 65% Black/ African American, mean incarceration time period of 13 months, 50% with chronic HCV, 86% prescribed ART, and 90% with a CD4 ≥200. There was a statistically significant greater mean proportion of persons who had a VL UD at baseline who maintained a VL UD at 6 months in the XR-NTX group as compared to the placebo group at < 50 copies/ ML and < 200 copies/mL value, but not at the < 400 copies/ mL value (see Table 1).

| Viral Load (Copies/ml) by Treatment Arm | Baseline (%) (XR-NTX, PLC) | 6 months (%) (XR-NTX, PLC) | Mean of the Differences | 95% Confidence Interval | P value |
|---|---|---|---|---|---|
| <50 XR-NTX, Placebo | 36,48 | 50, 34 | 0.212 | 0.740, 0.349 | 0.003* |
| <200 XR-NTX, Placebo | 53, 72 | 55, 34 | 0.176 | 0.043,0.31 | 0.013* |
| <400 XR-NTX, Placebo | 70, 72 | 63, 41 | 0.11 | -0.027, 0.239 | 0.118 |

*[Table 1: Comparisons of Percentages of VL suppression from baseline to 6 months by treatment arm based on Results of T Test analyses]*

**Conclusions:** Preliminary results from this RCT show that XR-NTX may help maintain VL suppression and/ or improve to achieve VL suppression as HIV+ prisoners transition to the community, thus a potential intervention to improve the HIV continuum of care for PLH with AUDs involved in the CJS.

## LBPEO13

### COMPARING MATERNAL TRIPLE ANTIRETROVIRALS (MART) AND INFANT NEVIRAPINE (INVP) PROPHYLAXIS FOR THE PREVENTION OF MOTHER TO CHILD TRANSMISSION (MTCT) OF HIV DURING BREASTFEEDING (BF)

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**Background:** BF is crucial to reducing infant morbidity and mortality but may result in HIV transmission if the mother is HIV-infected. Both mART and iNVP are effective in preventing postnatal HIV transmssion. PROMISE is the first randomized trial designed to directly compare the efficacy/safety of these two strategies during extended BF.

**Methods:** PROMISE was conducted in sub-Saharan Africa (13 sites) and India (1 site). HIV-infected women with CD4+ counts >350 cells/mm$^3$ (or > country-specific threshold for therapy if higher) and their HIV-uninfected newborns were randomized at 6 - 14 days postpartum to mART or iNVP. These regimens were continued until 18 months post-delivery unless there was cessation of BF, infant HIV infection, or toxicity. Kaplan-Meier (K-M) probabilities and incidence rates per 100 person-years were used in primary analyses of efficacy/safety.

**Results:** 2431 mother-infant pairs were enrolled between June 2011 and October 2014. Women were asymptomatic (median CD4 count - 686; 97% WHO Clinical Stage I) with median age of 26 years. Infant's median gestational age and birthweight were 39 weeks and 2.9 kg, respectively. Baseline characteristics were comparable by study arm. Median duration of BF was 15 months and not significantly different by study arm (p=0.85). K-M estimates of MTCT of HIV at ages 6, 9 and 12 months were 0.3% (95% CI 0.1-0.6), 0.5% (95% CI 0.2-0.8) and 0.6% (95% CI 0.4-1.1), respectively, and not significantly different between the two arms. Infant 12-month survival rate was extremely high (98.9%) and not significantly different by regimen. Incidence rates of maternal/infant safety outcomes did not differ significantly by regimen (Table).

| | mART N=1220 | iNVP N=1211 | P-value, K-M log-rank test |
|---|---|---|---|
| Composite maternal Grade 3/4 signs/symptoms; Grade 2-4 lab events; or maternal death (2 deaths in mART arm and 1 in iNVP arm) | 14.8 (95% CI 12.7-17.3) | 14.6 (95% CI 12.5-16.9) | 0.99 |
| Composite severe maternal safety outcomes (same as row 1 but excludes Grade 2 lab events) | 5.1 (95% CI 4.3-6.1) | 5.6 (95% CI 4.8-6.6) | 0.61 |
| Composite infant Grade 3/4 signs/symptoms; Grade 3/4 lab event; or infant death | 44.1 (95% CI 39.2-49.5) | 43.5 (95% CI 38.7-48.8) | 0.95 |
| Infant death (16 in mART arm and 14 in iNVP arm) | 1.2 (95% CI 1.0-1.5) | 1.1 (95% CI 0.9-1.3) | 0.72 |

*[Safety outcome incidence rates (per 100 person years) by study arm]*

**Conclusions:** Both mART and iNVP were safe and were associated with very low MTCT rates during extended BF and high infant survival rates. For mothers who do not adhere to or tolerate ART, iNVP throughout BF offers a safe efficacious alternative.

## LBPEO14

### LONG-TERM OUTCOMES IN THE SOUTH AFRICAN ART PROGRAMME

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**Background:** Universal antiretroviral therapy (ART) could simplify treatment provision, reduce morbidity and mortality and prevent HIV transmission, but long-term outcomes are not well-described in resource-limited settings.

**Methods:** Routinely-collected cohort data from five large South African public sector ART programmes were linked to the National Population Register to verify vital status using civil identification numbers. Patients were ART-naïve adults (16-85 years old) starting ART 2004-2015. All-cause mortality was analysed using Kaplan-Meier and Cox regression methods.

| | Time since ART initiation (months) | | | | | |
|---|---|---|---|---|---|---|
| Year | 12 | 36 | 60 | 84 | 108 | 120 |
| 2004-2006 | 7.4 (6.9-7.9) | 12.3 (11.7-13.0) | 16.3 (15.7-17.0) | 19.4 (18.6-20.1) | 22.2 (21.5-23.0) | 23.5 (22.8-24.3) |
| 2007-2009 | 8.5 (8.2-8.9) | 13.5 (13.0-14.0) | 17.2 (16.6-17.7) | 20.2 (19.6-20.8) | 22.5 (21.8-23.2) | |
| 2010-2012 | 6.5 (6.2-6.8) | 10.4 (10.1-10.8) | 13.3 (12.8-13.7) | 14.8 (14.1.15.6) | | |
| 2013-2015 | 4.2 (3.9-4.6) | 7.6 (7.0-8.3) | | | | |

*[Table 1: Cumulative mortality by year enrolled and time since ART initiation]*

**Results:** 73,288 adults were followed for 351,795 person-years (pyrs), with a median of 4.5 (IQR 2.4-7.0) pyrs. The median CD4 count increased between 2004 and 2015, from 86 (40-144) to 246 (119-355) cells/µL, and the proportion starting ART with CD4< 50 cells/µL dropped from 25% to 7%. Overall 10,851 (15%) patients died, for a mortality rate of 3.1 (95% CI 3.0-3.1)/100 pyrs. At 10 years, cumulative mortality was 23.5% (Table 1). Mortality peaked in 2007-2009 and decreased through to 2015: from 8.5% to 4.2% (12-month) and 13.5% to 7.6% (36-month). Adjustment for CD4 count and ART initiation site removed the effect of year of enrolment (2014-15 vs 2004: aHR 1.06, 95% CI 0.92-1.24). Among patients with viral loads in the last year of cohort follow-up, 88% were virologically suppressed (< 400 copies/mL).

**Conclusions:** Nearly 80% of patients in these well-ascertained cohorts were still alive after ten years of national ART provision. Earlier initiation of ART reduced mortality. After adjustment for baseline characteristics, mortality was stable over time despite the challenges of increasing enrolment; and high levels of virologic suppression were sustained. These findings provide substantial reassurance as to the effectiveness of the largest ART programme worldwide.

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## LBPE015

### HIV TESTING AND ART ARE ASSOCIATED WITH LOWER HIV INCIDENCE AMONG PWID IN UKRAINE

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**Background:** PWID remain to be in the epicenter of HIV epidemic in Ukraine, one of the most affected countries in Eastern Europe. Majority of the estimated 11,000 new annual HIV cases are occurring among PWID and their sexual partners. Large-scale HIV prevention program supported by The Global Fund and PEPFAR grew rapidly since 2004 to reach more than 210,000 PWIDs in 2014. Provision of all prevention services is recorded in the national SYREX database; records are linked by a unique client identifier.
**Methods:** For this analysis we compared results from two cohort studies - retrospective and prospective. The retrospective cohort included all PWID who received prevention services in 2011-2014; HIV seroconversion defined as a SYREX record of positive HIV test after a negative one. To address limited testing coverage, a prospective cohort of prevention clients was recruited in 2013 in 11 cities; HIV seroconversion measured by rapid testing at 6, 12, 18 months. For both studies, data on prevention services were extracted from SYREX database. City-level epidemiological and clinical service coverage variables were added to analysis. "Time-to-event" methods were used to determine impact of prevention on HIV incidence.
**Results:** Of all 366,786 unique PWID prevention clients, 50,586 (13.8%) had at least two HIV test records with first negative result, and 1,012 seroconverted (1.54%/year incidence). Of 2,157 PWID in prospective cohort, 2,052 (95.1%) completed at least one follow-up with 52 seroconversions (1.81%/year incidence).
Provision of syringes, condoms, information, or counseling did not have significant and consistent effect in both studies. Each additional HIV test received in lifetime, controlling for the effect of age, sex, other service use, was decreasing the risk of seroconversion by up to 88.4% (aHR(retrospective)=0.216, p<0.001, aHR(prospective)=0.414, p<0.001).
Several city-level variables had consistent significant effect, most importantly the level of ART coverage appeared to be a very strong protective factor while controlling for other variables (aHR(retrospective)=0.440, p=0.002, aHR(prospective)=0.006, p=0.001).
**Conclusions:** Consistency of findings on effects of ART coverage and HIV testing in both cohorts strongly supports the recommendation to further expand these interventions in order to minimize transmission in Ukraine and other countries with HIV epidemics driven by PWID.

## LBPE016

### MOTHER TO CHILD TRANSMISSION (MTCT) OF HIV IN NEW YORK STATE (NYS): FROM EPIDEMIC TO ELIMINATION

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**Background:** NYS, once the epicenter of pediatric AIDS epidemic in the United States, has eliminated MTCT as defined by the Centers for Disease Control and Prevention (CDC). NYS began to target MTCT prevention in the early 1990s. Statewide data is now available through 2015, indicating no cases of MTCT in 2015.
**Description:** The NYS Department of Health's AIDS Institute (AI) implemented a multi-pronged approach involving consumers, health/social services providers, birth facilities and state/local agencies. This initiative, data-driven and supported by laws/regulations/ standards of care, evolved in alignment with emerging science. A comprehensive monitoring program includes routine provision of facility-specific data to all birth facilities and on-site technical support. NYS MTCT guidelines were widely disseminated and promoted through the AI's statewide guidelines and education programs.
**Lessons learned:** Statewide implementation of voluntary prenatal HIV testing began in 1996 after regulations were adopted to require offering of prenatal HIV testing. In 1997, a law was implemented requiring routine HIV screening of all newborns using the blood spots obtained via NYS' Newborn Screening Program. Antiretroviral (ARV) regimens for maternal health/MTCT prevention were quickly implemented, with 98% of exposed infants having received ARV prophylaxis in one or more periods (prenatal, intrapartum, newborn) by 2001.
In 1990, 1,898 HIV-positive women gave birth. An estimated 475 (25%) to 760 (40%) of their infants were born with HIV. In 2015, 25 years later, 391 positive women gave birth. Data for 2015, to be verified by July, indicate that no infants were born with HIV. These data represent a 79% decline in number of positive women delivering and a 100% decline in number of newborns with HIV. NYS has satisfied CDC criteria for elimination. An analysis of return on investment for preventing MTCT demonstrated for every $1 invested, NYS saved almost $4 in HIV-related health care expenses for infected children.
**Conclusions/Next steps:** With consistent collaborative effort, statewide regulations, implementation/monitoring strategies and efficient use of resources focused on prenatal HIV testing for all pregnant women and ARV medications for all HIV-positive pregnant women and exposed infants, MTCT can be eliminated in high prevalence jurisdictions and is cost effective. Sustaining elimination will be an ongoing challenge.

## LBPE017

### COMPARING REAL-TIME ADHERENCE MEASUREMENTS TO TENOFOVIR BLOOD CONCENTRATIONS IN MSM AND TRANSWOMEN PREP USERS IN CAPE TOWN, SOUTH AFRICA

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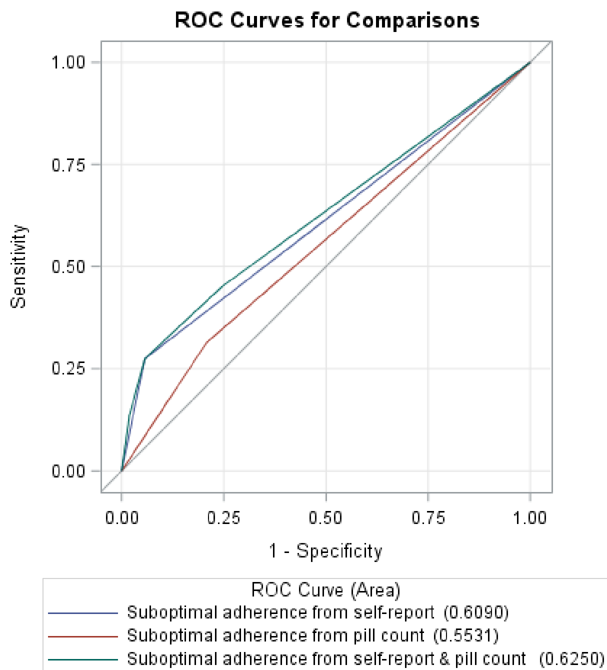
**Background:** Pre-exposure prophylaxis (PrEP) in an effective intervention to prevent HIV transmission in men who have sex with men (MSM) and transgender women (transwomen). With approval in South Africa (SA) late 2015, scale up is expected soon. Understanding optimal adherence measurements in implementation settings is critical to successfully scaling up PrEP.
**Methods:** The Sibanye Health Project is a one-year cohort study of MSM/transwomen in Cape Town, SA. HIV-uninfected, eligible participants were offered PrEP. One and two months after PrEP initiation, and three monthly thereafter, self-reported missed doses in the last week, pill counts, and dried blood spots (DBS) were collected. DBS were tested for tenofovir concentrations. Self-report and pill counts were used in real time to identify suboptimal adherence and intervene with counseling. Tenofovir results were received in bulk and incorporated into counseling as available. This analysis compared suboptimal adherence based on the three measures. Receiver operating characteristic (ROC) curves were created to compare real-time measures of suboptimal adherence to the "gold standard" of tenofovir concentration.
**Results:** Of 115 enrolled participants, 80 were HIV-uninfected, 66 were PrEP-eligible, and 45 initiated PrEP. Data on all three adherence measures were available for 40 participants during 101 patient-visits (Table). Self-report and pill counts have low sensitivity in identifying suboptimal adherence (Figure). Tenofovir concentrations identified 28 additional patient-visits requiring increased counseling.

| | Suboptimally adherent (tenofovir ≤ 40 ng/ml) n=48 patient-visits | Adherent (tenofovir > 40 ng/ml) n=53 patient-visits |
|---|---|---|
| | n (%) | n (%) |
| Identified by self-report & pill count* | 5 (10%) | 40 (75%) |
| Identified by self-report only | 6 (13%) | 10 (19%) |
| Identified by pill count only | 9 (19%) | 2 (4%) |
| Identified by neither | 28 (58%) | 1 (2%) |
| *Suboptimal adherence defined via self-report as missing 3 or more pills in the last week and via pill count as having a raw adherence score based on pill count of less than 0.80 (pills dispensed-pills returned /days since last refill) | | |

*[Comparisons of suboptimal adherence on PrEP using tenofovir blood concentrations, self-report, and pill counts]*




*[Receiver operating characteristic (ROC) curves for detecting suboptimal adherence based on "gold standard" tenofovir blood concentrations]*

**Conclusions:** While viral load is an accepted measure of treatment adherence, there is limited consensus on appropriate PrEP adherence measures. These data suggest that drug concentrations are useful in measuring PrEP adherence for MSM in SA, at least early after initiation. Tenofovir-diphosphate testing is planned to clarify the utility of biomedical measures.

## LBPE018

### AN ANALYSIS OF BASELINE AND EARLY DATA FROM THE PLUS PILLS STUDY: AN OPEN-LABEL TRIAL OF PRE-EXPOSURE PROPHYLAXIS FOR SOUTH AFRICAN ADOLESCENTS

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**Background:** The use of pre-exposure prophylaxis (PrEP) to reduce sexual acquisition of HIV in adults is well established. Young people in sub-Saharan Africa face amongst the highest HIV incidence globally, yet there are few prevention interventions on offer.
We present baseline and early data from an ongoing, demonstration study examining the use of oral PrEP in an adolescent population.
**Methods:** PlusPills is an open-label study to explore the acceptability, safety, and use of oral PrEP (tenofovir-emtricitabine) for sexually active, HIV-negative adolescents (15-19 years old) in Soweto and Cape Town as part of a combination HIV prevention package. PrEP was administered from community-based, adolescent-specific health services. Although participants were required to take daily PrEP for the first 12 weeks, they were allowed to opt out of PrEP at 3 months and at 3 monthly intervals thereafter for 12 months. Demographic, behavioural, clinical and adherence data including plasma and dried blood spot drug levels were collected. Drug levels were available at subsequent visits. Adherence support was offered through counselling, SMS messaging and monthly adherence clubs.
**Results:** 148 adolescents were enrolled (98 female, 50 male), with a median age of 18 (IQR: 17-19). Median age at sexual debut was 15 years (IQR: 14-16). At enrolment, participants reported an average of 1.5 sex acts per week, 30% had 2 or more partners in the past 12 months, 43% reported infrequent condom use, and 38% tested positive for sexually transmitted infections. There were no HIV incident infections. At 12 weeks, 72% reported good adherence to product (>6 pills/week) and 76% had tenofovir plasma levels >40 ng/ml. Mild headache and gastrointestinal side effects were most frequently reported with no significant laboratory adverse events. 15% of participants chose to opt out of PrEP at week 12.
**Conclusions:** PlusPills is the first Southern African adolescent study to explore PrEP use. Baseline data indicated that this study attracted an adolescent population at risk for HIV acquisition. Early data suggested side effects were minimal and early adherence reasonable. The majority of adolescents persisted with PrEP. Follow up is continuing to understand use patterns and appropriate support measures for this important population.

## LBPE019

### UNEXPECTED BENEFITS AND HEIGHTENED DISCLOSURE RISKS: ADOLESCENTS' EXPERIENCES IN A PREP TRIAL

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**Background:** Parental permission is a cornerstone of research protections for minors. However, in HIV prevention trials, parental permission may deter participation because of disclosure concerns. Research is needed to understand the best approach to balance protections for minors with equitable access to biomedical HIV prevention studies.
We describe the perspectives of young men who have sex with men (YMSM) regarding research decision-making and disclosure in a PrEP trial.
**Methods:** Project PrEPare (ATN trials 110/113) were open-label safety and demonstration trials for YMSM ages 15-22. They were the first US PrEP trials for adolescents, and allowed participants under 18 years to consent for themselves. Qualitative phone interviews were conducted 0-24 months after study completion. We examined disclosure, autonomous and supported decision-making, and perceptions of harms and benefits of study participation. Interviews were recorded, transcribed and analyzed using qualitative content analysis.
**Results:** Of 25 participants interviewed, 5 (20%) were younger than 18 at enrollment. At week 4, 16 (64%) had TFV-DP levels consistent with at least 4 doses of PrEP per week. Participants described research staff as strong sources of social support, and many suggested staff served as surrogate family. Only 2 discussed the trial with parents prior to enrollment. Among the rest, 9 disclosed participation after enrollment, 13 never disclosed, and one had lost both parents. Participants most often disclosed participation to friends, a few to partners, and one never disclosed. Participants identified three disclosure-related barriers to parental permission: 1) risk of social harm with disclosing sexual minority status, 2) discomfort disclosing sexual activity, and 3) fear that parents would assume they were promiscuous or sexually irresponsible. Four participants would have approached parents for permission if required. Many discussed concern about PrEP-related stigma (e.g. being labeled a "PrEP whore") and for some this prevented disclosure to friends and partners.
**Conclusions:** This group of high-risk YMSM had an overall positive experience as research participants. They identified unanticipated benefits and heightened concerns about disclosure, in particular, PrEP-related stigma, which may impact PrEP adherence. Attention to these barriers in the design of consent processes for future trials will facilitate appropriate access to biomedical HIV prevention research for adolescents.

## LBPE020

### VARIATION IN INCIDENCE, TYPE AND SEVERITY OF AE BY CIRCUMCISION METHOD IN VMMC CLIENTS AGED 10-14 IN MOZAMBIQUE

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**Background:** Mozambique MOH introduced VMMC as part of HIV prevention strategies in 2009. The surgical circumcision method originally chosen was forceps guided (FG). Glans injuries were reported to WHO among younger adolescents circumcised using FG method throughout 14 VMMC priority countries. In August 2014, MOH recommended that dorsal slit (DS) be used in VMMC clients aged 10-14 years, consistent with WHO guidance. Since then, VMMC clinical providers have been trained to attain proficiency in both methods.

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The authors assessed the frequency and characteristics of adverse events (AEs) among VMMC clients aged 10-14 years by circumcision method (FG&DS), including glans injuries.

**Methods:** AE data were abstracted from circumcised clients aged 10-14 from November 2009 to December 2015 in 40 facilities in six provinces. By convention, only moderate and severe AEs/rates were included. Analysis was done to characterize AEs diagnosed and quantify AE rates, and compared by FG vs. DS method for statistical significance using Chi-square.

**Results:** Total of 447,289 VMMC procedures were conducted in the period, 235,527 (52.7%) among males aged 10-14 years. Of these, 198,242 (84.1%) through FG and 37,285 (15.8%) by DS. With FG the AE rate was 0.3% (341/112,997) and 0.14% (30/21,252) with DS. Chi-square revealed statistical differences between frequencies of AE in FG and DS (p=0.001), though 43% of clients failed to follow-up on day 7, and AEs are unknown among these. Only clients returning for follow-up visit were considered. No glans injuries occurred with DS, while with FG, there were 6 (5.9%). For both methods, bleeding/hematoma was the most frequently diagnosed AE, 23% with FG and 43% with DS, a difference of proportions t test revealed statistical differences (p=0.000). Infection and pain were similar across both methods.

**Conclusions:** The DS VMMC method reduced the risk of glans injuries among clients aged 10-14 years. Overall rate of AE was lower with DS than FG, with statically significant differences, except for bleeding/hematoma. Ongoing training in FG and DS surgical techniques should continue to ensure proficiency in both methods and further expand availability of appropriate VMMC methods to meet demand for VMMC, which is particularly high among adolescents.

## LBPE021

### THE SOCIAL CONTEXT OF HIV SELF-TESTING: A GLOBAL QUALITATIVE EVIDENCE SYNTHESIS

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**Background:** HIV self-testing (HIVST) has the potential to expand HIV testing due to its confidential nature and accessibility, but substantial ethical concerns remain. Quantitative studies suggest widespread acceptability, but provide limited evidence on the social context of HIVST. We synthesized qualitative evidence on implementing HIVST.

**Methods:** We searched ten databases for studies reporting qualitative evidence on HIVST. All studies included individuals who self-tested or stakeholders who had organized an HIVST program. Data extraction and thematic analysis were used to synthesize findings. Quality was assessed using the CASP tool and certainty of evidence was evaluated using the CERQual approach.

**Results:** Fourteen studies from six countries focused on adults (12 studies), adolescents (2 studies), couples (2 studies), men who have sex with men (5 studies), transgender individuals (1 study), and health care workers (4 studies). Six studies were conducted in low and middle-income countries and eight in high-income countries. Fourteen studies included perspectives on individual experiences with self-testing, but no studies reported on stakeholder experiences with organizing self-testing programs. We identified 6 themes. HIVST was preferred to facility-based testing because of improved accessibility, feasibility, and confidentiality (high quality of evidence). HIVST provided a more personalized testing experience that increases agency, moving testing away from the clinic and into people's homes and lives (high quality of evidence). HIVST expanded partner-testing among both casual and long-term partners, with implications for partner services (high quality of evidence). Adverse outcomes such as psychological distress, coercive testing, and violence during partner testing were investigated and only mild anxiety was reported (low quality of evidence). HIVST initiation was associated with less overall test-associated stigma compared to facility-based testing, although stigma persisted and was associated with discovery of the self-test kit (moderate quality of evidence). HIVST increased awareness of the link between sexual risk and HIV testing, decreasing barriers to knowing one's serostatus (moderate quality of evidence).

**Conclusions:** HIV self-testing increases agency and broadens the context in which testing occurs. Our findings have implications for developing national and global guidelines on HIV self-testing. Further implementation research on scaling up self-testing is needed.

## LBPE022

### GENERATION UBUNTU COMPREHENSIVE CARE MODEL

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**Background:** Generation Ubuntu (GenU) offers a Comprehensive Care Model to children ages 4-18 living with HIV in Khayelitsha, South Africa. GenU aims to provide the gold standard of care to 140 regularly attending children from the Khayelitsha area. The programme runs Monday-Friday year round. The objectives of the programme are 1) Increase BMI from Initial Health Assessment, 2) Increase Adherence to ARV medication, and 3) Promote healthy living (measured by the above) and acceptance of HIV status.

**Description:** GenU was founded in 2006 and has worked with more than 340. GenU is an afterschool programme based in Site B of Khayelitsha. Children are cared for under the 4 Departments of the Comprehensive Care Model outlined in the Department Descriptions Table.

| | Health & Nutrition | HIV Education & Life Skills | Psycho-Social Support | Community Engagement |
|---|---|---|---|---|
| Deliverables | • Nutritious meals • Health education • Monthly Health Assessments and adherence counseling • Quarterly Health Packages | • Tailor-made HIV & Life Skills curriculum • Physical activities & games • Education outings and guest speakers | • Individual & group counseling • Health disclosure support • Case management and home visits • Individual treatment plans | • Caregiver workshops • Community outreach, and advocacy • Scholar-led community service projects |

*[Department Descriptions]*

GenU will present its findings through a specific example of a student, Simbulele. Simbulele had her initial health assessment at the age of 15 in January 2015. Simbulele had ulcers covering her trunk, sacral region, and legs. Her BMI revealed she was "Underweight", as classified by the CDC, at 13.17 (Weight 22.6 kg & Height 131 cm). Her viral load was 152572. Her caregivers did not understand the importance of adherence to ARV's and the severity of her health.

**Lessons learned:** The below table explains how GenU's Comprehensive Care Model positively impacted Simbulele's health over a 6 month period from January to July 2015.

| | Health & Nutrition | HIV Education & Life Skills | Psycho-Social Support | Community Engagement |
|---|---|---|---|---|
| Outcome | • Suppressed viral load to 1304 in July 2015 and 576 in March 2016 • BMI of 17.99 „Healthy Weight" (32.3 kg, 134 cm) • 10.1 kg weight gain | • Simbulele's facilitator delivered GenU curriculum increasing knowledge and understanding of her HIV status | • 3 home visits & caregiver counseling sessions • 9 Case Management meetings • 1-on-1 counseling sessions with a Social Worker | • Community outreach events increased Simbulele's acceptance & understanding of her status |

*[Department Outcomes]*

Simbulele's most recent Health Assessment (March 2016) reveals she is at a BMI of 24.48 kg/m$^2$, a "Healthy Weight".

**Conclusions/Next steps:** The crosscutting of departments, which comprise GenU's Comprehensive Care Model, yields similar results to Simbulele's constantly. The GenU programme is effective and life changing. We have learned the importance of tracking Health Assessments and departmental interventions. Improving policies and procedures to better document successes like that of Simbulele will offer more accurate statistics as we continue to benchmark our program. Next steps include finalizing and disseminating the Programme Handbook. This will be offered as an open-source document available online to organizations that wish to implement our Comprehensive Care Model.

## LBPE023

### HIV PREVENTION TRIALS NETWORK'S (HPTN) UTILIZATION OF GOOD PARTICIPATORY PRACTICE GUIDELINES DURING THE DEVELOPMENT OF A FEASIBILITY STUDY AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN SUB-SAHARAN AFRICA

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**Background:** HPTN 075 is a vanguard study designed to assess the feasibility of recruitment and retention of MSM in Sub-Saharan Africa (SSA). Given stigma, discrimination, and criminalization of homosexuality in SSA, innovative community involvement approaches were needed to proactively address concerns related to social harms, strengthen community rapport, and plan for community engagement. Robust community involvement during study design, preparation, and implementation is of critical importance for successful study completion.
**Description:** UNAIDS/AVAC Good Participatory Practice Guidelines (GPP) outline effective community engagement strategies for designing and conducting biomedical HIV prevention research. From March 2013 to April 2016 the HPTN Community Working Group (CWG) utilized GPP to provide substantive input into the HPTN 075 study design, on-going contribution to site implementation plans, communications plans, and crisis management plans. Additionally, community representatives at four clinical research sites (CRS) in three countries (Kenya, Malawi, and South Africa) conducted on-going MSM sensitivity trainings with community advisory board (CAB) representatives and all site staff who interacted with study participants. Attendees (n= 97) were provided overviews of homosexuality, global MSM research, HPTN 075 study design, and the SSA HIV epidemic among MSM.
**Lessons learned:** Six African HPTN CWG representatives received training on protocol review and clinical research essentials. Protocol feedback from the CWG representatives resulted in practical operationalization of the proposed study design, improved community engagement efforts, and supported efficient participant enrollment and retention systems. MSM sensitivity training increased site staff's (n=49) and CAB representatives' (n=48) understanding of MSM lived experiences and behavior, decreased stigma, and enhanced site staff's ability to provide culturally appropriate care to MSM. Participants identified potential barriers that might hinder accrual and retention and took steps to make clinics welcoming safe spaces for MSM.
**Conclusions/Next steps:** Engaging community members in resolving matters that affect their community is a fundamental principle of HIV prevention research. It is an important strategy for the conduct of studies in highly stigmatized environments. While GPP provides a comprehensive checklist it cannot be applied blindly in all research and consideration should to be given to context, research literacy levels, rights/legal status of study populations, and need for an ongoing engagement with key stakeholders.

## LBPE024

### THE IMPACT OF THE HISTORICAL SCALE UP OF CONDOMS ON THE HIV EPIDEMIC

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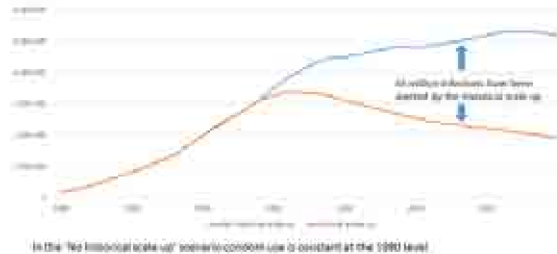
**Background:** Condom use rates increased dramatically from 1990 as people became aware of the HIV epidemic and the protection that condoms could provide. We investigated have estimated the number of HIV infections averted by condoms from 1990-2015.
**Methods:** We used a publicly available mathematical simulation model, the Goals model, to simulate the number of new HIV infections that would have occurred in 45 high burden countries if condoms use rates had remained at their 1990 levels and compared this result with UNAIDS' estimates of actual trends in new HV infections. The Goals model simulates HIV transmission among and between population groups on the basis of behavioral factors (number of partners, acts per partner, age at first sex, needle sharing behavior) and biomedical factors (stage of infections, presence of other STIs, male circumcision, ART and condom use). Results were reviewed at a meeting of condom experts in Geneva, March 21-23, 2016.
**Results:** According to UNAIDS the estimated number of new HIV infections globally peaked at about 3.5 million in the late 1990s and has since decreased to just under 2 million today. Without any increase in condom use the number of new HIV infections would have continued rising to a little over 5 million today. The difference indicates that condom scale-up averted 45 million new HIV infections from 1990-2015. Looking forward to 2020, achieving the UNAIDS condom targets would avert 3.4 million new infections. The cost per infection averted would be about $450, well below the lifetime cost of providing antiretroviral treatment.
**Conclusions:** Condoms have played an important role in controlling the HIV epidemic and are a key component of efforts to achieve the Fast-Track goals. We need to ensure that funding for condom procurement and programming is adequate in order to enhance the impact and cost-effectiveness of future efforts.



*[Number of new HIV infections with and without condoms in LMIC, 1990-2015]*

## LBPE025

### ESTIMATING CONDOM NEEDS AND GAPS FOR FAST-TRACKING PEOPLE-CENTRED CONDOM PROGRAMMING IN SUB-SAHARAN AFRICA

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**Background:** Despite condoms' major contribution to HIV incidence declines in various countries and their critical role in achieving the fast-track goals, investments have lagged since 2001. Condom use at last sex with a non-regular partner is less than 50% in several countries and sub-populations in sub-Saharan Africa. There is no agreed approach to estimate condom need, set targets and calculate gaps to inform comprehensive needs-based programming and resource mobilisation.
**Methods:** An MS-excel based tool was developed to generate national condom needs estimates by aggregating specific needs estimates for preventing HIV, STIs and unintended pregnancy for major sub-populations "at higher risk" including sex workers, MSM, people with non-regular partners, young people, PLHIV, and family planning clients who use condoms. For each sub-population need is calculated using published data on population size, HIV prevalence, sexual behaviour and condom use targets (80-95%). Overlap between estimates for sub-populations are corrected and assumptions for wastage included. The national condom gap is calculated using data on total annual male and female condom distribution.
**Results:** Total estimated condom need for the 46 countries was 6.4 billion ranging from 63 condoms per male age 15-64 in Botswana to 14 in Ethiopia. On average, condom needs for sex workers and their clients accounted for 35% of the total need, HIV affected couples for 22%, non-regular partners for 19%, MSM for 9% and other users of condoms for family planning for 16% of the total need. In 2015, an estimated 2.7 billion condoms were distributed in Africa, suggesting a potential gap of 3.7 billion against the total estimated need (6.35 billion) and that 58% of the condom need was not met. Country gaps ranged from 3% of total condom need in South Africa to >75% in several countries. 110 million US$/year is needed to close the procurement gap. Range: 24 million US$ (Nigeria) to ≤1.5 million US$ (25 countries).
**Conclusions:** Our estimate of total potential condom need suggests that there is a substantial condom programming gap in most sub-Saharan African countries. Increased investment in scale-up of comprehensive demand generation, procurement and people-centred programming is needed to ensure condoms' full contribution to combination HIV prevention.

## LBPE026

### SYSTEMATIC REVIEW OF THE BARRIERS AND FACILITATORS TO VOLUNTARY MALE MEDICAL CIRCUMCISION (VMMC) UPTAKE IN PRIORITY COUNTRIES AND RECOMMENDATIONS

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**Background:** In 2007, the WHO called for scaling-up voluntary maedical male circumcision (VMMC) as an effective HIV prevention strategy, particularly in 14 priority countries with generalized HIV epidemics and low male circumcision prevalence. While millions have accessed VMMC since scale-up, demand has been lower than expected, compromising VMMC's HIV prevention benefits at population level. The purpose of this study is to systematically analyze the literature to understand barriers and facilitators to VMMC uptake across countries and offer recommendations.
**Methods:** PubMed, Embase, Web of Science, Scopus, and PsycINFO databases were searched for studies published in peer reviewed journals from 2007 through 2015. Reviewers assessed the eligibility of each study based on predefined inclusion criteria. Twenty three studies were selected: 16 qualitative, 4 quantitative, and 3 mixed methods studies. Data was extracted in a study summary table, and tables and conceptual maps summarizing VMMC barriers and facilitators across countries.
**Results:** The data revealed 17 barriers and 16 facilitators at community, individual, interpersonal, and service provision levels. Key barriers were: male circumcision perceived as being practiced by other or foreign cultures and religions; fear of pain caused by the procedure; and futility of VMMC because of low HIV risk behavior and still needing to use condoms. The main facilitators were: improved hygiene; family and peer support (especially for boys and young men); and enhanced sexual pleasure and sex appeal. VMMC was strongly preferred for younger than older men. Lost wages, cost associated with circumcision, and inconveniences around having to take time off for healing were not prominent barriers across countries.
**Conclusions:** VMMC programs should address barriers to VMMC uptake at various levels, particularly community level where community involvement seems neglected. Additionally, VMMC services should continue to be made fully accessible to boys among whom MC is becoming normative across countries. In the case of adults, offering VMMC information through individually-tailored counseling sessions may help to overcome VMMC-related stigma among adults and determine its appropriateness based on individual circumstances. Given that lost wages were not a prominent barrier, monetary incentives for uptake may not be justified across countries and they should be assessed also considering their psychosocial impact.

## LBPE027

### ASSOCIATIONS BETWEEN NEIGHBORHOOD PHYSICAL DISORDER, SEXUAL BEHAVIORS AND HIV INFECTION AMONG BLACK MEN WHO HAVE SEX WITH MEN IN THE DEEP SOUTH: THE MARI STUDY

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**Background:** Despite decades of research examining a broad range of behavioral factors, stark racial and geographic disparities in HIV persist among men who have sex with men (MSM). Moving beyond studies of individual-level factors, a focus on neighborhood contexts may help explain variations in HIV among subsets of MSM. The purpose of this study was to examine associations between neighborhood disorder, sexual behaviors and HIV infection among Black MSM in the Deep South, a population at high risk for HIV.
**Methods:** Data came from the MARI Study, including Black MSM ages 18-66 years recruited from the Jackson, MS and Atlanta, GA metropolitan areas (analytic sample *n*=373). Participants completed questions about neighborhood disorder (i.e., excessive noise, heavy traffic/speeding cars, lack of adequate food, parks and sidewalks, and trash/litter) and sexual behaviors (e.g. condomless sex) as well as underwent STI/HIV testing. We used logistic regression models to estimate the prevalence ratio [PR; 95% confidence intervals (CI)] of neighborhood disorder with sexual behaviors and HIV infection, after adjustment for socio-demographic characteristics.
**Results:** About a fourth of the sample reported neighborhood problems across the different aspects, with the highest (31.4%) being no/poorly maintained sidewalks. Multivariable models show that tertiles of neighborhood disorder was associated with any alcohol or drug use before or during sex (especially drug use before sex), condomless anal sex with a main partner during the last encounter and HIV infection as well as ≥2 main male partners in the past 12 months and exchange sex in the past 12 months (all $p< 0.05$). For example, compared to terile 1, those reporting more neighborhoods disorder in tertile 2 (PR=1.70, 95% C: 1.16, 2.48) and tertile 3 (PR=1.72, 95% C: 1.18, 2.53) reporting more drug use before or during sex ($p$ for trend=0.005). Individuals reporting more neighborhoods disorder in tertile 3, compared to tertile 1, were more likely to be HIV infected (PR=1.48, 95% C: 1.11, 1.96) ($p$ for trend=0.007).
**Conclusions:** Our findings suggest that policies and structural interventions to improve community infrastructure to reduce neighborhood problems (e.g. building quality sidewalks) may alleviate the burden of HIV among Black MSM in the Deep South.

## LBPE028

### CHALLENGES FACED BY HEALTH CARE PROVIDERS IN PROVIDING SERVICES TO KEY POPULATIONS AT RISK FOR HIV IN ZAMBIA

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**Background:** Health service utilization is essential for key populations (KPs) at high risk of HIV in order to reduce their risk of HIV acquisition and transmission and live positively (for HIV positives). Understanding how service providers (SPs) provide care to KPs is important to ensure the development of HIV prevention, care and treatment services tailored for KPs. We report on SPs experiences providing health services to these populations.
**Methods:** Seventy-one service providers participated in in-depth interviews conducted from July 2013 to September 2015 in nine districts in Zambia. Thirty-three (33) were from government institutions, 14 from private clinics, 15 from non-governmental organizations, 6 traditional healers, and 3 from faith-based organizations. Interviews gathered information on the providers' experiences and challenges with KPs' needs, and recommendations to improve HIV-related service utilization. Qualitative thematic content analysis was conducted.
**Results:** The mean age of SPs was 44.6 years and 53.2% were male. The average length of service at institutions ranged from 0-4 years (26%), 5-9 years (20.8%) and 10+ years (53.2%). The majority (84.4%) completed post-secondary school. Four overarching themes emerged from the data. *Legal barriers to care* - service providers in government facilities reported being limited by law and could not go beyond legal frameworks. *Need to provide patient-centered care* - SPs acknowledged lack of confidentiality and privacy, negative staff attitudes, and stigma and discrimination experienced by KPs served as barriers. *Need for more training* - SPs reported that lack of training on how to engage with and care for KPs made it difficult to handle and provide necessary health care to KPs. *Need for more resources* - inadequate human resources and money hindered the provision of necessary care to KPs. SPs noted that more financial help and HIV treatment centers are needed to provide appropriate care to KPs.
**Conclusions:** SPs face varied challenges in providing the necessary care to KPs. Therefore, it is essential to address these needs and challenges through trainings, capacity building, and values clarification and attitude transformation. Increased human resource and improved health infrastructure, and a flexible policy environment are critical in improving service delivery to KPs.

## LBPE029

### MITIGATING THE RISK OF SOCIAL HARMS IN MEN WHO HAVE SEX WITH MEN (MSM) IN SUB-SAHARAN AFRICA PARTICIPATING IN COHORT RESEARCH OF THE HIV PREVENTION TRIALS NETWORK (HPTN)

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**Background:** Participating in HIV prevention research exposes MSM in sub-Saharan Africa (SSA) to various social and cultural risks. In addition, there are risks to research staff and the integrity of the study. Risks to participants include insensitive treatment by study staff and disclosure of sexual practices, resulting in discrimination. There are potential legal repercussions in countries that criminalize homosexual activities because participation implies 'illegal' behavior.
Other risks include physical attacks on study sites and negative media coverage of the study or the MSM population. To safeguard overall safety, these risks need to be thoroughly assessed in advance, and procedures needed to be in place mitigate these risks.
**Description:** Four sites participating in a study designed to assess feasibility of recruitment and retention of MSM in SSA (HPTN 075) developed site-specific risk-mitigation plans (RMPs), informed by the AmFAR *Respect, Protect, Fulfil* guidance. RMPs included ongoing dynamic community consultation; establishing general and MSM community rapport and support; procedures for ensuring confidentiality; sensitizing relevant stakeholders, including the media and local police; procedures for responding to identified problems; an emergency committee; and systematic assessments of possible social harms at study visits. RMPs were reviewed by the study team and individuals with expertise in human subjects protection as well as legal and local implications. RMPs were further refined after visits to two sites where concern for harm was highest. Final plans were approved by the local IRBs.
**Lessons learned:** Five social harms were reported by three sites in the study's first 10 months and addressed according to the RMPs. These social harms included: indecent treatment of study participants (n=2), loss of confidentiality related to MSM status (n=2); and self-disclosure of a positive HIV status, negatively affecting family relationships (n=1). Confidentiality was breached through the discovery of informed consent forms, resulting in homophobic treatment by a manager at work and a decision not to participate in the study. Without RMPs we would have been caught off-guard and an unprepared response might have aggravated these social harms. An efficient and effective response was greatly facilitated by the development of RMPs.
**Conclusions/Next steps:** RMPs are a necessity when doing research with marginalized populations.

## LBPE030

### LESBIAN GAY BISEXUAL AND TRANSGENDER (LGBT) HEALTH NEEDS: KNOWLEDGE AND PRACTICES OF MEDICAL AND NURSING STUDENTS ATTENDING UNIVERSITY OF BOTSWANA

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**Background:** LGBTs are a key population disproportionately affected by STIs and HIV, with HIV prevalence in Botswana estimated at 13.1%, and Chlamydia 11.3%. Risk factors for HIV and STI transmission include limited access to water-based lubricants and a lack of awareness that anal sex increases HIV risk.Homosexuality is illegal in Botswana, perpetuating stigma against LGBTs.
The study assessed whether medical and nursing students have necessary knowledge and training on unique health needs of LGBTs,for effective medical consultations with LGBTs.
**Methods:** A descriptive cross sectional survey conducted in University of Botswana. A total of 196 medical and nursing students were randomly selected to participate and self-administered questionnaire used. Ethical approval was granted by the UB institutional review board. Epi Info software was used to analyse the data.

**Results:** The response rate was 87%

| RESPONDENT CHARACTERISTICS | TOTAL POPULATION (%) | | |
|---|---|---|---|
| Designation | student doctor- 54% | student nurse 46% | |
| Gender | male- 46% | female- 53% | other- 1% |
| Year of study | year 3- 50% | year 4- 42% | year 5- 8% |
| sexual orientation | heterosexual- 90% | homosexual- 2% | bisexual- 8% |
| Age | minimum- 20yrs | maximum- 26yrs | Mean- 22yrs |

*[Demographics of respondents]*

Although awareness on existence of LGBTs higher than 90%, only 35% reported awareness of unique health-needs of LGBTs with 38% unsure. Only 10% received formal training on consulting a LGBT patient. Knowledge on sexual protection devices was moderate for the condom (61%)very poor for sexual gloves (22%) dental dam (37%) and lubricants (42%). Knowledge on prevalent medical conditions among LGBTs was high for STIs (94%). Fistula formation and anal cancer (62%), suicide and depression (60%) poor for other cancers (40%). Provision of supportive environment during consultations was poor among those who had consulted a LGBT patient,57% of respondents never asking about sexual orientation,only 22% providing non-judgmental setting and 15% screening for relevant illnesses.
**Conclusions:** Awareness on the existence of the LGBT community is high but significantly low knowledge and poor practices on unique health-needs of LGBTs among future healthcare workers. This may be partially attributed to absent formal training on LGBT health needs for medical and nursing students. This is likely to negatively impact future HIV prevention efforts among LGBTs and larger population.

## LBPE031

### HIGHLY SUCCESSFUL ENGAGEMENT IN AN ACUTE HIV-INFECTION AWARENESS CAMPAIGN IN AMSTERDAM

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**Background:** Acute HIV infection (AHI) is associated with increased infectiousness because of high levels of HIV viral load. Timely detection and treatment of AHI can contribute to a better HIV prognosis and help prevent onward transmission. Men who have sex with men (MSM) in the Netherlands are generally unaware of the symptomatology and the benefits of early detection and treatment of AHI.
**Methods:** We designed an online intervention to promote knowledge of AHI and skills to self-identify it among MSM, using interactive text, films, and testimonials. An (online) media campaign directed men to the intervention, at www.hebikhiv.nl, where visitors were trained in recognizing AHI-symptoms and subsequently offered an interactive risk-assessment questionnaire combining sexual risk behavior and AHI-related symptoms. If indicated at risk, men were referred to a specific point of care (POC) for rapid HIV RNA testing where AHI could be detected and immediate counseling and treatment could be offered. Intervention participation was monitored using web-statistics, and if presented at the POC, men were questioned regarding their referral source.
**Results:** From mid August 2015 to April 2016, the intervention was visited over 113,700 times by over 96,540 unique visitors. Of all visitors, 56% (53,627/96,540) completed the online risk-assessment tool. Of those, 10% (5,598/53,627) received the advice to test for AHI, and subsequently, 20% (1093/5,598) downloaded the referral letter to the POC. Preliminary results collected at the POC indicated that 142 men presented themselves for AHI testing, of which 65.5% (93/142) were confirmed to arrive through the campaign or website.
**Conclusions:** Despite the specialized theme, the AHI campaign succeeded in engaging a large number of MSM. The high percentage of participants who continued and completed the risk-assessment tool points at an in-depth engagement with the intervention's material. While most men were not found to be at risk for AHI at the moment of participation, their engagement with the intervention is meant to enable them to self-identify an AHI-infection in the future. The Amsterdam AHI campaign is still ongoing and after its completion (2017) the full data collected at the POC will be combined with the findings.

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## LBPE032

### RISING CD4 COUNTS AT CLINICAL PRESENTATION: EVIDENCE FROM A NOVEL NATIONAL DATABASE IN SOUTH AFRICA

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**Background:** Treatment as prevention requires earlier HIV-testing and linkage to care. Prior studies suggest that many patients only seek care once they are sick. Using novel record linkage of National Health Laboratory Services (NHLS) data, we identified - for the first time - the first CD4 specimen collected for all patients in South Africa's national HIV care, management and treatment program, a proxy for the date of clinical diagnosis. Monitoring entry into clinical HIV care is critical to guide resource allocation as test-and-treat is scaled up.
**Methods:** The NHLS database contains nearly all CD4 counts collected in South Africa's national HIV care and treatment program (2004-2015). KwaZulu-Natal joined NHLS in 2010. We constructed and validated a unique patient identifier, enabling identification of the first CD4 count specimen in patients who had never had a viral load (ART-naïve). We estimated the number of patients with a first CD4 specimen and the median value of these CD4 counts, quarterly from 2004-2015, stratifying by gender, province, and district.
**Results:** From April 2004-March 2015, there were 8.8 million first CD4 specimens nationwide. Numbers entering HIV care each quarter increased from 2004 through 2010, reaching over 350,000 per quarter during the 2010/2011 national testing campaign, and have since plateaued at 210,000 per quarter. Median first CD4 count has increased, from 178 cells/mm$^3$ in second quarter of 2004 (men=147; female=194) to 348 cells/mm$^3$ in first quarter of 2015 (men=280; female=386), with rapid increases occurring during the national testing campaign (Figure). However, there are large and persistent disparities in median CD4 by gender and province (Figure).
**Conclusions:** South Africans living with HIV are seeking care earlier than ever before. Geographic and gender heterogeneity suggests potential opportunities to learn from higher-performing regions and the need for targeted interventions in specific areas and among men to increase early engagement with HIV care.

*[Figure. Median CD4 counts in patients presenting for HIV care in South Africa, 2004-2015. Figure displays trends in the median value of first CD4 count specimens recorded, by province and nationally. The figure excludes KwaZulu-Natal, which joined NHLS in 2010. The shaded region denotes the April 2010 - December 2011 national HIV testing campaign]*

## LBPE033

### IMPLEMENTING THE PEPFAR PIVOT: EXPERIENCES FROM ZIMBABWE'S VOLUNTARY MEDICAL MALE CIRCUMCISION PROGRAM

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**Background:** Since 2013, the ZAZIC Consortium implemented an integrated voluntary medical male circumcision (VMMC) program jointly with Ministry of Health and Child Care in 21 districts in Zimbabwe. ZAZIC's integrated VMMC approach used existing healthcare workers and MOHCC infrastructure. From October 2013 through September 2015, ZAZIC expanded from 2 to 36 static VMMC sites and performed a total of 84,708 VMMCs, averaging 3530 per month and exceeding donor targets. More than 85% of all VMMCs were completed independently by existing MOHCC staff in health facilities; approximately two-thirds occurred in outreach settings.
**Description:** In 2015, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) 3.0 required a strategic *pivot* in Zimbabwe's VMMC program, transitioning from national coverage to focused scale-up in areas of highest disease burden. Under the pivot, ZAZIC's VMMC implementation was limited to 10 scale-up districts beginning in October 2015. Ambitious targets were maintained, translating to a 40% increase in circumcisions within these districts. By January 2016, implementation was discontinued outside of PEPFAR scale-up districts. From October 2015-March 2016, ZAZIC performed 20,241 VMMCs, a monthly average of 3374, demonstrating an impressive transition in accordance with the pivot requirements.

*[Male circumcisions in priority versus non priority districts, pre- and post-pivot]*

**Lessons learned:** The pivot necessitated immediate redirection from program breadth to depth. Due to MOHCC human resource constraints and the dramatic rise in targets, this mandate was accompanied by a rapid ZAZIC shift from integrated service delivery to a mixed implementation approach employing additional mobile teams using non-MOHCC staff.
**Conclusions/Next steps:** ZAZIC's locally-led consortium successfully transitioned its program to meet changing PEPFAR priorities. Momentum indicates continued future achievements. There is need to evaluate the implications of the pivot on VMMC cost, quality, population-level HIV reduction benefit, and impact on the health system as a whole.

## LBPE034

### EVALUATION OF A CONDITIONAL CASH TRANSFER PROGRAM FOR PREVENTING MOTHER TO CHILD TRANSMISSION (PMTCT) OF HIV IN NIGERIA

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**Background:** Nigeria suffers from the highest burden of MTCT worldwide. Although PMTCT services are widely available at public clinics, most HIV+ women do not complete the PMTCT cascade. To increase retention, a conditional cash transfer (CCT) program was piloted in Akwa Ibom in 2014 for HIV+ pregnant women. Through a

randomized control trial, we evaluate the effect of this program on two targeted health behaviors—delivering at a facility and getting an early infant diagnosis (EID) 6-8 weeks post-birth. Interim results (the study is on-going) became available in spring 2016.
**Methods:** From August 2015 to April 2016, HIV+ pregnant women at three public facilities in Akwa Ibom, Nigeria were randomized to be offered enrollment in the CCT program, where they received cash incentives for up to US$160; (determined with feedback from local stakeholders and patient-reported out-of-pocket medical expenditures) independently for: enrolling, delivering at the facility, and obtaining an EID, compared the standard course of care. Data on patient characteristics, delivery outcomes and infant testing were extracted from administrative records. Regression analysis was conducted to estimate the intent-to-treat (ITT) effects of the program.
**Results:** Of 473 pregnant women testing HIV+ so far, 238 (50.3%) were randomized to the control group and 235 (49.7%) to the treatment group. Compared to women in standard PMTCT care, women in the CCT program were significantly more likely to give birth at the facility (OR=2.28, p=0.001, n=300), representing a 18.4 percentage point difference in facility-based births (27.5% vs. 45.9%). Women in the CCT program were also significantly more likely to return for an EID test (OR=1.78, p=0.068, n=181) than those in standard PMTCT care, representing a 13.5 percentage point difference in EID testing (32.1% vs. 45.6%).
**Conclusions:** Preliminary results suggest that a CCT program can improve retention in PMTCT in Akwa Ibom, Nigeria. Through continued research we will assess: optimal cash amounts, better targeting of women most in need, reasons for non-compliance and self-reported survey data on care and treatment behaviors.

## LBPE035

### A NOVEL ONLINE-TO-OFFLINE (O2O) MODEL FOR PREP AND HIV TESTING SCALE UP

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**Background:** PrEP awareness and uptake among men who have sex with men (MSM) and transgender women (TG) in Thailand remains low. Finding ways to identify high-risk groups through innovative and scalable methodologies for increasing uptake of PrEP and HIV testing is a critical priority.
**Methods:** The Thai Red Cross AIDS Research Centre (TRCARC)'s Adam's Love (www.adamslove.org) launched a three-month program to enroll MSM and TG into free PrEP and HIV testing services using its novel Online-to-Offline (O2O) model at four sites in Bangkok including Adam's Love private clinic, TRCARC public clinic, and two community-based clinics. Adam's Love online staff provided real-time PrEP eCounseling to assess and enroll at-risk participants who made online bookings via free Eventbrite application and received auto-generated e-ticket and Quick Response (QR) code on their mobile devices that were scanned at check-in by the offline site staff.
**Results:** Between January 10th - April 11th, 2016, Adam's Love reached 272,568 people online via PrEP O2O campaign. 425 MSM and TG received eCounseling, made online bookings, and received QR codes. 325 (76.4%) actually checked-in at clinics, with 168 PrEP users (52%) and 148 HIV testers (48%). Median (IQR) time between receiving e-ticket and actual check-in was 2 (0-7) days for HIV testing and 3 (1-7) days for PrEP services. Clients of Adam's Love and TRCARC clinics had higher education (p< 0.001), higher income (p< 0.001), were less likely to be bisexual (p=0.007), and less aware of any HIV prevention methods (p=0.02), than those at community-based clinics. In a multivariate model, higher education (OR 2.17, 95%CI 1.06-4.45; p=0.03), seeking sex partners online (OR 2.17, 95%CI 1.19-3.61; p=0.01), being aware of sexual partners' HIV status (OR 2.42, 95%CI 1.31-4.48; p=0.008), ever used PEP (OR 2.39, 95%CI 1.15-4.96; p=0.02), and enrollment at Adam's Love clinic (OR 4.05, 95%CI 2.18-7.54; p< 0.001) were associated with PrEP uptake.
**Conclusions:** Adam's Love O2O model is highly effective in linking online at-risk people to actual PrEP and HIV testing services, using online eCounseling and booking as 'bridging steps'. The O2O model has high potential to be replicated and scaled up in other settings with high internet penetration among key populations.

## LBPE036

### ESTIMATION OF TIMELY EID AND MORTALITY AMONG HIV-EXPOSED INFANTS IN MASHONALAND EAST PROVINCE, ZIMBABWE: A SAMPLING-BASED APPROACH

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**Background:** Estimates indicate 45% of HIV-exposed infants receive timely Early Infant Diagnosis (EID) in Zimbabwe. However, existing health information systems do not enable routine reporting of the individual proportion of exposed-infants that receive EID, creating uncertainty regarding the true fraction. We conducted a population-based survey in which individual HIV-infected mother-HIV-exposed infant pairs were followed through registers to identify and trace a sample of HIV-positive women with no documented EID for their infants to ascertain better estimates of timely EID completion.
**Methods:** A modified probability-proportional-to-size schema was used to select 45/193 health facilities in Mashonaland East Province. Outcomes of all HIV positive mothers enrolled in ANC from Apr-12 to May-13 were traced through facility registers to determine documented uptake of EID<3 months of age. A random sample of women with no documented EID for their infants were traced at household-level to determine true outcomes. We estimate cumulative incidence of timely EID and death by 3 months of age among the population of HIV-exposed infants.
**Results:** Among 18,065 women attending ANC, 2,651 were HIV positive (14.7%); 31.2% (n=828) had documented uptake of EID within three months (95%CI:29.5%-33.0%). From Mar-May 15, of 643/1,826 (35.3%) mothers of HIV-exposed infants with no documented EID, 256 (39.8%) were successfully traced at household level. The majority of infants (76.9%;n=190) traced had DNA PCR samples for EID, however only 38.4% (n=73) confirmed timely EID within 3 months of birth. We observed a high rate of HIV-exposed infant mortality (17.8%; 66/371) among infants for whom vital status outcomes could be ascertained and 'my child died' was the number one reason provided among the 'no EID' group. Weighted population estimates indicate cumulative incidence of infant death by 90 days at 3% (95%CI:3.4% - 4.4%) and an annual infant mortality rate of 7.7% (95%CI: 4.7%- 13.5%). Cumulative incidence of timely EID with death as a competing risk was 60% (95%CI: 58.7% to 61.3%).
**Conclusions:** Our findings indicate uptake of timely EID among HIV-exposed infants is currently underestimated. High, early mortality among HIV-exposed infants underscore need to identify HIV positive mother-HIV exposed infant pairs at high risk of adverse outcomes and loss-to-follow-up. Sampling-based approaches are valuable tools for providing a better picture of PMTCT program effectiveness.

## LBPE037

### DIFFERENTIATED MODELS FOR DELIVERY OF ANTIRETROVIRAL THERAPY TO HIV-INFECTED WOMEN IN THE POSTPARTUM PERIOD IN CAPE TOWN, SOUTH AFRICA

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**Background:** Concerns exist regarding delivery of antiretroviral therapy (ART) to HIV-infected women in the postpartum period, including low levels of retention in care and poor adherence. We piloted an innovative model of care for delivery of ART services to postpartum women.
**Methods:** We recruited a cohort of HIV-infected women who initiated ART in pregnancy making their first postpartum visit at a primary care facility in Cape Town, South Africa. Eligible women were asked to choose between two models of care for delivery of long-term ART services: (i) referral to existing system of community-based 'ART adherence clubs' (ACs), operated by lay counsellors with medication collection every 2-4mo; or (ii) referral to the local primary care clinic (PHC), with services provided by clinicians and medication collection every 1-2mo (standard of care). Women were followed through 6mo postpartum with study visits conducted separately from either ART service.
**Results:** Between February and September 2015, 129 postpartum women were enrolled (mean age, 28yrs; median time postpartum, 10 days); 65% (n=84) opted for ACs and 35% (n=45) for PHC. Reasons for choice included shorter wait times, ability to receive ART from lay counsellors and less frequent appointments among those choosing ACs; women opting for PHC cited proximity to their homes and/or infant health services and more frequent contact with clinicians. Among women choosing

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ACs, 64% were retained in ACs through 6mo postpartum; 14% never attended AC visits; 18% dropped out after at least one visit and 2% were referred out for clinical reasons. Of those who chose ACs, 61%, 26%, and 13% reported none, < 1, and 1+ missed doses, on average, per 30 days on ART up to 6mo postpartum, respectively. In this group, 87% (n=73) had 6mo viral load (VL) measure. Of these, 88% and 92% had VL< 50 and < 1000 copies/mL, respectively. Compared to women who were retained, women who disengaged from ACs were more likely to have VL≥50 (p=0.051) and VL≥1000 (p=0.001).

**Conclusions:** These data demonstrate that it is possible to refer HIV-infected women on ART to ACs immediately postpartum. However ongoing retention remains a concern and further research is needed to evaluate long-term outcomes.

## LBPE038

### HIGH RATES OF RETENTION AND VIRAL SUPPRESSION IN THE SCALE UP OF ANTIRETROVIRAL THERAPY ADHERENCE CLUBS IN CAPE TOWN, SOUTH AFRICA

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**Background:** Increasingly there is health authority scale up of successfully piloted differentiated models of antiretroviral therapy (ART) delivery to stable patients. However, there is a paucity of evidence on system-wide outcomes after scale-up. In the Cape Town metropolitan district, stable patients (ART>6 months, supressed viral load) were referred to Adherence Clubs (ACs) - a group model of ART delivery with five visits per year. By the end of March 2016, approximately 32% of 142,000 ART patients were in an AC**.** We describe patient outcomes of a representative sample of AC patients during this scale-up.

**Methods:** Patients enrolled in an AC at non-research supported sites between 2011 and 2014 were eligible for analysis. We sampled 10% of ACs (n=100) in quintets proportional to the number of ACs at each facility, linking each patient to city-wide laboratory and service access data to validate retention and virologic outcomes. We digitised registers and used cross-sectional and Kaplan-Meier methods to estimate outcomes: lost to follow-up (LTFU), transfer (TFO) and viral load assessment and suppression (< =400 copies/mL).

**Results:** Of the 3,216 adults contributing 4,188 person years of follow-up (94% in an AC, median 13 months), 71% were women. The median time from ART initiation to AC enrolment was 2.3 [interquartile range (IQR) 1.5-3.6] years. Cross-sectional retention at study closure was 89%, with 4(0.1%) reported deaths and 104(3.2%) patients LTFU. Of 251 (7.8%) transfers, 174(69%) were originally classified as LTFU identified through data linkage. Cumulatively retention, LTFU and TFO were 94.9% (CI 92.9-94.8), 2.1% (CI 1.6-2.8) and 3.9% (CI 3.2-4.7) at 12 months and 83.7% (CI 81.5-85.6), 5.1% (CI 4.0-6.5) and 11.6% (CI 10.0-13.5) at 24 months after AC enrolment. After 12 and 24 months in an AC, 96.8% (CI 96.0-97.4) and 96.0% (CI 95.0-97.0) were virally supressed, with viral load completion in 87% and 84% of patients.

**Conclusions:** This is the first analysis reporting patient outcomes after health authorities scaled-up a differentiated care model across a high burden district. The findings provide substantial reassurance that stable patients on long-term ART can safely be offered care options, which are more convenient to patients and less burdensome to services.

## LBPE039

### ADVERSE EVENT PROFILE OF A MATURE VOLUNTARY MEDICAL MALE CIRCUMCISION PROGRAM

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**Background:** The frequency of adverse events (AEs) is a widely used indicator of voluntary medical male circumcision (VMMC) program quality. Though over 9 million male circumcisions (MCs) have been performed, little published data exists on the profile of AEs from mature, large-scale programs. No published data exists on routine implementation of PrePex, a device-based MC method that is being scaled up in the region.

**Methods:** The ZAZIC Consortium began implementing VMMC in Zimbabwe in 2013, supporting services at 36 facilities. Aggregate data on VMMC outputs are collected monthly from each facility. Detailed forms are completed describing the profile of each moderate and severe AE. Bivariate and multivariable analyses were conducted using log-binomial regression models.

**Results:** From October 2014 to September 2015, 44,868 clients were circumcised according to their VMMC method choice; 156 experienced a moderate or severe AE. AEs were uncommon: 0.28% (116/41,416) of surgical and 1.16% (40/3,452) of PrePex clients experiencing an AE. After adjusting across the 36 VMMC sites, we found that PrePex was associated with a 3.29-fold (95% CI, 2.04-5.30) increased risk of experiencing an AE compared to surgical procedures. Device displacements, when the PrePex device is intentionally or accidentally dislodged during the 7-day placement period, accounted for 70% of PrePex AEs. The majority of device displacements were intentional self-removals. Infection was the most common AE among VMMC clients. Compared to clients ages 20 and above, clients ages 10-14 were 3.07-fold (95% CI, 1.30-7.26) more likely to experience an infection and clients ages 15-19 were 1.80-fold (95% CI, 0.72-4.48) more likely to experience an infection, adjusted for site.

**Conclusions:** To the best of our knowledge, this exploratory analysis is the first to show that clients receiving a PrePex MC were more likely to experience an AE than surgical circumcision clients. This is largely attributable to the frequent occurrence of device displacements, most of which could be prevented if client behavior could be modified through counseling interventions. We are also the first to find that infection after MC is more common among younger clients. Young clients may benefit from additional counseling or increased parental involvement to reduce infections.

## LBPE040

### THE KAVANGO TREATMENT INITIATIVE: ENGENDERING MUTUAL EMPATHY TO CATALYZE ACTION TOWARD ACHIEVEMENT OF THE 90-90-90 TARGETS

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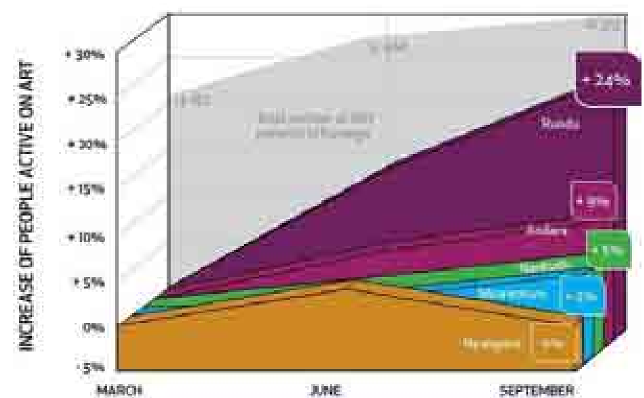
**Background:** Namibia's Kavango Region had the second-highest HIV treatment gap in the country at almost 50% (PEPFAR analyses, 2015). As part of the PEPFAR-funded Namibian Institutional Strengthening project, the Kavango Treatment Initiative (KTI) was a highly successful, locally-driven platform that created the opportunity for local actors to focus on shared objectives and formulate innovative and collaborative solutions to address the local epidemic.

**Description:** Targeting Rundu District, the largest district in the region, KTI was a critical platform for improving the HIV cascade. After a careful recruitment process, the KTI merged local, easily understood data on service mapping, patient data and pharmaceutical data with innovative facilitation approaches to foster open interaction, trust, needed dialogue and idea exchanges between health care providers and PLWHA, along with critical experiential learning to develop clear, shared goals. The results were local solutions implemented by highly motivated and empowered members. Convening 6 times in less than 6 months, the KTI (1) improved data demand and systems which led to improvements in the management of client flows, waiting times, defaulter tracking and referrals, and reduced stock-outs, and (2) increased active ART clients by 24%.




*[Figure 1: Increase in active clients by 24% in Rundu District between March and Sept 2015]*

**Lessons learned:** As a forum that removed organizational and rank boundaries, the KTI broke through many constraints typical of coordination structures. The facilitated processes inspired empathy and solidarity/consensus, which was critical to

deepening local ownership and understanding of issues and motivated members to mobilize local resources rapidly to take action.

**Conclusions/Next steps:** Small investments in well-facilitated participatory processes that target joint understanding, trust, and empathy can dramatically motivate government and non-governmental actors to creatively take action. Opportunities for generating and sustaining high levels of motivation for catalyzing action are critical in places like Namibia where the HIV response is predominantly domestically funded, and where efficiencies in human resources and supporting systems are urgently required to deliver an effective response.

## LBPE041

### COMMUNITY-BASED DISTRIBUTION OF HIV SELF-TEST KITS: RESULTS FROM A PILOT OF DOOR-TO-DOOR DISTRIBUTION OF HIV SELF-TEST KITS IN ONE RURAL ZIMBABWEAN COMMUNITY

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**Background:** We piloted household distribution of HIV self-test (HIVST) kits in one rural district in Zimbabwe in preparation for a community randomised trial evaluating HIVST distribution models.

**Methods:** We briefly trained 81 paid community volunteers (CV) to distribute HIVST kits in four rural wards. Test-kits were distributed house-to-house to adults (≥16 years) with verbal consent. CV provided information on HIVST use and post-test referral. Demographic data were captured electronically from test acceptors who could opt to test alone or with CV assistance. Self-testers were asked to return used kits to locked drop-boxes in communities. Late read was then used to estimate HIV prevalence. At two and four weeks after kit distribution, PSI provided confirmatory testing, CD4 cell count/clinical staging/referral and non-HIV services through mobile outreach. Focus group discussions (FGD) explored views on HIVST and were analysed thematically. A follow-up household survey is underway providing population level estimates of uptake and linkage to services.

**Results:** Between 23Mar16 and 23Apr16, 79 CVs distributed 8,095 HIVST kits to 3,516 (51.8%) households across all four wards (estimated adult population 14,534 (males=5,849)) representing coverage of 61% in men and 52% in women. Electronic data are available for 7,510 individuals; 44% were male, 15% were adolescents (16-19 years). 85% tested without CV assistance and 5,521 (68.2%) returned their used HIVST kits as requested. On late read 0.4% kits were invalid and 0.4% were unused. Of the remaining kits 1153 (21.0%) of 5,479 were HIV+ve, representing a minimum yield of 1153/8095 (14.3%).

824 (10.2%) participants accessed PSI post-test services; some presented directly to public health facilities. A minimum of 48 HIV positive self-testers have been initiated on antiretroviral therapy to date.

In FGD self-testers stated that HIVST facilitated testing among individuals who would not test otherwise. Demand for HIVST exceeded supply.

**Conclusions:** Community-based distribution of HIVST is acceptable and results in high testing coverage, particularly among men and young people. The high testing yield suggests participation by high risk individuals with unknown status, although we cannot exclude use of kits to confirm known HIV+ve status. More precise estimates of uptake and linkage based on household surveys are currently being analysed.

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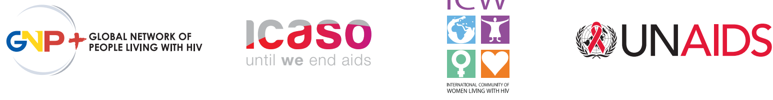


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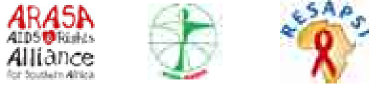


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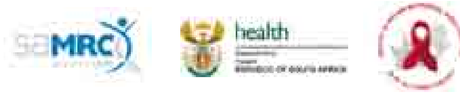


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